UMT Research Outlook

2017

Edited by:
Sohail Aslam

Compiled by:
Muhammad Ismail
Sehrish Shoukat

LRC
Learning Resource Center

UNIVERSITY OF MANAGEMENT AND TECHNOLOGY
UMT

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University of Management & Technology

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Foreword

Research is not only critical to transform human living; it is also critical to the vision and mission of our universities. Universities are the breeding ground of innovation and the hub for research activities. They set up research based standards for coherent thinking with a global perspective. Bringing together the academic/university research and the expertise of practitioners make possible what was once only a fantacy. Academic research that provide new course of ideas, tools and techniques, and innovation and invention across a broad spectrum of disciplinary/multi-disciplinary areas with a global perspective is needed more than ever.

UMT is determined to best ensure its continued relevance, quality and usefulness by making research its priority; by investing more in research. Cohesive research strategies have been formulated at UMT to keep the momentum on the go. As a result, the scale of research output increased almost twofold duing the last calendar year. Accordingly, the Learning Recource Center (LRC) has adapted to its new role which is to strategically manage the research produced at the university. To establish university's research profile and maximize its reach LRC has continued to record and publish the research produced at UMT in the Annual Research Outlook.

Research outlook aims to inform the interested audience about the research work carried out during a single calendar year. The idea behind it is to increase knowledge-sharing among the learning communities. We are pleased to present its 7th edition which allows the readers to browse through the content, title and abstract of research work done by the UMT community. It is also pertinent to mention here the ***eScholar*** – a database that showcases the research produced at UMT.

Sohail Aslam
Acting CLO

Table of Contents

School of Science 7

Department of Chemistry 7

Journal Articles 7

Conference Papers 19

Department of Physics 27

Journal Articles 27

Conference Papers 34

Department of Life Science 35

Journal Articles 35

Conference Papers 38

Department of Biotechnology 38

Journal Articles 39

Department of Mathematics 39

Journal Articles 39

Conference Papers 60

School of Engineering 62

Department of Civil Engineering 62

Journal Articles 62

Conference Papers 67

Department of Electrical Engineering 68

Journal Articles 68

Conference Papers 71

Department of Energy Engineering 73

Journal Articles 73

Department of Industrial Engineering 78

Journal Articles 78

Conference Papers 79

Department of Mechanical Engineering 80
Journal Articles 80
Institute of Communication and Cultural Studies 82
ICCS 82
Journal Articles 82
Conference Papers 83
Institute of Clinical Psychology 85
ICP 85
Journal Articles 85
Conference Papers 88
Institute of Islamic Banking 90
IIB 90
Journal Articles 90
Conference Papers 93
School of Architecture and Planning 94
SAP 94
Journal Articles 94
Conference Papers 96
School of Business and Economics 100
Department of Economics 100
Journal Articles 100
Conference Papers 108
Department of Finance 109
Journal Articles 109
Conference Papers 114
Books/ Book Chapters/ Book Reviews 115
Department of Management 115

Journal Articles 115
Conference Papers 121
Department of Operations and Supply Chain 122
Journal Articles 122
Conference Papers 122
Department of Quantitative Methods 123
Journal Articles 123
Department of Skills Development 124
Journal Articles 124
Conference Papers 124
Department of Information Systems 125
Journal Articles 125
School of Commerce and Accountancy 127
SCA 127
Journal Articles 127
School of Food and Agricultural Sciences 128
SFAS 128
Journal Articles 128
School of Governance and Society 137
SGS 137
Journal Articles 137
Books/ Book Chapters/ Book Reviews 138
School of Health Sciences 139
SHS 139
Journal Articles 139
Conference Papers 144
School of Professional Advancement 145

SPA 145
Journal Articles 145
Conference Papers 146
School of Social Sciences and Humanities 148
Department of Education 148
Journal Articles 148
Conference Papers 151
Department of English Language and Literature 153
Journal Articles 153
Conference Papers 155
Department of Gender Studies 162
Journal Articles 162
Conference Papers 163
Department of Islamic Thought and Civilization 164
Journal Articles 164
Department of Political Science 164
Journal Articles 164
Conference Papers 165
Department of Psychology 167
Journal Articles 167
Conference Papers 168
Books/ Book Chapters/ Book Reviews 168
Department of Sociology 169
Journal Articles 169
Conference Papers 170
Department of Special Needs Education 170
Journal Articles 170
Conference Papers 172
School of Systems and Technologies 174

Department of Computer Science 174

Journal Articles 174

Department of Informatics and Systems 178

Journal Articles 178

School of Textile & Design 181

STD 181

Journal Articles 181

Conference Papers 182

Quality Ehnancement Cell 183

Conference Papers 183

Office of Participants Affairs 183

Books/ Book Chapters/ Book Reviews 183

Author Index 184

Keyword Index 190

Table –I 199

School/ Center/ Department wise listing of publications: 199

Table –II 201

School/ Center wise graph of publications: 201

Table-III 202

Number wise(Descending Order) publications by authors: 202

Table-IV 209

Author wise (Alphabetical) publications: 209

Table-V 216

Numbar wise (Decending-order) JCR publications by authors: 216

Table-VI 220

School/ Center/ Department wise/ Category wise table of publications: 220

School of Science

Department of Chemistry

Journal Articles

1: **Ijaz, F., Shahid, S., Khan, S. A., Ahmad, W.,** & Zaman, S. (2017). Green synthesis of copper oxide nanoparticles using Abutilon indicum leaf extract: Antimicrobial, antioxidant and photocatalytic dye degradation activities. *Tropical Journal of Pharmaceutical Research, 16*(4), 743-753. **(JCR)**

Abstract: Purpose: To synthesize copper oxide (CuO) nanoparticles using a ecofriendly technique and evaluate their antimicrobial, antioxidant and photo-catalytic dye degradation potentials. Methods: A superficial method (solution combustion method) was employed for the synthesis of copper oxide nanoparticles from an aqueous extract of Abutilon indicum. The CuO nanoparticles were characterized using x-ray diffraction (XRD), energy-dispersive x-ray spectroscopy (EDX), scanning electron microscope (SEM) and ultraviolet-visible (UV-Vis) spectroscopic techniques. The antimicrobial activity of the CuO nanoparticles was determined by agar well diffusion method, while their antioxidant properties were assessed by DPPH radical scavenging, ferric reducing antioxidant power (FRAP), total antioxidant, ferric thiocyanate (FTC) and total phenolic content (TPC) assays. The photo-catalytic degradation activity of synthesized CuO nanoparticles was assessed by the degradation of Acid Black 210 (AB) dye under sunlight irradiation. Results: XRD, EDX and SEM results confirmed successful synthesis of CuO nanoparticles, with hexagonal, wurtzite and sponge crystal structure. Photo-catalytic data revealed that the nanoparticles are a good catalyst for effective degradation of Acid Black 210. The nanoparticles also exhibited remarkable antioxidant activity, with IC50 and FRAP values ranging from 40 ± 0.23 to 84 ± 0.32 µg/ml, and 0.65 ± 0.01 to 9.10 ± 0.21 Trolox equivalent/mL, respectively. Significant bactericidal activity was manifested by the CuO nanoparticles against Klebsiella and Bacillus subtilis with zone of inhibition of 14 ± 0.05 and 15 ± 0.11 mm, respectively. Conclusion: The synthesized CuO nanoparticles exhibit antibacterial and antioxidant potential, indicating that they are good candidates for future therapeutic applications.

Keywords: CuO nanoparticles, Green synthesis, Photo-catalytic Degradation, Antioxidant, Antimicrobial.

2: **Khan, S. A., Shahid, S., Ahmad, W., & Sami Ullah.** (2017). Pharmacological importance of clerodendrum genus: A current review. *International Journal of Pharmaceutical Science and Research, 2*(2), 22-30. **(SJR)**

Abstract: Clerodendrum genus l. Belongs to a family of Lamiaceae. Clerodendrum broadly spread in subtropical as well as in tropical areas of this world. Almost about 500 species belongings to the genus Clerodendrum of that are recognized till yet. More than five hundred species of Clerodendrum genus comprises small herbs, shrubs, and trees. Numerous species of Clerodendrum genus exhibited its medicinal significance that had been described in several native schemes of drugs as well as in several traditional medications. For the curing of a

number of natural life menacing ailments i.e. Syphilis, typhoid, cancer, jaundice and hypertension genus Clerodendrum is being used as in medicines specifically in different countries like Japanese, Thai, Indian, Chinese and Korean systems of me dication. Clerodendrum genus has also been extensively studied for various biological activities to know its potential effect towards pharmaceutics. Several studies had been also reported the isolation as well as chemical constituents' identification and its association with the biotic activities of the Clerodendrum genus. Chief chemical constituents that were described in numerous reported studies of the genus are volatile oils, steroids, diterpenoids, triterpenoids, flavonoids and phenolic compounds.

Keywords: Clerdodendrum, Antioxidant, Antibacterial, Antifungal, Insecticidal, Flavonoids.

3: **Khan, S. A., Jameel, M.,** Kanwal, S., & **Shahid, S.** (2017). Medicinal importance of allium species: A current review. *International Journal of Pharmaceutical Science and Research, 2*(3), 29-39. **(SJR)**

Abstract: Nature is a good friend of human. Plants are serving humanity from hundreds of the years. Herbal/ayurvedic medicines are used for the treatment of several diseases without any harm. Allium species are one of the remedial herbs with bioactive parts, that act as medicinal plant and cure diseases, their roots stems leaves and also juices are valuable for human health. Allium species like (Allium cepa, Allium sativum, Zingiber officinale) are studied for the treatment of cancer, cardiovascular diseases, inflammation, reducing blood sugar, baldness, gastric ulcer, colic diseases, oxidative damage, etc. These species are evaluated for their total phenolics, flavonoids, antioxidant activity, hepatoprotective and microbial study. Total phenolic content was examined spectrophotometrically with the Folin-Ciocalteu phenol reagent and total antioxidant activity were studied by the ferric reducing antioxidant power (FRAP) and diphenyl picryl hydrazyl (DPPH) methods. Watery and alcoholic concentrates in Pbs subjected to an antibacterial activity test using the agar well diffusion procedure against various contagious pathogenic microorganisms. HPLC and LC–MS/MS demonstrated the nearness of Gallic corrosive, ferulic corrosive, protocatechuic corrosive, kaempferol, curcumin and quercetin content can possibly contribute as a dietary supplement for controlling hyperglycemia, treatment of alopecia areata and oxidative anxiety connected diabetes complexities. The biological activities, chemical characteristics and used in pharmaceutics are well studied. Some of its major chemical components reported are volatile oils, steroids, diterpinoids, flavonoids and phenolic compounds.

Keywords: Allium, Antioxidant, Antibacterial, Antifungal, Insecticidal, Flavonoids, Alopecia Areata.

4: **Ahmad, W.,** Khan, S. A., **Munawar, K. S.,** Khalid, A., & Kanwal, S. (2017). Synthesis, characterization and pharmacological evaluation of mixed ligand-metal complexes containing omeprazole and 8-hydroxyquinoline. *Tropical Journal of Pharmaceutical Research 16* (5), 1137-1146. **(JCR)**

Abstract: Purpose: To synthesize a series of mixed ligand-metal complexes and to evaluate their alkaline phosphatase inhibitory capacities, antioxidant potential and antimicrobial activities. Method: Mixed ligand-metal complexes of Zn (II), Ni (II), Co (II), Cu (II), omeprazole and 8-hydroxyquinoline were synthesized. The ligand-metal complexes were characterized by various physicochemical techniques, including elemental analysis, magnetic susceptibility, scanning

electron microscope (SEM), mass spectrometry (EI-MS), ultraviolet-visible (UV-Vis) spectrophotometry, Fourier transform infrared spectroscopy (FTIR), proton nuclear magnetic resonance (1H-NMR) and conductance studies. The new compounds were also investigated for their alkaline phosphatase (ALPs) inhibition, 2,2'-diphenyl-1-picrylhydrazyl (DPPH) radical-scavenging and antimicrobial activities. Results: Spectroscopic studies revealed the chemical composition of synthesized compounds as well as the bidentate bonding behavior of the coordinating ligands with metal ions. Conductance measurement suggested that the metal complexes were non-electrolytes. Ni(II) complex exhibited antioxidant activity (30.48 ± 0.32 M) higher than those of BHT (standard) and other complexes. Stronger inhibition of ALPs by Ni (II) mixed ligand complex compared to the other complexes was evident. The synthesized compounds showed moderate to very good antimicrobial activity against bacterial strains, i.e., Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Actinomyces viscosus, Staphylococcus aureus, Bacillus subtilis; as well as against the fungal strains, Candida albicans, Aspergillus flavus and Aspergillus niger. Conclusion: All the mixed ligand complexes demonstrate higher antioxidant, ALPs-inhibitory and antimicrobial activities than their corresponding ligands. This indicates their therapeutic potential as future drug candidates for the concerned diseases.

Keywords: Omeprazole, 8-Hydroxyquinoline, Mixed-ligand Complexes, Alkaline Phosphatase, Bidentate Bonding Behaviors.

5: **Hassan, A. U., Mohyuddin, A** & **Ali, S**. (2017). Chemical characterisation of himalayan rock salt. *Pakistan Journal of Scientific and Industrial Research, Series A: Physical Sciences, 60*(2) 61-67. **(X Cat.)**

Abstract: Present study involves the chemical evaluation of rock salt samples collected from the plugging sites of Himalayan salt (Khewra salt mines and Kalabagh salt mines) for their moisture content, water insoluble matter, calcium, magnesium, sulphate content and trace minerals such as Fe,Cu,Cd,Pb,As,Ag and Zn determined by atomic absorption spectroscopy. Moisture content of Khewra and Kalabagh salt samples ranged from 0.03 wt. % to 0.09 wt. % and 0.06 % to 0.08 %, respectively. Water insoluble matter ranged from 0.08 wt. % to 1.4 wt. % and 1.5 wt. % to 2.8wt. % for Khewra and Kalabagh salt samples, respectively. Sulphate content for Khewra salt sample was from 0.39 % to 0.91 % and for Kalabagh salt mines from 0.75 wt. % to 0.95wt. %. For Khewra salt mines calcium ranged 0.15wt. % to 0.32wt. % and for Kalabagh salt samples from 0.1 wt. % to 0.27wt. %. Magnesium ranged from 0.11 wt. % to 0.35wt. % for Khewra salt mines, while for Kalabagh salt samples its range was 0.18wt. % to 0.89wt. %. Trace metals had the concentration ranges between 0.2 to 1.85 mg/kg for copper; between 0.21 to 0.42 mg/kg for manganese; between 0.04 to 0.06 mg/kg for zinc; between 0.12 to 0.18 mg/kg for arsenic and between 0.03 and 0.05 mg/kg for lead while cadmium content was either below the method's detection limits or in very trace amounts. The results show that the concentrations of all the parameters studied are below the limits set by World Health Organization (WHO) and Food and Agriculture Organization (FAO). Therefore, it can be concluded from the paper that the Himalayan salt from the plugging sites of Khewra and Kalabagh salt mines are safe to use.

Keywords: Atomic Absorption Spectrophotometer, Minerals, Water Insoluble Matter, Sulphate.

6: **Fatima, U., Shahid, S., & Nadeem, S.** (2017). Preparation and characterization of biodegradable

thin film gelatin grafted vinyl acetatemethylemethacrylate Nanocomposite. *Digest Journal of Nanomaterials and Biostructures, 12*(2), 549-554. **(JCR)**

Abstract: Thought to make the environment green and restrict fossil sources is increasing day by day. Renewable sources are helpful in production of green materials as they are biodegradable and non-toxic to living being and atmosphere. Our main concern is to from biodegradable polymeric product from non biodegradable product. Graft copolymerization was used to prepare biodegradable gelatin grafted vinyl acetate methylmethacrylate nanocomposite. Gelatin backbone used as biodegradable material and grafted with vinyl acetate Methylmethacrylate. This polymer was fully characterized by Fourier transform Infrared (FTIR), Thermogravemetric analysis (TGA), Differential scanning calorimetry (DSC) and Scanning electron microscopy (SEM). The polymer nanocomposite was prepared by adding the suitable amount of Ni doped ZnO nanoparticles. Biodegradability was checked by soil burial method. Percent weight loss was measured as a function of number of days and results showed that degradability increase with the number of day's up to 44.39%. Degradation studies showed that Gelatin-Grafted-Vinyl AcetateMethylmethacrylate is more degraded as compare to Gelatin-Grafted-Vinyl AcetateMethylmethacrylate nanocomposite. Results showed that the grafting was a flexible tool to impart biodegradation to non biodegradable polymers. Addition of nanoparticles gave them a resistance against microbes up to an extent. Therefore this nanocomposite can be used successfully as biodegradable food packaging material.

Keywords: Gelatin, Graft Copolymerization,Ni Doped ZnO Nanocomposites,Thin Films.

7: **Khan, S. A., Shahid, S.,** Sajid, M. R., Noreen, F. & Kanwal, S. (2017). Biogenic synthesis of CuO nanoparticles and their biomedical applications: A current review. *International Journal of Advanced Research, 5*(6), 925-946. **(NR)**

Abstract: In this paper, brief reviews for the synthesis of copper oxide nanoparticles by the different green routes are described. Since last few years, synthesis of nanoparticles has been attracted considerable attention. The metal oxides are important technology materials used as antibacterial, antioxidant, antifungal as well as catalysts in chemical industries and in electronic and photonic devices. Due to the applications in advanced technologies, researchers have focused more on synthesis of CuO nanoparticles with improved, cost effective ecofriendly synthetic strategies. Copper oxide nanoparticles appear as a brownish-black powder. They can be reduced to metallic copper when exposed to hydrogen or carbon monoxide under high temperature. Copper oxide nanoparticles are used in wide range of applications such as biological, catalysis, gas sensors, magnetic storage media, batteries, solar energy transformer, semiconductors, and field emission. CuO, as a P-type semiconductors exhibiting narrow band gap, have attracted great attention due to its potential application in Nano devices such as electronic, optoelectronics.

Keywords: CuO, Nanoparticles, Green Synthesis Leaf Extract, Antioxidant, Antibacterial Photocatalytic Degradation.

8: Ali, M., Khan, H. A. A., Tahir, H. M., Tariq, A., Ashfaq, M., **Ali, S**. W., ... Mubashar, U. (2017). The larvicidal potenial of diffrent plants extracts against the larvae of mosquito (Aedes aegypti (L.) (Culicidae: Diptera). *Pakistan Entomoligist, 39*(1), 37-40. **(HEC Y-Cat.)**

Abstrsact: Larvicidal potential of five indigenous plants extracts viz., Eucalyptus globulus, Calotropis gigantea, Coriandrum sativum, Mentha sp. and Azadirachta indica against Aedes

aegypti larvae were studied in the present work. The methanol extract of incubator dry leaves were used for the study. Different concentrations were made of all these extracts and 20-25 larvae were placed in different concentrations for different time of intervals. After 24 hrs of exposure, 15-45% mortality was observed at different concentrations of A. indica followed by C. sativum (10-35%) and C. gigentea (5-30%). After 48 hrs of exposure, 35-70 % mortality was observed at different concentrations of A. indica followed by C. sativum (20- 60%) and E. globulus(20-30%). The results revealed that the extract of A. indica proved to be the most toxic against the tested larvae. The results can be helpful in devising an effective environment friendly approach for the management of Ae. Aegypti larvae. However, further studies are required to check the efficacy of these plant extracts under field conditions

Keywords: Biopesticde, Aedes Aegypti, Mosquito, Plant Extracts, Larvicidal.

9: **Haroon, S. M.,** & **Afzal, M. S.** (2017). Latent tuberculosis infection screening in HCV patients: The necessity and guidelines for Pakistan. *Asian Pacific Journal of Tropical Disease, 7*(4), 237-238. **(SJR)**

Abstract: Not available.

10: Rauf, A., Shah, A., **Munawar, K. S**., Khan, A. A., Abbasi, R., Yameen, M. A., ... **Aslam, H. M. U**., Kraatz, H.-B. (2017). Synthesis, spectroscopic characterization, DFT optimization and biological activities of Schiff bases and their metal (II) complexes. *Journal of Molecular Structure, 1145*, 132-140. **(JCR)**

Abstract: A Novel Schiff base, 3-(((4-chlorophenyl)imino)methyl)benzene-1,2-diol (***HL*^{1}**) was successfully synthesized along with a structurally similar Schiff base 3-(((4-bromophenyl)imino)methyl)benzene-1,2-diol (***HL*^{2}**). Both the Schiff bases were used to synthesize their zinc (II) and cobalt (II) complexes. These compounds were characterized by FTIR, ^{1}H NMR, ^{13}C NMR and elemental analysis. Metal complexes were confirmed by TGA. Crystals of Schiff bases were also characterized by X-ray analysis and experimental parameters were found in line with the theoretical parameters. Quantum mechanical approach was also used to fine useful structural parameters and to ensure the geometry of metal complexes. The photometric behaviors of all the synthesized compounds were investigated in a wide pH range using BR buffers. The appearance of isosbestic points indicated the existence of Schiff bases in more than one isomeric form. Moreover, these compounds were screened for enzyme inhibition; antibacterial, cytotoxic and *in vivo* antidiabetic activities and compounds were found active against one or other activity. Results indicate that ZnL22 is a good inhibitor of alkaline phosphatase enzyme and possess highest potential against diabetes, blood cholesterol level and cancer cells. This effort just provides preliminary data for some biological properties. Further investigations are required to precisely determine mechanistic pathways of their use towards drug development.

Keywords: Schiff Base, Metal-Schiff Base Complexes, Spectroscopy, X-Ray Analysis Antibacterial Activity, Antidiabetic Activity, Cytotoxicity.

11: **Arif, M**., & **Afzal, M. S**. (2017). Antibiotic resistance pattern of escherichia coli and kelbsiella species in Pakistan: A brief overview. *Journal of Microbial and Biochemical Technology, 9*(6), 277-279. **(SJR)**

Abstract: Antibiotics kill or inhibit the replication of bacteria by different means, like emergence of resistance to these antibiotics is serious threat to health care system across the globe. Pathogens can attain drug resistance either by intrinsic mechanism or may be acquired due to selective pressure of a drug. *Escherichia coli* (E. coli) and Klebsiella specie (K. species) are the most common causative pathogens for most of the infections especially in countries with poor health care systems. Increase in extended-spectrum β-lactamases (ESBL) production in these microbes in recent years has led to limitations of treatment. Pakistan is also one of these countries with very low budget for health and per capta income. In Pakistan, majority of health care professionals prescribe antibiotic without testing the pathogen for antibiotic susceptibility. Long term utilization of antibiotics has contributed to greater resistance among pathogenic bacteria. The prevalence of such organisms has brought new challenges for the practitioners treating bacterial infections. The recent studies on the antibiotic resistance pattern of *E. coli* and K. species from Pakistan are summarized and data is showing that the emergence and rapid spread of multidrug resistance in these microbes are of great concern for future. There is an urgent need of community education for health care providers and general population regarding careful utilization of antibiotics.
Keywords: Antibiotic, Resistance, *E. Coli* K. Species.

12: Ali, M., H. A. A. Khan, H. M. Tahir, A. Tariq, M. Ashfaq, S. W., Ali, A. Gulzar, **H. M. U. Aslam**, U. Khalid, S. Yousaf & U. Mubashar, 2017. The larvicidal potenial of diffrent plants extracts against the larvae of mosquito (Aedes aegypti (L.) (Culicidae: Diptera). *Parasitology Research*, 39(1), 37-40. **(NR)**

Abstract: Larvicidal potential of five indigenous plants extracts viz., Eucalyptus globulus, Calotropis gigantea, Coriandrum sativum, Mentha sp. and Azadirachta indica against Aedes aegypti larvae were studied in the present work. The methanol extract of incubator dry leaves were used for the study. Different concentrations were made of all these extracts and 20-25 larvae were placed in different concentrations for different time of intervals. After 24 hrs of exposure, 15-45% mortality was observed at different concentrations of A. indica followed by C. sativum (10-35%) and C. gigentea (5-30%). After 48 hrs of exposure, 35-70 % mortality was observed at different concentrations of A. indica followed by C. sativum (20- 60%) and E. globules (20-30%). The results revealed that the extract of A. indica proved to be the most toxic against the tested larvae. The results can be helpful in devising an effective environment friendly approach for the management of Ae. Aegypti lglarvae. However, further studies are required to check the efficacy of these plant extracts under field conditions.
Keywords: Biopesticde, Aedes Aegypti, Mosquito, Plant Extracts, Larvicidal.

13: Rauf, A., Shah, A., Munawar, K. S., Ali, S., Tahir, M. N., **Javed, M**., & Khan, A. M. (2017). Synthesis, physicochemical elucidation, biological screening and molecular docking studies of a Schiff base and its metal (II) complexes. *Arabian Journal of Chemistry*. **(JCR)**

Abstract: A Schiff base 1-((3-nitrophenylimino)methyl)naphthalen-2-olate (HL) and its two novel complexes with Zn(II) and Co(II) metals were successfully synthesized and characterized by FTIR, ^{1}H NMR, ^{13}C NMR, elemental analysis, magnetic susceptibility, TGA and EIS-MS. Crystal of Schiff base was also characterized by X-ray analysis and experimental parameters were found in line with the theoretical parameters. Quantum mechanical approach was also used to compare structural and calculated parameters and to ensure the geometry of metal complexes.

The photometric behaviors of all the synthesized compounds were investigated in a wide pH range using BR buffers. Appearance of isosbestic point suggested the existence of Schiff base molecules in different tautomeric forms. Binding of synthesized complexes with calf thymus DNA was explored by photometric and voltammetric titrations and binding constants were calculated. The results indicated that ligand and its metal complexes bind to DNA by intercalation mode. Docking studies indicate their binding possibilities with topoisomerase II. Moreover, all these prepared compounds were screened for enzyme inhibition, antibacterial, cytotoxic and in vivo antidiabetic activities and found active against one or other activity. This effort just provides preliminary data for some biological properties and which can act as foundation stone for their application in drug development.

Keywords: Schiff Base-Metal Complexes, Spectroscopy, X-Ray Analysis, DNA Binding, Molecular Docking.

14: **Javed, M**., Abbas, S. M., Siddiq, M., Han, D., & Niu, L. (2018). Mesoporous silica wrapped with graphene oxide-conducting PANI nanowires as a novel hybrid electrode for supercapacitor. *Journal of Physics and Chemistry of Solids, 113*, 220-228. **(JCR)**

Abstract: A high charge-carrier transport is an important aim in the synthesis of nanostructures for an effective supercapacitor. This article describes a methodology to prepare mesoporous silica nanoparticles (MSNs) wrapped with graphene oxide (GO) together with conducting polyaniline (PANI) wires. The morphology and chemical structure of the prepared samples have been tested by transmission electron microscopy (TEM), high-resolution TEM (HRTEM), and X-ray diffraction (XRD), whereas the stability and electrostatic interaction of the structures have been verified by thermogravimetric analysis (TGA) and Fourier-transform infrared (FT-IR) spectroscopy, respectively. The supercapacitive behaviour of these nanocomposites has been analysed by cyclic voltammetry (CV), charge–discharge tests, and electrochemical impedance spectroscopy (EIS). Compared with pristine MSNs and PANI, the 20%-GO@MSNs/PANI nanocomposite had the highest specific capacitance, reaching 412 F g^{-1}. The nanocomposite structure maximizes the synergy between mesoporous metal oxide, conducting PANI, and GO, yielding a significantly enhanced specific capacitance, rapid charge–discharge rates, and good cycling stability of the resulting device. The wrapping with GO prevents the structural breakdown and acts as a highly conductive pathway by bridging the individual particles, whereas the MSNs nanoparticles greatly enlarge the specific surface area to facilitate ion transport and charge transfer throughout the cycling performance of supercapacitor. The approach adopted in this article can be applied for preparing similar novel functional materials in future for electrochemical applications.

Keywords: PANI, Graphene, Silica, Supercapacitor, Electrode.

15: Waqas, M., Iqbal, S., Bahadur, A., Saeed, A., Raheel, M., & **Javed, M**. (2017). Designing of a spatially separated hetero-junction pseudobrookite (Fe2TiO5-TiO2) yolk-shell hollow spheres as efficient photocatalyst for water oxidation reaction. *Applied Catalysis B: Environmental, 219*, 30-35. **(JCR)**

Abstract: For the first time, controlled pseudobrookite phase as the yolk and titanium oxide as the shell of hollow spheres were synthesized for the photocatalytic water oxidation. Simple and facile sacrificial hard template strategy was utilized. Firstly, the distribution of TiO_2 in the hollow spheres was controlled by loading aqueous solution of 2, 3, and 5 mol/L $TiCl_4$ precursor

respectively onto carbonaceous template followed by annealing. To prove the Fe^{3+} ions radial penetration into the hydrophobic core of carbonaceous template, we optimized the ethanol to water ratio. The Fe_2TiO_5-TiO_2yolk-shell hollow spheres exhibited high oxygen evolution reaction (OER) rate up to 148 µmol g^{-1} h^{-1} under UV–vis light. This was attributed to the better light harvesting due to the geometry of hollow sphere; charge separation by a thin shell-yolk hetero-junction, a void cavity to access reaction solvent to reactive sites and the hetero-junction of Fe-O-Ti in the hollow structure. These findings suggest that our designed Fe_2TiO_5-TiO_2 yolk-shell hollow spheres are beneficial for the photocatalytic water oxidation.

Keywords: Yolk-Shell Hollow Spheres, Titanium Oxide, Pseudobrookite, Hetero-Junction Photocatalytic Water Oxidation

16: **Qaddir, I.**, **Rasool, N.**, **Hussain, W.**, & **Mahmood, S.** (2017). Computer-aided analysis of phytochemicals as potential dengue virus inhibitors based on molecular docking, ADMET and DFT studies. *Journal of Vector Borne Diseases, 54*(3), 255-262. **(JCR)**

Abstract: Background & objectives: Dengue fever, caused by dengue virus (DENV), has become a serious threat to human lives. Phytochemicals are known to have great potential to eradicate viral, bacterial and fungal-borne diseases in human beings. This study was aimed at in silico drug development against nonstructural protein 4B (NS4B) of dengue virus 4 (DENV4). Methods: A total of 2750 phytochemicals from different medicinal plants were selected for this study. These plants grow naturally in the climate of Pakistan and India and have been used for the treatment of various pathologies in human for long-time. The ADMET studies, molecular docking and density functional theory (DFT) based analysis were carried out to determine the potential inhibitory properties of these phytochemicals. Results: The ADMET analysis and docking results revealed nine phytochemicals, i.e. Silymarin, Flavobion, Derrisin, Isosilybin, Mundulinol, Silydianin, Isopomiferin, Narlumicine and Oxysanguinarine to have potential inhibitory properties against DENV and can be considered for additional in vitro and in vivo studies to assess their inhibitory effects against DENV replication. They exhibited binding affinity ≥ -8 kcal/mol against DENV4-NS4B. Furthermore, DFT based analysis revealed high reactivity for these nine phytochemicals in the binding pocket of DENV4-NS4B, based on ELUMO, EHOMO and band energy gap. Interpretation & conclusion: Five out of nine phytochemicals are reported for the first time as novel DENV inhibitors. These included three phytochemicals from Silybum marianum, i.e. Derrisin, Mundulinol, Isopomiferin, and two phytochemicals from Fumaria indica, i.e. Narlumicine and Oxysanguinarine. However, all the nine phytochemicals can be considered for in vitro and in vivo analysis for the development of potential DENV inhibitors.

Keywords: ADMET, Band Energy Gaps, DENV4-NS4B, DFT, Molecular Docking, Phytochemicals.

17: **Mohyuddin, A.**, **Ulfat, W.**, **Nadeem, S.**, & **Amjad, M.** (2017). Synthesis and analysis of environment friendly gelatin grafted biodegradable polymer. *OIDA International Journal of Sustainable Development, 10* (09), 21-28. **(SJR)**

Abstract: Polymers are extensively used in human life with a serious problem of disposal. The non-biodegradable polymers cause severe environmental concerns therefore synthesis of biodegradable green polymer was targeted in this study. Gelatin based grafted copolymer was synthesized with vinyl acetate and acrylonitrile monomers by the use of free radical polymerization technique with potassium per sulfate as initiator. The polymer was

characterized by the use of Fourier Transform Infrared Spectroscopy (FTIR), Thermo Gravimetric Analysis and Differential Scanning Calorimetry (TGA-DSC). FTIR proved the grafting of monomers on the backbone of the gelatin. TGA-DSC analyzed the degradation and melting of the copolymer and nanocomposite polymer. The nanocomposite biopolymer was prepared with the incorporation of suitable quantity of Nickel doped nanoparticles. Soil burial method was used for the study of biodegradation of this polymer for 60 days. The degradation study of the two prepared samples W-1 (copolymer) and W-2 (nanocomposite biopolymer) showed degradation percentage of 29.9% and 11.05% respectively. Initially, weight of the W-1 increased due to the absorption of moisture from the soil but after 20 days the weight of polymer decreased constantly due to degradation. The W-2 sample showed resistance against the biodegradation with slower degradation rate and was also less moisture absorber. Results depicted that the blended nanoparticles imparted resistance against the fungi and bacteria, therefore these nanocomposite biopolymers are more suitable for biodegradable packing.

Keywords: Biodegradable Polymer, Gelatin, Graft Polymerization, Nanocomposite, TGA-DSC

18: **Qamar, M. A**, **Shahid, S.**, Khan, S. A., Zaman, S., & Sarwar, M. (2017). Synthesis characterization, optical and antibacterial studies of co-doped SnO2 nanoparticles. *Digest Journal of Nanomaterials and Biostructures, 12*(4), 1127-1135. **(JCR)**

Abstract: This study was involved to synthesize, characterize and investigate the antimicrobial properties of Cobalt-doped tinoxide (Co-doped SnO2) nanoparticles. Cobalt-doped tinoxide (Co-doped SnO2) nanoparticles were prepared by using a simple and cheap co-precipitation method. The synthesized and Cobalt-doped tinoxide (Co-doped SnO2) nanoparticles were characterized by using different characterization techniques i.e. Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD) analysis, and Ultraviolet-visible (UV-Vis) spectroscopy. The antimicrobial activity of the synthesized Cobalt-doped tinoxide (Co-doped SnO2) nanoparticles was carried by agar well diffusion method against both Gram-negative (Escherichia coli) and Gram-positive bacteria (Bacillus subtilis). Results from XRD, SEM, EDX and UV-Vis analyses demonstrated successful synthesis of Co-doped SnO2 nanoparticles as seen in their tetragonal structures. The average grain size of the synthesized nanoparticles was found to be 24.8 nm. The optical properties were studied by measuring the energy band gap and were found 1.50 eV for un-doped SnO2 nanoparticles, and it decreases to 1.48 eV for Co-doped nanoparticles. Co-doped SnO2 nanoparticles were exhibited the significant and maximum antibacterial activity against both bacterial strains with the zone of inhibition (ZOIs) of 16 ± 0.8 mm and 22 ± 1.6 mm for Escherichia coli (E.coli) and Bacillus subtilis (B. subtilis) respectively. Co-doped SnO2 nanoparticles showed good activity against both Gram-negative and Gram-positive bacteria confirming these as future broad spectrum antibacterial. Thus, the preparation is a good candidate for further development into therapeutic formulations.

Keywords: Synthesis, Characterization, Co-Doped SnO2 Nanoparticles, Antibacterial, Activity.

19: Ahmed, H., **Afzal, M. S.**, Ozyalin, O., Khan, M. R., & Simsek, S. (2017). Occurence of hypodermosis in Pakistan, Iran and Turkey: Comparative risk factor analysis and future perspectives. *The Journal of Infection in Developing Countries, 11*(02), 207-211. **(JCR)**

Abstract: Not available.

Keywords: Hypodermosis, Occurrence, Comparative, Risk Factor, Future Perspective.

20: Ahmed, H., Ali, S., **Afzal, M. S.**, Khan, A. A., **Raza, H.**, **Shah, Z. H.**, & Simsek, S. (2017). Why more research needs to be done on echinococcosis in Pakistan. *Infectious diseases of poverty, 6*(1), 90. **(JCR)**

Abstract: Echinococcosis has a worldwide geographical distribution with endemic foci on every inhabited continent. Due to the frequent outbreaks in different parts of Pakistan in the recent past, echinococcosis is being described as a neglected tropical disease and is considered one of the most neglected parasitic diseases in the country. In endemic regions, predominantly settings with limited resources, there are high numbers of echinococcosis patients, as these communities do not have access to appropriate treatment. In Pakistan, there are limited reports on echinococcosis. The disease is prevalent in human and livestock, but this has not been sufficiently explored yet. Pakistan is an agricultural country and due to the disease's zoonotic mode of transmission, there is a dire need of future research on it. The present paper is an effort to highlight the importance of echinococcosis in Pakistan.

Keywords: Pakistan, Echinococcosis, Neglected Tropical Diseases, Research.

21: **Afzal, M. S**. (2017). Does HCV prevalence in blood donors reflects the incidence in general population? A study for global impact. *Journal of Antivirals & Antiretrovirals 9*(3), 065-068. **(SJR)**

Abstract: Not available.

22: **Afzal, M. S**. (2017). Hepatitis C virus and interferon-free antiviral therapeutics revolution: Implications for Pakistan. *Viral Immunology, 30*(4), 252-257. **(JCR)**

Abstract: Hepatitis C virus (HCV) is a major health concern worldwide as a leading cause of liver-related mortalities and morbidities. Pakistan ranks second among countries with endemic HCV infection; ~11 million cases are reported so far. HCV burden is continuously rising in Pakistan, mainly because of unsafe blood transfusions, surgical procedures, dental procedures, untrained clinicians, reuse of syringes, barbers, and ear/nose piercing tools. Lack of awareness about HCV transmission routes among the general and high-risk population is a major hurdle in disease management. HCV prevalence in the general population and healthy blood donors ranges from 3.13% to 23.83% and from 1.05% to 20.8%, respectively; whereas in the high-risk groups, HCV prevalence is up to 66%. Genotype 3 is most prevalent in Pakistan followed by genotypes 1 and 2 along with an alarming number of untypable viral genotypes in the local community. Mainly interferon-based antiviral regimens are used in Pakistan and are quite effective, because the major prevalent genotype (genotype 3) showed the best sustained virological response (SVR) with it. But a large number of individuals did not show SVR either because of infection with nonresponder genotypes or because of side effects. Due to these reasons, there was a need for interferon-free direct acting antivirals (DAAs). Recently, Sovaldi (Sofosbuvir: NS5B inhibitor) is approved on a heavy discounted rate for Pakistan; it is currently in effective use and showed good SVR. Sovaldi plus ribavirin is used alone or along with interferon to treat different viral genotypes. Sovaldi will be the future treatment regime for Pakistan, because genotype 2 and genotype 3 infected individuals achieve the best SVR with it. For the treatment of other prevalent viral genotypes, approval of some other DAAs such as Ledipasvir on discounted price is required for better disease management.

Keywords: HCV, Epidemiology, General Population, Blood Donors, High-Risk Population, Interferon-Free Antivirals, Treatment Guidelines, Pakistan.

23: Mehboob, R., **Kabir, M.**, Ahmed, N. and Ahmad, F. J. (2017). Towards better understanding of the pathogenesis of neuronal respiratory network in sudden perinatal death. *Frontiers in Neurology, 8*,1-8. **(JCR)**

Abstract: Sudden perinatal death that includes the victims of sudden infant death syndrome, sudden intrauterine death syndrome, and stillbirth are heartbreaking events in the life of parents. Most of the studies about sudden perinatal death were reported from Italy, highlighting two main etiological factors: prone sleeping position and smoking. Other probable contributory factors are prematurity, male gender, lack of breastfeeding, respiratory tract infections, use of pacifiers, infant botulism, extensive use of pesticides and insecticides, etc. However, extensive studies across the world are required to establish the role of these factors in a different subset of populations. Previous studies confirmed the widely accepted hypothesis that neuropathology of the brainstem is one of the main cause of sudden perinatal death. This study is an effort to summarize the neuropathological evaluation of the brainstems and their association to sudden perinatal death. Brainstem nuclei in vulnerable infants undergo certain changes that may alter the sleep arousal cycle, cardiorespiratory control, and ultimately culminate in death. This review focuses on the roles of different brainstem nuclei, their pathologies, and the established facts in this regard in terms of it's link to such deaths. This study will also help to understand the role of brainstem nuclei in controlling the cardiorespiratory cycles in sudden perinatal death and may provide a better understanding to resolve the mystery of these deaths in future. It is also found that a global initiative to deal with perinatal death is required to facilitate the diagnosis and prevention in developed and as well as developing countries.

Keywords: Sudden Infant Death, Sudden Fetal Death, Sudden Perinatal Death, Sudden Intrauterine Death, Stillbirth, Neuropathology.

24: Ahmed, H., **Afzal, M. S.,** Mobeen, M., & Simsek, S. (2016). An overview on different aspects of hypodermosis: Current status and future prospects. *Acta Tropica, 162*, 35-45. **(JCR)**

Abstract: Livestock plays a vital role in economic development of a nation and is being used in agriculture for draft power, production of farmyard manure as well as milk and meat production. Bovine hypodermosis is the top culprit among all parasitic infections across the world. Hypodermosis is an endemic disease in the mountainous areas/plain areas and is regularly observed in the northern hemisphere of the globe affecting cattle, deer, yaks and buffaloes. There is a wide variation in geographical distribution of Hypoderma spp. during the years 1945–2015. The manuscript includes a geospatial study that tries to maps the global distribution of hypodermosis in different areas of the world in order to detect hotspots or endemic areas that may be a potential source for disease spread. This information's are very useful to predict the potential high risk areas that are prone to disease outbreak. The present review aims to evaluate the global distribution, molecular discrimination, diagnostics and vaccination of hypodermosis, focusing on its current status and future perspectives towards the management of the disease and its control strategies.

Keywords: Hypodermosis, Distribution, Molecular Diagnostics, Vaccination, Recommendations.

25. **Khan, S. A**., **Shahid, S**., Bashir, W., Kanwal, S., & Iqbal, A. (2017). Synthesis, characterization and evaluation of biological activities of manganese-doped zinc oxide nanoparticles. *Tropical Journal of Pharmaceutical Research, 16*(10), 2331-2339. **(JCR)**

Abstract: Purpose: To synthesize, characterize and investigate the antimicrobial properties of pure and manganese-doped zinc oxide nanoparticles.
Method: Un-doped and manganese-doped zinc oxide (Mn-doped ZnO) nanoparticles were prepared using co-precipitation method. The synthesized Mn-doped ZnO nanoparticles were characterized using energy-dispersive x-ray spectroscopy (EDX), scanning electron microscopy (SEM), and x-ray diffraction (XRD) spectroscopic techniques. Their band gap energies were measured with ultraviolet-visible (UVVis) spectroscopy, while their antioxidant properties were evaluated by ferric reducing antioxidant power (FRAP), DPPH radical-scavenging, ferric thiocyanate (FTC) and total phenolic content (TPC) assays. The antimicrobial activities of the nanoparticles against different bacterial strains were determined using agar diffusion method.
Result: Results from XRD, SEM, EDX and UV-Vis analyses demonstrated successful synthesis of undoped and Mn-doped ZnO nanoparticles as seen in their hexagonal, wurtzite structures. The un-doped and Mn-doped ZnO nanoparticles had average grain sizes of 16.72 nm and 17.5 nm, and band gap energies of 3.585 eV and 2.737 eV, respectively. Significant antibacterial activity was manifested by Mndoped ZnO against *E. coli, S. aureus, Klebsiella* and *B. subtilis,* with zones of inhibition (ZOIs) of 13 ± 0.09 mm, 14 ± 0.01 mm, 18 ± 0.07 mm and 20 ± 0.10 mm, respectively. The Mn-doped ZnO nanoparticles also exhibited effective and significant antioxidant potential relative to butylated hydroxytoluene (BHT) and un-doped ZnO nanoparticles.
Conclusion: Mn-doped ZnO nanoparticles demonstrate significant antimicrobial and antioxidant activities. Thus, the preparation is a good candidate for further development into therapeutic formulations.
Keywords: Mn-Doped ZnO, Nanoparticles, Properties, Antioxidant, Antibacterial.

26. **Khan, S. A.**, Noreen, F., Kanwal, S., & Hussain, G. (2017). Comparative synthesis, characterization of Cu-doped ZnO nanoparticles and their antioxidant, antibacterial, antifungal and photocatalytic dye degradation activities. *Digest Journal of Nanomaterials and Biostructures, 12*(3), 877-889. **(JCR)**

Abstract: In this study, synthesis, characterization, antioxidant, antibacterial, antifungal and photocatalytic properties of copper-doped zinc oxide nanoparticles have been investigated. Undoped ZnO and Copper doped ZnO nanoparticles have been synthesized by using co-precipitation method 1 (M1 Naps) and method 2 (M2 Naps). The synthesized un-doped ZnO, M1 Naps, and M2 Naps were characterized by X-ray diffraction (XRD), energy-dispersive X-ray spectroscopy (EDX), scanning electron microscope (SEM) and Ultraviolet-visible (UV-Vis) spectroscopic techniques. The antibacterial and antifungal activity of M1 Naps and M2 Naps was determined by the agar diffusion method while their antioxidant properties were assessed through DPPH radical scavenging, ferric reducing antioxidant power (FRAP), ferric thiocyanate (FTC) and total phenolic content (TPC) assays. Photocatalytic disintegration activity of M1 Naps and M2 Naps was determined by the degradation of Acid Black 234 (AB) dye. Results of XRD, EDX and SEM confirmed the successful synthesis, crystalline nature, spheroid to the rod-like shape of un-doped ZnO, M1 Naps, and M2 Naps. The average grain size of un-doped ZnO, M1 Naps, and M2 Naps was 16.72 nm, 17.49 nm, and 20.73 nm respectively. Photocatalytic studies revealed that both nanoparticles are a good catalyst for effective degradation of Acid Black 234. M1 Naps and M2 Naps nanoparticles were exhibited remarkable antioxidant activity. Significant antibacterial and antifungal activity was shown by M2 Naps against bacterial strains (E. coli, S.

aureus, Klebsiella and B. subtilis) and fungal strains (A. niger and T. harzianum) with ZOI of (13 +/- 0.09, 14 +/- 0.01, 18 +/- 0.07 and 20 +/- 0.10) and (17 +/- 0.07 and 24 +/- 0.08) respectively in contrast to standard drug. Hence, Synthesized Cu-doped ZnO nanoparticles demonstrated splendid photocatalytic, antibacterial, antifungal and antioxidant potential, indicating that they are good candidates for future therapeutic applications.

Keywords: Synthesis, Characterization, Antioxidant, Antibacterial, Antifungal, Photocatalytic.

Conference Papers

1. **Sharif, I**., & **Shahid, S.** (2017). *Comparison of green synthesis and characterization of zno nanoparticles.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.

Abstract: Among metal oxide nanoparticles, zine oxide (ZNO) has received much attention in the recent past. ZnO nanostructures are the forefront of research due to their unique properties and wide applications. Presently the progress of green chemistry in the synthesis of nanoparticles with the use of plants has engrossed a great attention. The present study reports the green mediated synthesis of Zno nanoparticles as an alternative to conventional chemical methods. Synthesis was carried out by using Euphorbia jatropa latex as reducing agent, ponganiapinnata and trifolium pretense flower extract in method 1, 2 and 3 respectively. The bio-synthesized Zno nanoparticles were characterized by X-ray diffract meter (XRD), UV- visible spectroscopy, scanning electron microscopy (SEM) and Fourier transform infra— red spectroscopy (FT-IR) analysis. Morphology studies showed the nature and size of the particles. XRD graphs showed the well crystallization of the particles. The average particles size was calculated using Scherer's equation and advanced Williamson hall (WH) plots. FTIR shows the characteristic peak of ZNO. SEM micrographs show that the particles were almost hexagonal in nature. The study reveals the ecofriendly inexpensive and simple method for the synthesis of multifunctional ZnO nanoparticles.

2. **Azad, U**., & **Shahid, S**. (2017). *Comparative study of synthesis of fe2o3-sno2 composite nanorods and analysis by xrd pattern.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.

Abstract: Inorganic semi-conductor metal oxides (fe2O3, ZNO, TIO2, Mno2, cuo) are the most common minerals on the earth and their ID nanostructures are very important for their special shapes, composites and chemical and physical. Cost effect carbon free nano coating strategy was developed for the synthesis of ultra-fine sno2 coating a fe2o3 core-shell nano particles. It is a comparative study for the synthesis of composite nanords that was analyzed by X-ray diffraction pattern (XRD), Current study elaborates the synthesis of fe2 o3 sno2 composite nanords by different wet chemical method, direct hydrothermal reaction and bottom-up approach. Their XRD pattern shows the nephology pore size, shape, orientation, assemblies and the effect of increasing the amount of Sno4 in reaction mixture that reduced the amount of a-ffe2o3 and increase amount of yfe2o3 nanords that further results the formation of fe2o3-sno2 composite nanords. Thesis composite facilitated the federated the generation of porosity for hierarchical material, and consider suitable adsorbent among the series of all adsorbents, to remove Congo red dye, composite nanords provide better electrical conductivity as compared to bare a fe2o3 nano particles.

3. **Jaan, A.**, & **Shahid, S**. (2017). *Comparative study of gas sensing property of ZnO nanowires.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.

Abstract: ZnOnano wires were synthesized by the chemical vapor deposition process. The synthesis and growth of sample on substrate of silicon and alumina show promising oxygen sensing property. ZnO nanowires were characterized by scanning electron microscope and X-ray diffraction method. Zno nanowires showed efficient results regarding sensing property of pollutant gases. To. Enhance the property of gas sensing, the chemical – physical properties of NiO and znO merged and the nanostructure composties were prepared by n type ZnO and p type NiO, which showed greater capability. The efficiency was varied with the temperature conditions. To study the H2s Sensing property, the ZnO nanowires were prepared by the chemical vapor deposition. A mixture of graphite and ZnO the nanowires were used by using silicon substrate for synthesis. The prepared nanowires showed efficient gas sensing behavior toward H2s, even 50 ppb concentration could be detected. Moreover, the oxygen sensing role was also observed. The current and constant voltages were required during the gas sensing experiment. The comparison of this study get more interest toward gas sensing behavior of Znonano wires due to the elaborative efficiency of gas sensing activity of ZnO nanowires with the hep of proposed mechanism and proceses, which revealed much more interest toward ZnO nanowires.

4. **Rasool, Z. G.**, & **Shahid, S**. (2017). *Comparison of fabrication of titanium dioxide nano fibers by electro spinning method.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.

Abstract: Titanium dioxide (TiO_2) has attracted great interest because it exhibits many modified electronic and optical properties, and hence resulting extensive applicability in many fields including photo catalysis, environment purification and dye-sensitized solar cell. The current comparison gives a comprehensive data on electro spinning technique that has attracted considerable attention as a relatively new, cheap and simple synthesis synthesis method for one-dimensional nanostructures. The unique nano fibers prepared by electro spinning generally exhibit high surface area-to-volume ratios, high porosity, nano sized effects, and excellent mechanical strength Biologically safe natural HAp NPs can be obrained from calcination of bovine bone. Titanium dioxide nano fibers were obtained by calcination of Ti (Iso)/PVAcnano fiber mats in air at 600^{o}C for I hr. After calcination of the hybrid nano-fibers, titanium dioxide nano-fiber with diameter of 200-300 nm were obtained. From the results of FE-SEM. TEM.XRD and FT-IR it was confirmed that the prepared TiO_2 nano fibers have amorphous structure and converted into crystalline TiO_2 fiber through the calcination process. Accordingly, these results strongly suggest the potential use of obtained nano-fibers as material in biomedical field like hard tissue engineering.

5. **Ikram, M.**, & **Shahid, S**. (2017). *Fabrication and characterization of TiO2 nanorods by electrochemical deposition into anodic alumina template.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.

Abstract: Titanium dioxide (TiO_2) nanorods have been successfully grown into a track etched

anodized aluminum oxide membrane (AAM) by a particulate electrochemical deposition from an aqueous medium. The prepared TiO_2 sols get stabilized against aging at pH 2. It was found that TiO_2 nanorods grown from dilute aqueous solution with a low concentration gave a stable and uniform growth. X-ray diffraction (XRD) results revealed that TiO_2nanorods dried at 500 ^oC were a mixture of anatase and brookite phases. Atomic force Microscope (AFM) images confirmed that TiO_2nanorods had a smooth morphology and longitudinal uniformity in diameter. A scanning electron microscope (SEM) image showed that TiO_2nanorods grown by electrochemical deposition from the dilute aqueous sol had a densed structure and possessed a repetitive pattern, containing small particles with an average size of 15 nm. Based on kinetic studies, it was found that uniform Tio2 nanorods with high-quality morphology were obtained under optimum conditions al an applied potential of 5V, a uniform current density of 500 mA, and a deposition time of 5 h.

6. **Irshad, M**., & Kim, J. W. (2017). *Efficient oxidative scission of alkenes or alkynes with heterogeneous ruthenium zirconia catalyst.* Paper presented at three days International Conference on Current Research in Chemical & Pharmaceutical Sciences, Lahore, Pakistan.
Abstract: Not available.

7. **Shahid, S**. (2017, March 20-21). *Enhancing student learning through classroom participation*. Paper presented at International Conference on Innovation & Internationalization in Pakistani Higher Education, Lahore, Pakistan.
Abstract: Pedagogy should help students not only to learn but actively increase their ability to learn. Student engagement strategies should be developed to motivate students and to help them to be good learners. In this presentation, participants learn of an instructor's effort to explore new ways of increasing student engagement in class. Various types of formative assessment tools employed will be shared, including integrating technology with class teaching.

8. **Shahid, S**., & **Sher, M. M**. (2017, May 12-14). *Solvothermal synthesis and biological activity of ni-doped zinc oxide nanoparticles*. Paper presented at second World Conference on Technology, Innovation and Enterpreneurship: Reforms for Intellectual Economy and Innovative Entrepreneurship, Istanbul, Turkey.
Abstract: Metal oxide nanoparticles are potential candidate for making future antimicrobials. Increased interest is due to change in fundamental properties at nanoscale. Ni-doped zinc oxide nano-particles were prepared for pharmacological studies. Co-precipitation and solvo-thermal methods were employed which yielded Ni-doped zinc oxide nano-particles and un-doped zinc oxide nano-particles were synthesized via solvo-thermal method. All prepared nano-particles were characterized using X-ray diffraction studies whereas doping was confirmed by Energy Dispersive X-ray analysis. Shape and morphology of these nano-particles was assessed using Scanning Electron Microscopy. The synthesized nano-particles have shown antibacterial activity against both Gram-negative and Gram-positive bacteria designating these nano-particles as future broad spectrum antibacterial. The optical properties were also studied by measuring the energy band gap and were found 1.50 eV for un-doped zinc oxide nano-particles, and it decreases to 1.47 eV for Ni-doped zinc oxide. Ni-doped zinc oxide nanoparticles were proved to be active future pharmaceutical and biomedical agents.
Keywords: Antibacterials, Morphology, Nanoparticles, Energy Dispersive X-Ray, Doping.

9. **Masood, Z.**, **Shahid, S.**, **Chattha, M. A.**, & **Ahmad, A.** (2017). *Surfactant assisted synthesis of nanocrystalline nickel oxide and its bioactivities.* Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Nanoparticles research is growing widely as they can be easily altered by changing their shape, size and chemical properties. Nickel is more commonly found in ores and sometimes found free in nature. It is electrically Â¬Â¬conductive and hence used for several applications. Nickel nanoparticles are difficult to prepare as they readily oxidize. Elevated temperature (550Â°C) and capping agent is used to enhance its stability. The optical properties of capped Nickel oxide 49 powder were characterized using UV-VIS-spectrophotometer. The powdered nanoparticles were characterized by, Fourier transform infrared (FT-IR) spectroscopy, X-ray diffraction pattern (XRD), transmission electron microscopy (TEM) and scanning electron microscopy (SEM). The surfactant assisted nanocrystalline Nickel oxide powder have various uses in industry due to its catalytic, antibacterial and dye degradation properties. Antibactrial Activities of Nickel oxide nano crystalline powder checked by Agar well diffusion assay against Gram â€“Ve and Gram +Ve bacteria proved them to be future broad spectrum antibiotics.

10. **Fatima, S.**, **Fatima, U.**, & Shahid, S. (2017). *Study of antibacterial activity of ziziphus sativa*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: The scientists select the different plants for screening their components that helped to control the bacterial growth. Ziziphus sativa belonged to â€œRhamnaceaeâ€ family. The common name of ziziphus sativa is berry in Persian it is known as ziziphus lotus. Ziziphus sativa is traditionally important medicinal plant. The antibacterial activity of ziziphus sativa was checked by the disc agar diffusion method. Four different solvents extracts (n-hexane, chloroform, ethyl acetate and aqueous) was used to check the antibacterial effect. Klebsiella pneumoniae, Staphylococcus 56 aureus, Streptococcus mutans, Streptococcus pseudopneumoniae and Escherichia coli were used to analyze the antibacterial effect. All the strains showed antibacterial effect except Streptococcus mutans. While the ethyl acetate showed the best result among all extracts. Ethyl acetate showed 70mm zone of inhibition in 1% of plant extract while n-hexane extract showed no results against Klebsiella pneumoniae, Staphylococcus aureus, Streptococcus mutans and Streptococcus pseudopneumoniae strain. So it is concluded that ethyl acetate, chloroform, aqueous and n-hexane extract of ziziphus sativa can be served as antibacterial agent.

11. **Taj, S.**, **Mushtaq, T.**, & **Shahid, S.** (2017). *Pistachia khinjuk shows antidiabetic activity*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: The present study evaluates the hypoglycemic effect of Pistachia khinjuk from the extract and wax of Pistachia khinjuk individually. Six groups of Swiss albino mice were made for wax and extract of Pistachia khinjuk separately and each group contains six albino mice. All the mice were injected alloxan monohydrate except normal group of wax and extract. Group 1 was treated as normal group and receives no treatment, group 2 receive 5mg/kg of glibenclamide after alloxan monohydrate induction, group 3 receive no treatment after alloxan monohydrate induction, group 4, 5 and 6 receive 500(extract), 250(extract) and 500(wax) mg/kg of Pistachia

khinjuk after alloxan monohydrate treatment. Almost all the mice for wax (Pistachia khinjuk) of group 4, 5 and 6 show gradual increase in their diabetes while all the mice for extract (Pistachia khinjuk) of group 4, 5 and 6 show hypoglycemic activity and decreases blood glucose level. Present study indicated the hypoglycemic effect of Pistachia khinjuk for extract but for wax of Pistachia khinjuk thereâ€™s no evidence of hypoglycemic effect. There may be many factors behind this activity which needs more research on it by detecting and analyzing specific compound which cause this effect.

12. **Zulfiqar, Z**., & **Shahid, S**. (2017). *Free radical scavenging activity of verbena bonariensi*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Verbena bonariensis (purpletop vervain) is a plant belongs to verbenaceae family. It is approximately 18 to 36 inch tall plant along with rigid branching stem having height 2 to 3 inch, purple colour flowers also observed on this plant in spring, summer and autumn season. It is used as a natural preservative rather than synthetic one. To ensure effectiveness, the antioxidant activity of n-hexane, chloroform, ethyl acetate, n-butanol, and aqueous fractions of said plant were prepared and evaluated by using five different methods i.e DPPH radical scavenging activity, total antioxidant study, ferric reducing antioxidant power analysis(FRAP), total phenolic contents and ferric thiocynate (FTC) assay. Results revealed that ethyl acetate soluble fraction 96 expressed highest percentage inhibition of DPPH radical i.e 80.9 Â± 0.87% inhibition at a concentration of 30 Âµg/mL as compared to other fractions. While FRAP analysis result indicated the highest antioxidant activity along with n-butanol fraction i.e 322 Â± 1.39 TE/ÂµM, the other three methods effect indicated the highest antioxidant value against the ethyl acetate fractions. Hence, this research confirmed that V. bonariensis is a valuable plant, which is used in many natural preservatives also beneficial in preparation of many folk medicines due to its significant antioxidant results.

13. **Khan, H**., **Shahid, S**., & **Fatima, U**. (2017). *Cuprous oxide nanoparticles as efficient antimicrobial agents*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Cuprous oxide nanopartciles were synthesized by using copper sulfate pentahydrate and hydrazine as reducing agent through a wet chemical method. XRD pattern confirmed the formation of crystalline cuprous oxide nanoparticles. Antibacterial efficiency of cuprous oxide nanoparticles was demonstrated against gram positive bacteria i.e. Pseudomonas, Klebsiella pneumonia and Streptococcus mutans and gram negative bacteria i.e. Escherichia.coli and Staphylococcus aureus. Amoxicillin was used as a standard antiseptic drug to compare the activity of cuprous oxide nanoparticles. Results showed that cuprous oxide nanoparticles are highly stable and showed maximum activity against Klebsiella pneumoniaand minimum against Pseudomonasthan standard antibiotic. Therefore, cuprous oxide nanoparticles are highly efficient and can be used to kill pathogens.

14. **Zahid, M**., & **Shahid, S**. (2017). *Combustion synthesis, characterization and activities of cuo nanoparticles*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: CuO nanoparticles were prepared by combustion synthesis method using Trigonella

foenumgraecum (Fenugreek) plant extract. Cupric nitrate was dissolved in plant extract and stirred continuously for fifteen minutes by using magnetic stirrer. Small amount of sodium hydroxide solution was added drop wise under constant stirring. Precipitates of CuO was obtained within 2 to 3 minutes. Precipitates were filtered and washed 2 to 3 times in order to obtain pure nanoparticles. Obtained CuO nanoparticles were dried and annealed at 350Â°C temperature for half hour. Prepared nanoparticles were characterized using X-ray diffraction photometer (XRD), scanning electron microscopy (SEM) and Transmission electron microscopy (TEM). Obtained CuO nanoparticles were analyzed for their anti-bacterial, anti-oxidant and dye-degradation activities.

15. **M. Haroon, S.**, **Shahid, S.**, & **Ashraf, F**. (2017). *Exploration of adsorption capacity of low cost activated carbon for removal of copper ion from groundwater*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: The ability of low cost activated carbon based on tamarind stone for the removal of copper ion from water was explored. Tamarind stone was converted into activated carbon by lean air carbonization and chemically activated by barium chloride. The factors affecting on adsorption process i-e particle size, concentration, and pH were investigated. The removal of copper ions from water was satisfactory.

16. **Mohyuddin, A**. (2017, October 5-7). *A study on antifungal potential of cassia fistula linn*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Cassia fistula (C. fistula) L. is one of the most useful medicinal plant of family Fabaceae which has been used in different system of herbal medicine since ancient times. C. fistula has therapeutic importance in health care. Almost all parts of this tree show pharmacological activities. C. fistula is used against various diseases from primeval time. It is famous for healing treatments of various diseases so it is also called traditional healer tree. The extracts of C. fistula are reported anti-inflammatory action, controlling blood sugar level , cancer , and hepatic diseases etc. Many chemical constituents such as ÃŸ-sitosterol, aurantimide, sugar, gluten, fistulic acid, and astringent have been isolated from C. fistula. The aim of this study was to evaluate the antifungal activity of different extracts of laves and shoot of C. fistula. The aqueous, n-haxane, and methanol extract of C. fistula were analyzed against C.albicans, S.cerevisiae for antifungal activity. Phytochemical screening revealed that plant contains steroids, alkaloids, tannins, flavonoids, saponins and coumarins. The extracts show significant antifungal. For methanolic extract, the good activity was observed by Candida albicans. The result indicated that methanolic extract have better activity than aqueous extract. Therefore, C. fistula can be used as a good antifungal agent as natural source.

17. **Mohyuddin, A**. (2017, July 5-6). *Analysis of lemon grass for its antifungal value*. Paper presented at the International Conference on Bioethic in Molecular Biology and Biotechnology, University of Veterinary & Animal Sciences, Lahore, Pakistan.

Abstract: Not available.

18. **Mohyuddin, A**. (2017, October 5-7). *Characterization of sunflower oil for its oleic acid content*. Paper presented at the second UMT International Conference on Pure and Applied Sciences,

Lahore, Pakistan.

Abstract: Sunflower is one of the most significant plants famous for their oils. Sunflower oil is reputed for its positive health effects. Physicochemical analysis of sunflower oil was carried out in which saponification value, acid value and ester values were calculated. The results show these values to be 191.675, 0.94 and 190.735 respectively. GC-MS analysis of sunflower oil shows the presence of Oleic acid as a major component. Other Components identified were; p-Toluylic acid, Pregn-4-en-18-oic acid, 11-(acetyloxy)-6,7-epoxy-9,20-dihydroxy-3-one, gamma.-lactone, 1,2-Benzenedicarboxylic acid, Benzoic acid, 2,4,6-trimethyl-, 2,4,6-trimethylphenyl ester and Linoleic acid. The presence of reasonable amount of Oleic acid in given sunflower oil sample proves it to be healthier for use in human diet. The rest of components identified can also provide a good scope of research in finding the further applications of sunflower oil.

19. **Mohyuddin, A**. (2017, October 5-7). *Determination of antifungal potential of Aloe vera gel*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Not available.

20. **Mohyuddin, A**. (2017, July 5-6). *Estimation of medicinal value of achyranthes aspera*. Paper presented at the International Conference on Bioethic in Molecular Biology and Biotechnology, University of Veterinary & Animal Sciences, Lahore, Pakistan.

Abstract: Not available.

21. **Mohyuddin, A**. (2017, October 5-7). *Evaluation of antibacterial potential of melia azedarach linn*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Medicinal plants are a key source of raw material for the conventional system like Ayurveda, Unani and Siddha. Melia azedarach (M. azedarach) L. is most versatile medicinal plants of meliaceae family which have great interest for scholars. Plant contains many compounds including, terpenoids, saponins, glycosides, alkaloids, rutins, flavonoids and phenolic compounds. These bioactive constituents are antibacterial, anti malarial, analgesic, anticancer, and antiviral. In Pakistan infectious diseases are major cause of deaths. With passage of time microorganisms has developed resistance to approximately all the antibodies. Several antibodies have severe side effects which reduce their applications. There is a need to build up such antimicrobial resources with extra efficacy and least side effects. It is reported that M. azedarach is a probable source of innovative antibodies. The bio active compounds are economical, less toxic and potentially effective. Crushed leaves of plant were extracted with methanol. The extracts showed excellent antibacterial activity against three strains Escherichia coli, Bacillus thuringiensis and Staphylococcus aureus.The maximum inhibition zone diameter showed the highest activity of methanol extract and is obtained for Staphylococcus aurous, Escherichia coli and Bacillus thuringiensis. The results indicate that methanolic extracts of leaves of M.azedarach L. could be a successful source of herbal treatment against infections.

22. **Ashraf, S**. (2017, October 5-7). *Hard X-rays emission from laser induced plasma*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: The hard X-rays of Nd: YAG laser (1064 nm, 9-14 ns, 1.1 MW) induced Aluminium Antimonide plasma has been investigated. With laser intensity ~1015 W/cm2 , Aluminium Antimonide target was irradiated at tight focus for the emission of hard X-rays under vacuum ~10-3 torr and in air. The emitted hard X-rays were monitored by a Photo Multiplier Tube (X-ray detector) and filtered by using Al filter of 10 Âµm thickness. The basic phenomenon which is considered for hard X-rays discharge from laser induced Aluminium Antimonide plasma is being elaborated. Confinement of plasma takes place at huge pressure. The evaluations are also augmented by the time resolved transitional conduct of hard X-rays. Various specifications of hard X-rays discharge with variable pressures are being calculated. Current, Voltage and energy of hard Xrays are inversely proportional to the ambient pressure and are directly proportional to the count of laser shots.

23. **Ahmad, I**. (2017, October 5-7). *Optical properties of thin films of niobium oxide prepared by electron beam evaporation*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Niobium oxide films with different thickness were prepared using the electron beam evaporation method. Major deposition parameters, including oxygen partial pressure and substrate temperature maintained during film deposition, affecting the optical properties of films is studied. X-ray diffraction result shows that all the deposited films were amorphous. A method requiring measurements at normal incidence of transmission from two films of different thickness prepared under identical conditions was used to determine the optical constants. Substantial changes in the optical constants were observed following changes in the preparation conditions. Perhaps one of the main causes could be the degree of deficiency of oxygen (i.e. excess metal) in the films. Indices of refraction and absorption increase as the degree of oxygen deficiency in the film increases. On the other hand, bandgap energy decreased as the degree of oxygen deficiency increased.

24. **Waheed, H**. (2017, October 5-7). *Review of laser induced plasma plume dynamics by anivimov model*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.

Abstract: Since the laser intensity exceeds the ablation threshold,interaction of solid with the laser pulse leads to the melting, evaporation, ionization of the material and the formation of cloud of ablated species thus leading to formation of isothermally expanding plasma that persists until after the termination of laser pulse.Differentregimes in plasma plume begin immediately after the laser pulse termination in which plume dynamics is investigated under vacuum, where velocity of the ablated species remains constant. Plume dynamics is a complex phenomenon, thus an appropriate theoretical description is required for the plume expansion for a wide range of ablation conditions, so several mathematical models have been proposed for different pressure. The theoretical description considered by Anisimov is based on adiabatic expansion of the plume and this theory begins after the termination of the laser pulse, expansion dynamics of plasma plume produced by laser is investigated in which the analysis is based on the special solution of gas dynamics equations that describes the expansion of an ellipsoidal gas cloud into vacuum.In this model a three dimensional core dense plume is studied.

25. **Mohyuddin, A**. (2017, October 5-7). *Utilization of waste cooking oil for manufacture of sustainable biodiesel*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.
Abstract: Not available.

Department of Physics

Journal Articles

1: **Jamil, M. I**., Masud, B., Akram, F., & **Gilani, S. M. S**. (2017). $\bar{D}^0D^{0*}(D^0\bar{D}^{0*})$ system in QCD-improved many body potential. *Chinese Physics C, 41*(1), 013103. **(JCR)**
Abstract: For a system of current interest (composed of charm, anticharm and a pair of light quarks), we show trends in phenomenological implications of QCD-based improvements to a simple quark model treatment. We employ a resonating group method to render this difficult four-body problem manageable. We use a quadratic confinement so as to be able to improve beyond the Born approximation. We report the position of the pole corresponding to the $\bar{D}^0D^{0*}$ molecule for the best fit of a model parameter to the relevant QCD simulations. We point out the interesting possibility that the pole can be shifted to 3872 MeV by introducing another parameter I_0 that changes the strength of the interaction in this one component of $X(3872)$. The revised value of this second parameter can guide future trends in modeling of the full exotic meson $X(3872)$. We also report the changes with I_0 in the S-wave spin averaged cross sections for $\bar{D}^0D^{0*} \longrightarrow \omega J/\psi$ and $\bar{D}^0D^{0*} \longrightarrow \rho J/\psi$. These cross sections are important regarding the study of QGP (quark gluon plasma).
Keywords: Meson-Meson Interaction, Resonating Group Method, Quark Potential Model, X(3872)

2: Ahmad, M., **Iqbal, M. A**., Kiely, J., Luxton, R., & Jabeen, M. (2017). Enhanced output voltage generation via ZnO Nanowires (50 nm): Effect of diameter thinning on voltage enhancement. *Journal of Physics and Chemistry of Solids, 104*, 281-285. **(JCR)**
Abstract: 50 nm ZnO nanowires were grown on indium tin oxide (ITO) coated poly ethylene terephthalate (PET) substrates by adapting facile aqueous growth technique using low temperature and vacuum conditions. Prior to growth of ZnO nanowires, pure hexagonal wurtzite structured seed layer was grown on flexible substrates. Surface morphology of nanostructure has been examined by scanning electron microscopy(SEM). Vertical growth orientation has been evidenced in XRD patterns. Minute external mechanical force (~50 nN) has produced periodic voltage peaks. 2.5 nm and 7.5 nm thick sputtered Pt electrode have been tested to obtain output voltages. 50 nm ZnO nanowires has produced a maximum output voltage of 2.717 volts having an output power density of 397.1 mW/cm^2. By squeezing the diameter, we have reduced reverse leakage current through nanowires and enhanced output voltage.
Keywords: ZnO Nanowires, Piezoelectric Potential, Schottky Contact, Energy Harvester.

3: Behram, R. B., **Iqbal, M. A**, Rashid, M., Sattar, M. A., Mahmood, A., & Ramay, S. M. (2017). Ab-initio investigation of AGeO3 (A= Ca, Sr) compounds via Tran–Blaha-modified Becke–Johnson exchange potential. *Chinese Physics B, 26*(11), 116103. **(JCR)**

Abstract: We employ *ab-initio* calculations to analyze the mechanical, electronic, optical and also thermoelectric properties associated with $AGeO_3$ (*A* = Ca, Sr) compounds. The full-potential linearized augmented plane wave (FP-LAPW) technique in the generalized gradient approximation (GGA-PBEsol) and the lately designed Tran–Blaha-modified Becke–Johnson exchange potential are utilized to examine the mechanical and optoelectronic properties respectively. To explore the thermoelectric quality, we use the semi-classical Boltzmann transport theory. The particular structural stabilities regarding $AGeO_3$ (*A* = Ca, Sr) materials are validated simply by computations from the elastic constants. The energy band structural framework and the density of states are displayed to indicate indirect bandgap under ambient conditions. The particular computed optical attributes that reveal prospective optoelectronic applications are usually elucidated simply by studying $\varepsilon_1(0)$ and also E_g, which can be connected by means of Penn's design. The optical details uncover the actual suitability to power ranging products. Finally, the BoltzTraP code is executed to analyze the actual thermoelectric properties, which usually presents that the increase of internal temperatures can enhance the electric conductivity, thermal conductivity and also the power factor, whilst Seebeck coefficient decreases. Therefore, the studied materials will also be ideal for thermoelectric products to understand helpful option for alternative energy resources.

Keywords: Semiconductors, Elastic Properties, Optical Properties, Thermal Properties.

4: **Iqbal, M. A**., & **Erum, N**. (2017). Opto-electronic investigation of rubidium based fluoro-pervoskite for low birefringent lens materials. *Scientific Inquiry and Review, 1*(1), 37-48. **(UMT)**

Abstract: In this communication, systematic first principles calculation has been scrutinize to evaluate bonding nature, structural, electronic, and optical properties of RbHgF3. The findings are based on total energy calculations where Khon Sham (KS) equation is solved by means of density functional theory (FP-LAPW) method. Optimization of structural parameters is done with variety of approximations, which corroborates through comparison with available experimental data. Assessment of band profile through GGA plus Trans-Blaha modified Becke–Johnson (TB-mBJ) potential highlights underestimation of bandgap with traditional Generalized Gradient approximations. Specific contribution of particular states on electronic properties is investigated by means of total and partial density of states while contour maps of electron density are used to sightsee bonding character and it is evaluated that emphasized compound is (M-Γ) indirect bandgap material with mixed ionic and covalent bonding character. Additionally attention is paid to absorption and reflection spectra of RbHgF3fluoroperovskite by reconnoitering optical properties, which shows extensive absorption and reflection in high frequency regions. Expectantly, current study would benchmark various quantum mechanical effects, which must be taken into account to understand and utilize RbHgF3 in fabricating practical devices.

Keywords: First- Principles Study, Fluorine Based Perovskites, Electronic Property, Optical Property.

5: **Erum, N**., & **Iqbal, M. A**. (2017). Ab initio study of high dielectric constant oxide-perovskites: Perspective for miniaturization technology. *Materials Research Express, 4*(2), 025904. **(JCR)**

Abstract: A new potential approximation known as modified Becke–Johnson (mBJ) based on density functional theory method is applied to compute electronic and optical properties of $BaPaO_3$ and $BaUO_3$ compounds. Type of chemical bonding is analyzed with the help of variations in electron density difference distribution that is induced due to changes of second cation. Results reveal (Γ–Γ) direct bandgap semi-conductive nature. The band gap dependent optical properties such as complex dielectric function $\varepsilon(\omega)$, optical conductivity $\sigma(\omega)$, refractive index $n(\omega)$, reflectivity $R(\omega)$, and effective number of electrons (n_{eff}) via sum rules are reported for the first time. Prominent variation of optical responses suggests that $BaPaO_3$ and $BaUO_3$ are applicant materials for micro as well as nano-electronic devices.
Keywords: First-Principles Study, Oxide Perovskites, Electronic Property, Optical Property.

6: **Erum, N.**, & **Iqbal, M. A.** (2017). Effect of pressure variation on structural, elastic, mechanical, optoelectronic and thermodynamic properties of SrNaF3 fluoroperovskite. *Materials Research Express, 4*(12), 126311. **(JCR)**

Abstract: The effect of pressure variation on structural, electronic, elastic, mechanical, optical and thermodynamic characteristics of cubic $SrNaF_3$ fluoroperovskite have been investigated by employing first-principles method within the framework of gradient approximation (GGA). For the total energy calculations, we have used the full-potential linearized augmented plane wave (FP-LAPW) method. Thermodynamic properties are computed in terms of quasi-harmonic Debye model. The pressure effects are determined in the range of 0–25 GPa, in which mechanical stability of $SrNaF_3$ fluoroperovskite remains valid. A prominent decrease in lattice constant and bonds length is observed with the increase in pressure from 0 to 25 GPa. The effect of increase in pressure on band structure calculations with GGA and GGA plus Tran–Blaha modified Becke–Johnson (TB-mBJ) potential reveals a predominant characteristic associated with widening of bandgap. The influence of pressure on set of isotropic elastic parameters and their related properties are numerically estimated for $SrNaF_3$ polycrystalline aggregate. Apart of linear dependence of elastic coefficients, transition from brittle to ductile behavior is observed as pressure is increased from 0 to 25 GPa. We have successfully obtained variation of lattice constant, volume expansion, bulk modulus, Debye temperature and specific heat capacities with pressure and temperature in the range of 0–25 GPa and 0–600 K. All the calculated optical properties such as the complex dielectric function $\varepsilon(\omega)$, optical conductivity $\sigma(\omega)$, energy loss function $L(\omega)$, absorption coefficient $\alpha(w)$, refractive index $n(\omega)$, reflectivity $R(\omega)$, and effective number of electrons n_{eff}, via sum rules shift towards the higher energies under the application of pressure.
Keywords: Pressure Variation Study, Structural Phase Transition, Thermodynamic Study, Opto-Electronic Property.

7: **Erum, N.**, & **Iqbal, M. A.** (2017). First principles investigation of protactinium-based oxide-perovskites for flexible opto—electronic devices. *Chinese Physics B, 26*(4), 047102 **(JCR)**

Abstract: The structural, elastic, mechanical, electronic, and optical properties of $KPaO_3$ and $RbPaO_3$compounds are investigated from first-principles calculations by using the WIEN2k code in the frame of local density approximation (LDA) and generalized gradient approximation (GGA). The calculated ground state quantities, such as lattice constant (a_0), ground state energy (E), bulk modulus (B), and their pressure derivative (B_p) are in reasonable agreement with the present analytical and previous theoretical results and available experimental data.

Based on several elastic and mechanical parameters, the structural stability, hardness, stiffness and the brittle and ductile behaviors are discussed, which reveal that protactinium-based oxide series of perovskites is mechanically stable and possesses weak resistance to shear deformation compared with resistance to unidirectional compression while flexible and covalent behaviors are dominated in them. The analysis of band profile through Trans–Blaha modified Becke–Johnson (TB-mBJ) potential highlights the underestimation of bandgap with traditional density functional theory (DFT) approximation. Specific contribution of electronic states is investigated by means of total and partial density of states and it can be evaluated that both compounds are (Γ–Γ) direct bandgap semiconductors. All fundamental optical properties are analyzed while attention is paid to absorption and reflection spectra to explore extensive absorptions and reflections of these compounds in high frequency regions. The present method represents an influential approach to calculating the whole set of elastic, mechanical, and opto–electronic parameters, which would conduce to the understanding of various physical phenomena and empower the device engineers to implement these materials in flexible opto–electronic applications.

Keywords: First-Principles Study, Oxide Perovskites, Mechanical Property, Electronic Property, Optical Property.

8: **Erum, N.**, & **Iqbal, M. A**. (2017). Mechanical and magneto-opto-electronic investigation of transition metal based fluoro-perovskites: An ab-initio DFT study. *Solid State Communications, 264*, 39-48. **(JCR)**

Abstract: Detailed ab-initio calculations are performed to investigate structural, elastic, mechanical, magneto-electronic and optical properties of the KXF_3 (X = V, Fe, Co, Ni) fluoro-perovskites using Full Potential Linearized Augmented Plane Wave (FP-LAPW) method within the framework of density functional theory (DFT). The calculated structural parameters by DFT and analytical methods are found consistent with the experimental results. From the elastic and mechanical properties, it can be inferred that these compounds are elastically stable and anisotropic while $KCoF_3$ is harder than rest of the compounds. Furthermore, thermal behavior of these compounds is analyzed by calculating Debye temperature (θ_D). The calculated spin dependent magneto-electronic properties in these compounds reveal that exchange splitting is dominated by N-3d orbital. The stable magnetic phase optimizations verify the experimental observations at low temperature. Type of chemical bonding is analyzed with the help of variations in electron density difference distribution that is induced due to changes of the second cation. The linear optical properties are also discussed in terms of optical spectra. The present methodology represents an influential approach to calculate the whole set of mechanical and magneto-opto-electronic parameters, which would support to understand various physical phenomena and empower device engineers for implementing these materials in spintronic applications.

Keywords: First-principles study, Fluoro-Perovskites, Mechanical property, Magneto-Electronic Property, Optical Property.

9: **Erum, N.**, & **Iqbal, M. A**. (2017). A novel pressure variation study on electronic structure, mechanical stability and thermodynamic properties of potassium based fluoroperovskite. *Materials Research Express, 4*(9), 096302. **(JCR)**

Abstract: The effect of pressure variation on stability, structural parameters, elastic constants,

mechanical, electronic and thermodynamic properties of cubic $SrKF_3$ fluoroperovskite have been investigated by using the full-potential linearized augmented plane wave (FP-LAPW) method combined with Quasi-harmonic Debye model in which the phonon effects are considered. The calculated lattice parameters show a prominent decrease in lattice constant and bonds length with the increase in pressure. The application of pressure from 0 to 25 GPa reveals a predominant characteristic associated with widening of bandgap with GGA and GGA plus Tran–Blaha modified Becke–Johnson (TB-mBJ) potential. The influence of pressure on elastic constants and their related mechanical parameters have been discussed in detail. Apart of linear dependence of elastic coefficients, transition from brittle to ductile behavior is also observed at elevated pressure ranges. We have successfully computed variation of lattice constant, volume expansion, bulk modulus, Debye temperature and specific heat capacities at pressure and temperature in the range of 0–25 GPa and 0–600 K.

Keywords: Pressure Variation Study, Fluorine Based Perovskites, Thermodynamic Study, Electronic Property, Structural Phase Transition.

10: **Erum, N**., & **Iqbal, M. A**. (2017). Physical properties of fluorine based perovskites for vacuum-ultraviolet-transparent lens materials. *Chinese Journal of Physics, 55*(3), 893-903. **(JCR)**

Abstract: Density functional theory (DFT) is used to study the bonding nature as well as the structural, electronic, and optical properties of the $SrLiF_3$, $SrNaF_3$, $SrKF_3$ and $SrRbF_3$fluoroperovskite compounds. The findings are based on the total energy calculations where the Khon Sham (KS) equation is solved by means of an ab-initio full-potential linearized augmented plane wave (FP-LAPW) method. The structural properties including the lattice constant (a_o), ground state energy (E), bulk modulus (B), and their pressure derivative (B') are evaluated using the Local Density Approximation (LDA) and the Generalized Gradient Approximation (GGA) exchange correlation potential. Furthermore, to avoid the underestimation of the band profile by other DFT schemes we highlight the GGA plus Trans-Blaha modified Becke–Johnson (TB-mBJ) potential in lieu of attaining opto-electronic trends close to the expected experimental findings. Detailed analysis of the band dispersion curves is done with five different exchange and correlation schemes at the (Γ-Γ), (R-R), (M-M) and (X-X) symmetry points. A predominant characteristic associated with cation replacement shows that Li by Na, Na by K, and K by Rb significantly reduce the direct bandgap in these compounds. This crucial variation is responsible for working in different UV regions of the spectrum. The calculations of the band structure show that these compounds have a wide and direct energy bandgap at (Γ-Γ). The total and partial density of state curves are used to define the contributions of the different bands. In addition to this, contour plots of the electron density verify that the ionic behavior increases as we go from $SrLiF_3$ to $SrRbF_3$ while the brittleness, which dominates in them, decreases from $SrLiF_3$ to $SrRbF_3$. To verify the opto-electronic behavior bandgap dependent optical parameters, such as the complex dielectric function Ɛ(ω), optical conductivity σ(ω), energy loss function L(ω), and effective number of electrons n_{eff}, the sum rules are analyzed. All the calculated results are in favorable agreement with the previous theoretical and existing experimental data. Furthermore, the opto-electronic properties from the (TB-mBJ) potential are reported, which reveals that the fluorine based strontium series of perovskites are wide and direct band gap ionic insulators. The comprehensive present methodology represents an effective and influential tool for calculating the whole set of opto-electronic parameters, which can provide support for the understanding of various physical

phenomena and empower device engineers for implementing these materials in UV based devices.

Keywords: First- Principles Study, Fluorine Based Perovskites, Electronic property, Optical Property.

11: **Erum, N.**, & **Iqbal, M. A.** (2017). Study of pressure variation effect on structural, opto-electronic, elastic, mechanical, and thermodynamic properties of SrLiF3. *Physica B: Condensed Matter, 525*, 60-69. **(JCR)**

Abstract: The structural, electronic, elastic, optical and thermodynamic properties of cubic fluoroperovskite $SrLiF_3$ at ambient and high-pressure are investigated by using first-principles total energy calculations within the framework of Generalized Gradient Approximation (GGA), combined with Quasi-harmonic Debye model in which the phonon effects are considered. The pressure effects are determined in the range of 0–50 GPa, in which cubic stability of $SrLiF_3$ fluoroperovskite remains valid. The computed lattice parameters agree well with experimental and previous theoretical results. Decrease in lattice constant and bonds length is observed with the increase in pressure from 0 to 50 GPa. The effect of increase in pressure on electronic band structure calculations with GGA and GGA plus Tran-Blaha modified Becke–Johnson (TB-mBJ) potential reveals a predominant characteristic associated with widening of bandgap. The influence of pressure on elastic constants and their related mechanical parameters have been discussed in detail. All the calculated optical properties such as the complex dielectric function Ɛ(ω), optical conductivity σ(ω), energy loss function L(ω), absorption coefficient α(w), refractive index n (ω), reflectivity R (ω), and effective number of electrons n_{eff}, via sum rules shift towards the higher energies under the application of pressure. Moreover, important thermodynamic properties heat capacities (C_p and C_v), volume expansion coefficient (α), and Debye temperature (θ_D) are predicted successfully in the wide temperature and pressure ranges.

Keywords: Pressure Variation Study, Fluorine Based Perovskites, Structural Phase Transition, Thermodynamic Study, Opto-Electronic Property.

12: Mahmood, Q., Hassan, M., & **Noor, N. A.** (2017). Theoretical study of electronic, magnetic, and optical response of fe-doped ZnS: First-principle approach. *Journal of Superconductivity and Novel Magnetism, 30*(6), 1463-1471. **(JCR)**

Abstract: In this study, we demonstrate Zn_{1-x} Fe $_x$ S (x = 0.0, 0.25, 0.50, 0.75, and 1.0) device applications by reporting electronic, magnetic, and optical properties, computed with Wien2k software, using density functional theory (DFT). The modified Becke and Johnson (mBJ) potential has been applied to accurately determine the material band gap. The presence of half-metallic ferromagnetism (HMF) is demonstrated. Moreover, the observed ferromagnetism is justified in terms of various splitting energies and the exchange constants. The Fe magnetic moment decreases from 4.0 μ_B due to the strong $p - d$ hybridization. A complete set of various optical parameters is also presented. The variation in the calculated static dielectric constant, due to Fe doping, is inversely related to the band gap that verifies Penn's model. Moreover, the band gap of ZnS is tunable by the Fe doping, from ultraviolet to visible regions, depicting that the materials are appropriate for optoelectronic devices.

Keywords: Magnetic Materials, Magnetic Properties, Optical Properties.

13: **Saddique, M. B**., Rashid, M., Afzal, A., Ramay, S. M., Aziz, F., & Mahmood, A. (2017). Ground state opto-electronic and thermoelectric response of cubic XSnO3 (X= Ba, Sr) compounds. *Current Applied Physics, 17*(8), 1079-1086. **(JCR)**

Abstract: The density functional has been implemented to deliberate the cubic perovskite $XSnO_3$ (X = Ba, Sr) for their elastic, electronic, optical as well as thermoelectric characteristic. The $XSnO_3$ (X = Ba, Sr) illustrates good pact of lattice parameter for these iso-structural compounds having cubic perovskite structure. The generalized gradient approximation based on the exchange-correlation functional is applied for computing structural and mechanical characteristic, whereas the electronic, optical and thermoelectric properties have been studied by the functional suggested by Tran and Blaha that is termed as of modified Becke-Johnson (mBJ) functional. The thermodynamics stability is recognized through the expression of enthalpies of formation, which is further verified from the calculated structural properties of cubic perovskite $XSnO_3$ (X = Ba, Sr). Moreover, various elastic parameters such has bulk modules B, C_{ij}, shear modulus G, Young's modulus Y, anisotropy factor, B/G ratio and Poisson's ratio ν have also been reported. It has been observed by band structure computation that the studied compounds exhibit an indirect band gap between the unoccupied Ba/Sr 6*s*/5*s* and the occupied O 2*p* orbitals. Detailed study of optical properties is presented under the incident photon energy upto 28 eV. Our computed static dielectric constant $\varepsilon_2(0)$ and refractive index n(0) are comparable with other theoretical and experimental values. Thermoelectric properties are presented in terms of computed Seebeck coefficient, electrical and thermal conductivities and their variation with the rise in temperature suggest that the studied compounds may find applications in the construction of various thermo-electric devices.

Keywords: Ab-Initio Studies, Elastic Properties, Electronic, Optical Properties and Thermoelectric Properties.

14: Saleemi, A., **Abdullah, A.,** & Anis-Ur-Rehman, M. (2017). Thermophysical properties of GD doped ceria nanoparticles. *Digest Journal of Nanomaterials & Biostructures (DJNB), 12*(1), 19-28. **(JCR)**

Abstract: Composite mediated hydrothermal (CMH) method, a facile technique to prepare functional materials, was utilized to synthesize the nanocrystalline gadolinium doped ceria. The structural properties and surface morphology for the composition Ce1-xGdxOδ (x = 0.10, 0.15, 0.20, 0.25) were studied by x-ray diffraction (XRD) and scanning electron microscopy (SEM). The Raman spectroscopy was performed to verify the Gd doping in ceria. The crystallite size was estimated by Scherrer's and Stokes and Wilson's formulae and the minimum size obtained, corresponding to most intense peak was 30 nm for Ce0.85Gd0.15Oδ calculated with Scherrer formula. The lattice constant measurements were done using x-ray diffraction data. AC and DC conduction studies were done on pellets. DC conductivity was measured in temperature range 300-700 °C. Activation energies were calculated from Arrhenius plots and were in range 0.87-1.19 eV. AC conductivity was measured as a function of frequency (1 kHz to 3 MHz) at different temperatures (300, 400, 500, 600, and 700 °C). The conductivity value was achieved as high as 9.30×10-4 S-cm-1 at 600 °C for Ce0.75Gd0.25Oδ . The thermal conductivity and thermal diffusivity values were also determined. The synthesis of electrolyte materials for intermediate temperature solid oxide fuel cells (ITSOFCs) was found to be better with composite mediated hydrothermal method.

Keywords: Crystallization, Powder Diffraction, Raman Spectroscopy, Dielectric Properties,

Microstructure, Transport Properties.

15: Asif, N. A., **Siddique**, **I.,** Jamil, M. I. (2017). On solutions of a fractional system with generalized coupled integral conditions. *Journal of Computational and Theoretical Nanoscience 14*(2), 879-886. **(SJR)**

Abstract: Existence and multiplicity of positive solutions for a nonlinear fractional singular system with generalized coupled integral boundary conditions at the right end of the type $D^{\alpha i}_{0+} x_i(t) + h_i(t) f_i(t, x_1(t), x_2(t)) = 0\ t \in (0, 1), n_i - 1 < \alpha_i \le n_i, i = 1,2$ $x_i(0) = x'_i(0) = \cdots = x^{(ni-2)}_i(0) = 0$, $\mathrm{ax}_i(1) = {}^2\sum_{j=1} \int^1_0 x_j(t) d\psi_{ij}(t)\ i = 1,2$ is established. The nonlinearities $f_i [0, 1] \times [0, \infty] \times [0, \infty] \to [0, \infty]$ are continuous, $h_i (0, 1) \to [0, \infty]$ are continuous and singular at $t = 0, t = 1$ for each $i = 1\ 2$, while $\psi_{ij} (i, j = 1, 2)$ are functions of bounded variation such that $(1 - \int^1_0 t^{\alpha 1\ -\ 1} d\psi_{11}(t))(1 - \int^1_0 t^{\alpha 2-1} d\psi_{22}(t)) - \int^1_0 t^{\alpha 1-1} d\psi_{21}(t) \int^1_0 (t)^{\alpha 2-1} d\psi_{12}(t) > 0$.

Keywords: Coupled Boundary Conditions, Coupled System, Fixed Point Index, Integral Conditions, Positive Solutions.

Conference Papers

1. **Khalid, S**. (2017, December 10-14). *Effect of aluminum doping on microwave assisted sol-gel synthesis of iron oxide thin films*. Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.

Abstract: Not available.

2. **Khalid, S**. (2017, December 10-14). *Controlled phase tranition of iron oxide thin films-microwave assisted sol-gel method*. Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.

Abstract: Not available.

3. **Khalid, S**. (2017, December 10-14). *Impact of microwave and hot water treatment on iron oxid thin films-structural and magnetic properties.* Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.

Abstract: Not available.

4. **Khalid, S**. (2017, December 10-14). *Impact of microwave processing on cr doped Fe2O3 thin films*. Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.

Abstract: Not available.

5. **Khalid, S**. (2017, December 10-14). *Magneto dielectric behaviour of microwave synthesized iron oxide thin films*. Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.

Abstract: Not available.

6. **Khalid, S**. (2017, December 10-14). *Magnto dielectric behavior of co doped iron oxide thin films-microwve assisted sol-gel route*. Paper presented at the International Conference on Solid State

Physics (ICSSP'17), Lahore, Pakistan.
Abstract: Not available.

7. **Khalid, S**. (2017, December 10-14). *Shifting of magnetic easy axis of nickel nanowires by varying diameter*. Paper presented at the International Conference on Solid State Physics (ICSSP'17), Lahore, Pakistan.
Abstract: Not available.

Department of Life Science

Journal Articles

1: Uzair, A., **Rasool, N**., & Wasim, M. (2017). Evaluation of different methods for DNA extraction from human burnt bones and the generation of genetic profiles for identification. *Medicine, Science and the Law, 57*(4), 159-166. **(JCR)**
Abstract: Bone exposure to heat in the presence of moisture breaks the phosphodiester bonds of the backbone, leaving sheared DNA in bone cells. This also limits the possibility of generating a complete profile of the victim. With the increasing incidence of fire outbreaks over the past few years, a paradigm shift to establish identity has been observed, from morphological identification of victims to STR profiling. For this study, 10 bone samples were taken from burnt human bodies that were recovered from different fire outbreak scenes. The DNA from these burnt human tissues was isolated using four different extraction methods: the organic extraction method, the total demineralisation method, the Qiagen kit method, and the Chelex extraction method. STR profiles of victims were generated on a genetic analyser using an AmpFlSTR Identifiler® Plus Kit and analysed on Gene Mapper ID-X. DNA isolated from bones using the total demineralisation extraction method and organic extraction method was of the highest quality due to the efficient removal of inhibitors. DNA obtained using these two methods successfully generated the STR profiles of the victims. The quality of isolated DNA obtained through the Qiagen kit was comparatively low, but STR profiles of the victims were successfully generated. The Chelex kit failed to extract good quality DNA of high quantity from the burnt bones, encountering inhibition in all samples at varying degrees. This study concludes that total demineralisation and the Qiagen kit are sophisticated and reliable methods to obtain a good yield of DNA from burnt human bones, which can be used for the identification of victims.
Keywords: Burnt Bone, DNA Extraction, Total Demineralisation Method, Organic Extraction Method, Qiagen Kit Method, Chelex Extraction.

2: **Afzal, M. S**. (2017). IL-28B genetic analysis and HBV disease association studies with small number study subjects; should we rely on results? *Journal of Gastroenterology and Hepatology Research, 6*(6), 2502-2504. **(SJR)**
Abstract: Hepatitis B Virus (HBV) is one of the leading cause of cirrhosis and hepatocellular carcinoma worldwide. The virus has 10 different genotypes and has a specific geographic distribution for each genotype. Viral genotypes and certain mutations in the viral genome are associated with differential clinical features and therapeutic response. It is also evident that

during HBV infection certain host genetic factors play major role in determining the outcome of infection and also impact the outcomes of antiviral therapy. IL28B plays an important role in the outcome of HBV infection and it could inhibit the viral replication. There are some functional genetic variants in IL28B gene which regulate the expression of IL28B. These genetic variants played significant role in predicting the antiviral therapy response and disease progression. There are several case control studies across the globe which are investigating the role of these functional variants on disease progression and antiviral therapy outcomes. In current study the available data on the genetic analysis of IL28B variants and their impact on HBV disease progression or antiviral therapy response is analyzed. The results showed that most of the studies including only small number of study participants hence the low sample number impact the power of statistical analysis. It is proposed that in future the case control studies must be conducted on large scale so statistical results can be justified and will be of help in clinical settings.

Keywords: IL-28B, HBV, Ethnicity, Genetic Analysis, Case-Control Studies.

3: Afzal, M. S. (2017). Dengue virus endemic in Pakistan: Its vertical transmission could be an un-attended threat to infants. Journal of Antivirals and Antiretrovirals, 9,075. **(SJR)**

Abstract: Not available.

4: **Afzal, M. S**., & Iqbal, M. A. (2017). Hepatitis C virus in Pakistan: Community education is an effective weapon against the killer. *Viral Immunology, 30*(8), 548-551. **(JCR)**

Abstract: Not available.

5: **Afzal, M. S**. (2017). Emergence of antibiotic resistance in Pakistan: A clear problem for future. *Journal of Vaccines & Vaccination, 8*(6), 375. **(SJR)**

Abstract: The capacity of bacteria to resist against the effects of an antibiotic is called antibiotic resistance. Antibiotic resistance is due to the change in bacteria by some approach that eliminates or reduces the efficiency of chemicals, drugs, or other agents designed for treatment against infections. The survival and continuously multiplication of bacteria causes more destruction in human body.

Keywords: Antibiotics, Resistance, Susceptibility, Multi-Drug Resistance, Pakistan.

6: Ahmed, H., Naz, M., Mustafa, I., Khan, M. R., Asif, S., **Afzal, M. S**., ... Simsek, S. (2017). Impact of epidemiological factors on the prevalence, intensity and distribution of ectoparasites in pigeons. *Journal of Parasitic Diseases, 41*(4), 1074-1081. **(SJR)**

Abstract: This study was carried out on domestic pigeons (*Columba livia domestica*) from September (2014) to June (2015) to determine the prevalence, intensity and species of ectoparasites in Sargodha region, east of Pakistan. A total of 200 domestic pigeons were inspected from the study area. Parasites were collected by forceps and stored in 70% ethanol. The epidemiological information e.g. health condition, color of plumage, mode of living, breed, intensity etc. were recorded in the form of questionnaire. The overall prevalence of ectoparasites in pigeon was 90.5% (181/200). Of the total of 200 (83 males and 117 females) domestic pigeons inspected, 73 (87.95%) and 108 (92.30%) were infected, respectively. The ectoparasites spp. were identified as *Columbicola columbae* (Linnaeus, 1758) and *Colpocephalum turbinatum* (Denny, 1842). The Qasid breed showed highest infestation

rate (91.25%) as compared to other two observed breeds. Pigeon of white color were more infested (91%) as compared to other colors. Thus color and breed factors showing the random differences. In medicated birds the rate of infestation of ectoparasites was 87% reflecting that drugs are unable to control or might be due to resistance. There was significant difference between the number of parasites on tail, neck, chest and wings within different breeds, as well as in the months. The mean intensity of parasites was in urban areas (28.5), rural areas (14.98), and sub-rural areas (23.55). In conclusion the prevalence of ectoparasites in pigeons is very high in north-east region of Pakistan.

Keywords: Domestic Pigeon, Ectoparacites, Columbicola Columbae, Colpocephalum Turbinatum, Epidemiological Factors.

7: **Afzal, M. S**. (2017). Hepatocellular carcinoma in Pakistan: An insight into future. *Journal of Cancer Science & Therapy, 9*(12), 746-747. **(SJR)**

Abstract: Not available.

8: **Rasool, N**. **Hussain, W**. **Mahmood, S**. (2017). Prediction of protein solubility using primary structure compositional features: A machine learning perspective. *Journal of Proteomics & Bioinformatics, 10*(12), 324-328. **(SJR)**

Abstract: It is a recurring limiting factor to obtain sufficient concentrations of soluble proteins using *in vitro*methodologies. Solubility is an independent characteristic of a protein which can be determined using amino acid compositions under specific experimental conditions. The present study aims at the prediction of protein solubility by adapting machine learning based approaches using the primary structure information. The features involve amino acid compositional features as well as the physiochemical properties of the amino acids i.e. canonical value, hydrophobicity, solubility index and solubility score. For a dataset of 6372 protein sequences (4850 soluble protein sequences and 1522 insoluble protein sequences), all the four features were calculated. Using the calculated values, four different prediction models were developed based on Multilayer Perceptron (MLP), Random Forest (RF), Decision Tree (DT), and Naïve Bayes Classifier (NBC). For performance evaluation, MCC, F-measure, accuracy, precision and recall rate are determined. Among all the four prediction models, MLP has been observed to be the most accurate model for the prediction of protein solubility with an accuracy rate of 95.92%, followed by RF and NBC. The proposed model, based on MLP, can be used for predicting protein solubility as a preprocess of experimental predictions. The method is resource and time efficient, and can help in predicting solubility of proteins instead of laborious and hectic experimental work.

Keywords: Protein Solubility, Machine Learning, Classification; Mlp, D-Tree, Naïve Bayes Classifier, Random Forest.

9: Jamal, M., Andleeb, S., Jalil, F., Imran, M., Nawaz, M. A., Hussain, T., ... **Ali, M**., Das, C. R. (2017). Isolation and characterization of a bacteriophage and its utilization against multi-drug resistant pseudomonas aeruginosa-2995. *Life sciences, 190*, 21-28. **(JCR)**

Abstract: **Aims:** To identify, isolate, and characterize a lytic bacteriophage against the multiple-drug resistant clinical strain of *Pseudomonas aeruginosa*-2995 and to determine the phage efficacy against the bacterial planktonic cells and the biofilm.

Main methods: Wastewater was used to isolate a bacteriophage. The phage was characterized with Transmission electron microscopy (TEM). Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS PAGE) was used to identify the expressed proteins. Bacteria were cultured in both suspension and biofilm to check and compare their susceptibility to phage lytic action. The activity of the phage (determined as AZ1) was determined against *P. aeruginosa*-2995 in both planktonic cells and the biofilm.

Key findings: A bacteriophage, designated as AZ1, was isolated from waste water showing a narrow host range. AZ1 was characterized by TEM and could be identified as an isolate in the family Siphoviridae [order Caudovirals]. Seventeen structural proteins ranging from about 12 to 110 kDa were found through SDS-PAGE analysis. Its genome was confirmed as dsDNA with a length of approx. 50 kb. The log-phase growth of *P. aeruginosa*-2995 was significantly reduced after treatment with AZ1 (4.50×10^8 to 2.1×10^3 CFU/ml) as compared to control. Furthermore, phage AZ1 significantly reduced 48 h old biofilm biomass about 3-fold as compared to control.

Significance: *Pseudomonas* aeruginosa is a ubiquitous free-living opportunistic human pathogen characterized by high antibiotic tolerance and tendency for biofilm formation. The phage, identified in this study, AZ1, showed promising activity in the destruction of both planktonic cells and biofilm of *P. aeruginosa*-2995. However, complete eradication may require a combination of phages.

Keywords: Bacteriophage, Biofilm, Cocktail, *Pseudomonas* Aeruginosa, Suspension.

Conference Papers

1. **Rasool, N**. (2017, July 20-22). *Computational model for predicting solubility of recombinant proteins in host.* Paper presented at First National Conference of Emerging Trends in Bioinformatics and Biosciences, Hazara, Pakistan.
   Abstract: Not available.

2. **Rasool, N**. (2017, July 20-22). *Quantum mechanics of metal ion replacement in ferritin associated with neurodegenerative diseases.* Paper presented at First National Conference of Emerging Trends in Bioinformatics and Biosciences, Hazara University, Pakistan.
   Abstract: Not available.

3. **Rasool, N**. (2017, July 20-22). *In silico prediction of hydroxylation sites involved in Bone Paget's disease.* Paper presented at First National Conference of Emerging Trends in Bioinformatics and Biosciences, Hazara, Pakistan.
   Abstract: Not available.

4. **Rasool, N**. (2017, July 20-22). *Exploiting the potential of natural products against non-structural protein 5 from dengue virus 4*. Paper presented at first national Conference of Emerging Trends in Bioinformatics and Biosciences, University, Pakistan.
   Abstract: Not available.

Journal Articles

1: **Ali, S.**, Nasir, I. A., **Rafiq, M.**, Butt, S. J., Ihsan, F., Rao, A. Q., & Husnain, T. (2017). Sugarcane Mosaic virus-based gene silencing in nicotiana benthamiana. *Iranian Journal of Biotechnology, 15*(4), 260. **(JCR)**

Abstract: **Background:** Potyvirus-based virus-induced gene silencing (VIGS) is used for knocking down the expression of a target gene in numerous plant species. *Sugarcane mosaic* virus (SCMV) is a monopartite, positive single strand RNA virus.

Objectives: pBINTRA6 vector was modifi ed by inserting a gene segment of SCMV in place of *Tobacco rattle virus* (TRV) genome part 1 (TRV1 or RNA1) and the two nonstructural proteins of TRV2(RNA2).

Materials and Methods: SCMV construct was inoculated into 3-4 weeks *Nicotiana benthamiana* plant leaves either by using a needleless syringe or applying pricking with a toothpick.

Results: The construct (SCMV-RNA2) successfully induced post-transcriptional gene silencing (PTGS) of the target genes *GFP* and *Chl*I through agroinoculation proving that SCMV is a substitute of the RNA1, which plays a pivotal role in the systemic gene silencing. 2-3-weeks of post inoculation, target genes' silencing was observed in the newly developed noninoculated leaves.

Conclusion: The newly developed construct expresses the knocked down of the endogenous as well as exogenous genes and only four weeks are required for the transient expression of the gene silencing based on SCMV-VIGS system.

Keywords: Nicotiana Benthamiana, Post-Transcriptional Gene Silencing, Scmv, Sugarcane Mosaic Virus, Vigs, Virus Induced Gene Silencing.

Department of Mathematics

Journal Articles

1: Latif, A., **Saleem, N.**, & **Abbas, M.** (2017). α– optimal best proximity point result involving proximal contraction mappings in fuzzy metric spaces. *Journal of Nonlinear Sciences & Applications (JNSA), 10*(1), 92-103. **(JCR)**

Abstract: In this paper, we introduce proximal fuzzy contraction of typeI and II in complete fuzzy metric space and obtain some fuzzy proximal and optimal coincidence point results. The obtained results further unify, extend and generalize some already existing results in literature. We also provides some examples which shows the validity of obtained results and a comparison is also given which shows that contractive mappings and obtained results further generalizes already existing results in literature.

Keywords: Fuzzy Metric Space, Proximal Fuzzy Contraction Of Typei, Proximal Fuzzy Contraction Of Typeii, Fuzzy Expansive Mapping, Optimal Coincidence Best Proximity Point, T Norm, 2000 Mathematics Subject Classification, 47h10, 47h0.

2: **Zulqarnain, M.**, & **Saeed, M**. (2017). A new decision making method on interval valued fuzzy soft matrix (IVFSM). *British Journal of Mathematics & Computer Science, 20*(5), 1-17. **(NR)**

Abstract: Interval valued fuzzy soft set and IVFSM are those mathematical tools which deal with problems involving uncertainties and imprecise or incomplete data. IVFSM may be useful for functions whose membership values vary. In this paper, we study basic definitions of IVFSM with some properties and prove commutative laws, associative laws and De-Morgan laws by using And-Operation and OrOperation on IVFSM. We propose a new decision making method on IVFSM named as "interval valued fuzzy soft max-min decision making method" (IVFSMmDM) with the help of interval valued fuzzy soft max-min decision making function. Finally, we apply IVFSMmDM method for decision making to solve those problems which involving uncertainties by using data from [19].

Keywords: Interval Valued Fuzzy Set (IVFS), Interval Valued Soft Set (IVSS), Interval Valued Fuzzy Soft Set (IVFSS), IVFSM; IVFSMMDM.

3: Zubair, M., Azmat, H., & **Noureen, I**. (2017). Dynamical analysis of cylindrically symmetric anisotropic sources in f (R, T) gravity. *The European Physical Journal C, 77*(3). **(JCR)**

Abstract: In this paper, we have analyzed the stability of cylindrically symmetric collapsing object filled with locally anisotropic fluid in $f(R, T)$ theory, where R is the scalar curvature and T is the trace of stress-energy tensor of matter. Modified field equations and dynamical equations are constructed in $f(R, T)$ gravity. The evolution or collapse equation is derived from dynamical equations by performing a linear perturbation on them. The instability range is explored in both the Newtonian and the post-Newtonian regimes with the help of an adiabetic index, which defines the impact of the physical parameters on the instability range. Some conditions are imposed on the physical quantities to secure the stability of the gravitating sources.

Keywords: Celestial Body, Adiabatic Index, Perturbation Scheme, Exotic Matter, Anisotropic Fluid.

4: Farahani, M. R., Nadeem, M. F., **Zafar, S.**, **Zahid, Z.** & Husin, M. N. (2017). Study of the topological indices of the line graphs of H-Pantacenic nanotubes. *New Frontiers in Chemistry, 26*(1), 31-38. **(NR)**

Abstract: In this paper, we computed the edge version of atom-bond connectivity and geometric arithmetic indices of H-Pantacenic nanotube. We also computed ABC4 and GA5 indices of the line graph of H-Pantacenic nanotube.

Keywords: Atom-Bond Connectivity Index, Geometric-Arithmetic Index, Line Graph, Phenylenes, H-Pantacenic Nanotube.

5: **Luqman, M.**, **Saeed, M.**, **Ali, J.**, & **Tabassum, M. F**. (2017). Radial artificial bee colony algorithm for constraint engineering problems. *Pakistan Journal of Science, 69*(1), 127-135. **(NR)**

Abstract: A modified variant of artificial bee colony (ABC) algorithms, called radial artificial bee colony (RABC) algorithm, was proposed. This modified method incorporated two novel strategies during the initialization of employed bees and the determination of new locations for scout bees. RABC was applied to solve well-known constrained and unconstrained problems. The statistical results of RABC were compared with those of the original ABC and a number of

approaches from the past studies. The comparisons revealed that RABC was superior to its competitor in terms of accuracy, speed of convergence and consistency.

Keywords: Radial Artificial Bee Colony Algorithm, Unconstraint Optimization, Constrained Optimization, Engineering Design Problems.

6: **Ali, J.**, **Saeed, M.**, Chaudhry, N., **Tabassum, M. F.**, & **Luqman, M.** (2017). Low cost efficient remedial strategy for stagnated nelder mead simplex method. *Pakistan Journal of Science, 69*(1), 119-126. **(HEC Z-Cat)**

Abstract: Nelder-Mead Simplex Algorithm was proposed in 60's and it had been enormously popular direct search method for unconstrained minimization. Despite its popularity, there existed some counter examples on which the method failed to find optimal solutions. This paper proposed a simplex volume based novel strategy for rescuing the method from stagnations or complete failures. The developed method was implemented to solve the state of the art benchmark functions. The comparison of the obtained results witnessed the remarkable low computational cost behavior and superiority of the proposed method over a number of existing methods.

Keywords: Nelder-Mead Simplex Method, Stagnation, Repeated Focused Inside Contractions, Remedy and Positive Basis.

7: Sen, M. D. l., **Abbas, M.**, & **Saleem, N.** (2017). On optimal fuzzy best proximity coincidence points of proximal contractions involving cyclic mappings in non-archimedean fuzzy metric spaces. *Mathematics, 5*(2), 22. **(SJR)**

Abstract: The main objective of this paper is to deal with some properties of interest in two types of fuzzy ordered proximal contractions of cyclic self-mappings integrated in a pair of mappings. In particular, is a non-contractive fuzzy self-mapping, in the framework of non-Archimedean ordered fuzzy complete metric spaces and is a -cyclic proximal contraction. Two types of such contractions (so called of type I and of type II) are dealt with. In particular, the existence, uniqueness and limit properties for sequences to optimal fuzzy best proximity coincidence points are investigated for such pairs of mappings.

Keywords: Fixed Points, Best Proximity Points, Fuzzy Set, Fuzzy Metric, Optimal Fuzzy Best Proximity Coincidence Points, Proximal Ψ-Contractions of Types I and II.

8: Beg, I., & **Rashid, T.** (2017). An extension of soft rough fuzzy sets. *The Korean Journal of Mathematics, 25*(1), 71-85. **(JCR)**

Abstract: This paper introduces a novel extension of soft rough fuzzy set so-called modified soft rough fuzzy set model in which new lower and upper approximation operators are presented together their related properties that are also investigated. Eventually it is shown that these new models of approximations are finer than previous ones developed by using soft rough fuzzy sets.

Keywords: Fuzzy Set, Rough Set, Soft Set, Soft Rough Fuzzy Set.

9: **Faizi, S.**, **Rashid, T.**, Sałabun, W., **Zafar, S.**, & Wątróbski, J. (2018). Decision making with uncertainty using hesitant fuzzy sets. *International Journal of Fuzzy Systems, 20*(1), 93-103. **(JCR)**

Abstract: Actual existing multi-criteria decision-making (MCDM) methods yield results that may be questionable and unreliable. These methods very often ignore the issue of uncertainty and rank reversal paradox, which are fundamental and important challenges of MCDM methods. In response to these challenges, the Characteristic Objects Method (COMET) was developed. Despite it being immune to the rank reversal paradox, classical COMET is not designed for uncertain, decisional problems. In this paper, we propose to extend COMET using hesitant fuzzy set (HFS) theory. Hesitant fuzzy set theory is a powerful tool to express the uncertainty that derives from an expert comparing characteristic objects and identifying membership functions for each criterion domain. We present the theoretical foundations and principles of COMET, and we provide an illustrative example to show how COMET handles uncertain decision problems both practically and effectively.
Keywords: Hesitant Fuzzy Sets, L–R-Type Generalized Fuzzy Numbers, Multi-Criteria Decision Making, the Characteristic Object Method, COMET.

10: Beg, I., & **Rashid, T**. (2017). A fuzzy similarity measure based on equivalence relation with application in cluster analysis. *International Journal of Computers and Applications, 39*(3), 148-154. **(SJR)**

Abstract: We propose a novel notion of fuzzy similarity measure between fuzzy sets by using fuzzy equivalence. Furthermore, a similarity base fuzzy relational clustering algorithm is formulated. Applications are given to illustrate the usefulness of the chosen fuzzy equivalence and similarity measure in a partition algorithm.
Keywords: Similarity Measure, Fuzzy Equivalence, Partition Algorithm.

11: **Rashid, T**., **Faizi, S**., Xu, Z., & **Zafar, S**. (2018). ELECTRE-based outranking method for multi-criteria decision making using hesitant intuitionistic fuzzy linguistic term sets. *International Journal of Fuzzy Systems, 20*(1), 78-92. **(JCR)**

Abstract: An outranking method is developed within the environment of hesitant intuitionistic fuzzy linguistic term sets (HIFLTSs), where the membership degree and the non-membership degree of the element are subsets of linguistic term set. The directional Hausdorff distance, which uses HIFLTSs, is proposed, and the dominance relations are subsequently defined using this distance. Moreover, some interesting characteristics of the proposed directional Hausdorff distance are further discussed in detail. In this context, a collective decision matrix is obtained in the form of hesitant intuitionistic fuzzy linguistic elements and analyzes the collective data by using proposed ELECTRE-based outranking method. The linguistic scale functions are employed in this paper to conduct the transformation between qualitative information and quantitative data. Furthermore, based on the proposed method, we also investigate the ranking of the alternatives based on a new proposed definition of HIFLTS. The feasibility and applicability of the proposed method are illustrated with an example, and a comparative analysis is performed with other approaches to validate the effectiveness of the proposed methodology.
Keywords: Directional Hausdorff Distance, Hesitant Fuzzy Linguistic Term Sets, Hesitant Intuitionistic Fuzzy Linguistic Term Sets, Multi-Criteria Decision Making, Outranking Method.

12: **Faizi, S.**, **Rashid, T.**, & **Zafar, S.** (2017). An outranking method for multi-criteria group decision making using hesitant intuitionistic fuzzy linguistic term sets. *Journal of Intelligent & Fuzzy Systems, 32*(3), 2153-2164. **(JCR)**

Abstract: This article proposes an outranking method for group decision-making (GDM) using hesitant intuitionistic fuzzy linguistic term sets (HIFLTSs). By means of HIFLTSs, the flexibility in generating evaluation information under uncertainty can be achieved to a larger extent than intuitionistic fuzzy sets (IFSs) or hesitant fuzzy linguistic term sets (HFLSs). Based on intuitionistic fuzzy support function (IFSF), intuitionistic fuzzy risk function (IFRF) and intuitionistic fuzzy credibility function (IFCF), the net outranking flow index (NOFI) of each alternative are calculated which represents the net outranking character of an alternative over the other. The linguistic scale functions (LSFs) are employed in this paper to conduct the transformation between qualitative information and quantitative data. Finally, an outranking approach is constructed for ranking alternatives in multi-criteria group decision-making (MCGDM) problems, and the approach is demonstrated using a numerical example.

Keywords: Linguistic Decision-Making, Hesitant Fuzzy Linguistic Term Sets (Hfltss), Hesitant Intuitionistic Fuzzy Linguistic Term Sets (Hifltss), Linguistic Scale Function (Lsf), Multi-Criteria Decision-Making (Mcdm), Outranking Approach.

13: Beg, I., & **Rashid, T.** (2017). Modelling uncertainties in multi-criteria decision making using distance measure and topsis for hesitant fuzzy sets. *Journal of Artificial Intelligence and Soft Computing Research, 7*(2), 103-109. **(JCR)**

Abstract: A notion for distance between hesitant fuzzy data is given. Using this new distance notion, we propose the technique for order preference by similarity to ideal solution for hesitant fuzzy sets and a new approach in modelling uncertainties. An illustrative example is constructed to show the feasibility and practicality of the new method.

Keywords: Uncertainty Modelling, Multiple Criteria Analysis, Group Decisions And Negotiations, Hesitant Fuzzy Set, Topsis, 91b06, 91b10, 03b52, 03e72, 68t37.

14: Gao, Y., Farahani, M. R., **Sardar, M. S.**, & **Zafar, S.** (2017). On the Sanskruti index of circumcoronene series of Benzenoid. *Applied Mathematics, 8*(4), 520-524. **(SJR)**

Abstract: Let $G = (V; E)$ be a simple connected graph. The sets of vertices and edges of G are denoted by $V = V(G)$ and $E = E(G)$, respectively. In such a simple molecular graph, vertices represent atoms and edges represent bonds. The Sanskruti index $S(G)$ is a topological index was defined as $S(G) = \sum_{uv \in E(G)} \left(\frac{S_u S_v}{S_u + S_v - 2} \right)^3$ where S_u is the summation of degrees of all neighbors of vertex u in G. The goal of this paper is to compute the Sanskruti index for circumcoronene series of benzenoid.

Keywords: Sanskruti Index, Molecular Graph, Circumcoronene Series of Benzenoid.

15: Sharif, M., & **Manzoor, R.** (2017). Shear-free axial model in massive Brans–Dicke gravity. *Annals of Physics, 376*, 1-16. **(JCR)**

Abstract: This paper explores the influences of dark energy on the shear-free axially symmetric evolution by considering self-interacting Brans–Dicke gravity as a dark energy candidate. We describe energy source of the model and derive all the effective dynamical variables as well as effective structure scalars. It is found that scalar field is one of the sources of anisotropy and

dissipation. The resulting effective structure scalars help to study the dynamics associated with dark energy in any axial configuration. In order to investigate shear-free evolution, we formulate a set of governing equations along with heat transport equation. We discuss consequences of shear-free condition upon different SBD fluid models like dissipative non-geodesic and geodesic models. For dissipative non-geodesic case, the rotational distribution turns out to be the necessary and sufficient condition for radiating model. The dissipation depends upon inhomogeneous expansion. The geodesic model is found to be irrotational and non-radiating. The non-dissipative geodesic model leads to FRW model for positive values of the expansion parameter.

Keywords: Self-Interacting Brans–Dicke Theory, Self-Gravitating System, Structure Scalar, Non-Spherical Source.

16: Sharif, M., & **Manzoor, R**. (2017). Dark energy and collapsing axial system. *International Journal of Modern Physics D, 26*(06), 1750057. **(JCR)**

Abstract: This paper investigates the effects of dark source term on the dissipative axially symmetric collapse by taking self-interacting Brans–Dicke (SBD) gravity as a dark energy (DE) candidate. We discuss physically feasible energy source of the model and formulate all the dynamical variables as well as structure scalars. It is found that the dark source term is one of the source of anisotropy and dissipation in the system. Further, we obtain structure scalars in this background. In order to discuss factors describing dissipative collapse, we develop equations related to the evolution of dynamical variables, heat transport equation as well as super-Poynting vector. We conclude that the thermodynamics of the collapse, evolution of kinematical terms (like expansion scalar, shear and vorticity) and inhomogeneity are affected by dark source term. Finally, we study the existence of radiation having repulsive gravitational nature in this collapse scenario.

Keywords: Self-Interacting Brans–Dicke Theory, Self-Gravitating Systems, Structure Scalars, Axial Sources.

17: Ansari, A. H., **Saleem, N**., Fisher, B., & Khan, M. (2017). C-class function on Khan type fixed point theorems in generalized metric space. *Filomat, 31*(11), 3483-3494. **(JCR)**

Abstract: The aim of this article is to study common fixed point theorems in generalized metric spaces and obtain sufficient conditions for the existence of C-class function on Khan type common fixed points of a pair of mappings satisfying generalized contraction involving rational expressions. Also, some examples are obtained to support the obtained result. Also obtained results further generalize, extend and unify already existing results in literature.

Keywords: Common Fixed Point, Contractive Type Mapping, Generalized Metric Space, C-Class Function.

18: **Noureen, I**., & Zubair, M. (2017). Axially symmetric shear-free fluids in f (R, T) gravity. *International Journal of Modern Physics D, 26*(11), 1750128. **(JCR)**

Abstract: In this work, we have discussed the implications of shear-free condition on axially symmetric anisotropic gravitating objects in f(R,T)f(R,T) theory. Restricted axial symmetry ignoring rotation and reflection entries containing three independent metric functions is taken into account for establishment of instability range. Implementation of linear perturbation on constitutive modified dynamical equations yield evolution equation. This equation associates

adiabatic index ΓΓ with material and dark source components of physical parameters defining stable and unstable regions in Newtonian (N) and post-Newtonian (pN) approximations. It is remarked that the axial system evolving under shear-free condition implicates high levels of stability in anisotropic environment.

Keywords: f(R,T)f(R,T) Gravity, Axial Symmetry, Instability Range, Shear-Free Condition, Adiabatic Index.

19: Hussain, T., Khurshudyan, M., **Ahmed, S**., & Khurshudyan, A. (2017). Role of structure scalars on viscous and heat conducting spherical systems in f (R, T) gravity. *International Journal of Modern Physics D, 26*(14), 1750155. **(JCR)**

Abstract: In this paper, we analyze some dynamical features of spherical celestial objects through structure scalars in f(R,T)f(R,T) gravitational theory, where RR and TT are the Ricci scalar and the trace of energy–momentum tensor, respectively. In this framework, we consider our relativistic geometry to be spherical in shape filled with radiating viscous and shearing fluid content. We formulate extended version of structure scalars by orthogonal decomposition of the Riemann tensor with and without constant RR and TTbackgrounds. We discuss the effects of dark source corrections on the construction of expansion and shear evolution equations via scalar variables. It is inferred that like general relativity, one can investigate the evolutionary stages of stellar compact objects with the help of extended scalar parameters.

Keywords: Gravitation, Structure Scalars, Relativistic Dissipative Fluids.

20: Cho, Y. J., **Chowdhury, M. S. R**., & Ha, J. A. (2017). Generalized bi-quasi-variational-like inequalities on non-compact sets. *Communications of the Korean Mathematical Society, 32*(4), 933-957. **(JCR)**

Abstract: In this paper, we prove some existence results of solutions for a new class of generalized bi-quasi-variational-like inequalities (GBQVLI) for (eta-h)-quasi-pseudo-monotone type I and strongly (eta-h)-quasi-pseudo-monotone type I operators defined on non-compact sets in locally convex Hausdorff topological vector spaces. To obtain our results on GBQVLI for (eta-h)-quasi-pseudo-monotone type I and strongly (eta-h)-quasi-pseudo-monotone type I operators, we use Chowdhury and Tan's generalized version of Ky Fan's minimax inequality as the main tool.

Keywords: Generalized Bi-Quasi-Variational-Like Inequalities, (N-H)-Quasipseudomonotone Type I Operators, Locally Convex Hausdorff Topological Vector Spaces.

21: **Ali, U**., **Bilal, M., Zafar, S.,** & **Zahid, Z**. (2017). Some families of convex polytopes labeled by 3-total edge product cordial labeling. *Punjab University Journal of Mathematics, 49*(3), 119-132. **(HEC X-Cat.)**

Abstract: For a graph G = (VG, EG), consider a mapping h : EG → {0, 1, 2, . . . , k − 1}, 2 ≤ k ≤ |EG| which induces a mapping h ∗ : VG → {0, 1, 2, . . . , k − 1} such that h ∗ (v) = Qn i=1 h(ei)(mod k), where ei is an edge incident to v. Then h is called k-total edge product cordial (kTEPC) labeling of G if |s(i) − s(j)| ≤ 1 for all i, j ∈ {1, 2, . . . , k − 1}. Here s(i) is the sum of all vertices and edges labeled by i. In this paper, we study k-TEPC labeling for some families of convex polytopes for k = 3.

Keywords: 3-TEPC Labeling, The Graphs of Convex Polytopes.

22: Imran, M., Aslam, A., **Zafar, S.**, & Nazeer, W. (2017). Further results on edge irregularity strength of graphs. *Indonesian Journal of Combinatorics, 1*(2), 82-91. **(NR)**

Abstract: A vertex k-labelling $\phi:V(G)\longrightarrow \{1,2,\ldots,k\}$ is called irregular k-labeling of the graph G if for every two different edges e and f, there is $w_{\phi}(e)\neq w_{\phi}(f)$; where the weight of an edge is given by $e=xy\in E(G)$ is $w_{\phi (xy)=\phi(x)+\phi(y)$. The minimum k for which the graph G has an edge irregular k-labelling is called \emph{edge irregularity strength} of G, denoted by $es(G)$. In the paper, we determine the exact value of the edge irregularity strength of caterpillars, n-star graphs, (n,t)-kite graphs, cycle chains and friendship graphs.

Keywords: Irregular Assignment, Irregular Total K-Labeling, Irregularity Strength.

23: Bashir, Z., Wątróbski, J., **Rashid, T.**, Sałabun, W., & Ali, J. (2017). Intuitionistic-fuzzy goals in zero-sum multi criteria matrix games. *Symmetry, 9*(8), 158. **(JCR)**

Abstract: The classical matrix theory is deficient to express the vagueness of the real life. The fuzzy set theory has been successfully applied to bridge this gap. Much work has already been done on a two-person zero sum matrix game with fuzzy goals. In continuation, this paper is dedicated to define and study a multi-criteria two-person zero sum game with intuitionistic fuzzy goals. It is shown that solving such games is equivalent to solving two crisp multi object linear programming problems. Our work generalizes the previous study on a multi-criteria game with fuzzy goals by adopting the approach of linear programming with intuitionistic fuzzy sets. Finally, an illustrative numerical example is provided to elaborate the proposed approach.

Keywords: Intuitionistic Fuzzy Sets, I-Fuzzy Goals, Zero-Sum Matrix Game, Pareto Optimal Security Strategies, Multi-Criteria Linear Programming.

24: Rashid, K., Razzaq, A., Ahmad, M., **Rashid, T.**, & Tariq, S. (2017). Experimental and analytical selection of sustainable recycled concrete with ceramic waste aggregate. *Construction and Building Materials*, 154, 829-840. **(JCR)**

Abstract: This experimental and analytical investigation is conducted to develop a sustainable recycled concrete by incorporating ceramic waste as coarse aggregate. In order to achieve the designed goal, conventional aggregate is replaced by different amounts of ceramic waste aggregate. Fresh and hardened properties of conventional as well as ceramic waste aggregate concrete are assessed. Environmental impacts are also considered in terms of CO_2 footprints and consumption of volume of raw materials by concrete. Interfacial model is proposed at micro level to evaluate the behavior of ceramic waste and conventional aggregate with hydrated cement paste. Finally, sustainable concrete is selected which has the best performance with respect to compressive strength and environmental impacts. It is concluded that 30% partial replacement of ceramic waste aggregate with conventional aggregate provides the highest compressive strength, less environmental impacts and is selected as sustainable concrete, which is also verified by analytical hierarchy process (AHP) and technique for order preference by similarity to ideal solution (TOPSIS)

Keywords: Ceramic Waste Aggregate, Concrete, Workability, Compressive Strength, Interfacial Model, Analytical Selection Techniques.

25: Rashid, K., & **Rashid, T.** (2017). Fuzzy logic model for the prediction of concrete compressive strength by incorporating green foundry sand. *Computers and Concrete, 19*(6), 617-623. **(JCR)**

Abstract: This work is conducted with the aim of using waste material to reserve the natural resources. The objective is accomplished by conducting experimentation and verify by modeling based on fuzzy logic. In experimentation, concrete is casted by using natural/river sand as fine aggregate and termed as control specimen. Natural sand is conserved by replacing it with used foundry sand (UFS) by an amount of 10, 20 and 30% by weight. Fresh and hardened properties of concrete are investigated at different ages. It is observed that compressive strength and modulus of elasticity reduced with the increase in amount of UFS. Furthermore, concrete compressive strength is predicted by using fuzzy logic model and verified at different replacement ratio and age with experimental observations.

Keywords: Conservation, Natural River Sand, Used Foundry Sand, Compressive Strength, Fuzzy Logic Model.

26: **Faizi, S.,** Sałabun, W., **Rashid, T.**, Wątróbski, J., & **Zafar, S**. (2017). Group decision-making for hesitant fuzzy sets based on characteristic objects method. *Symmetry, 9*(8), 136. **(JCR)**

Abstract: There are many real-life problems that, because of the need to involve a wide domain of knowledge, are beyond a single expert. This is especially true for complex problems. Therefore, it is usually necessary to allocate more than one expert to a decision process. In such situations, we can observe an increasing importance of uncertainty. In this paper, the Multi-Criteria Decision-Making (MCDM) method called the Characteristic Objects Method (COMET) is extended to solve problems for Multi-Criteria Group Decision-Making (MCGDM) in a hesitant fuzzy environment. It is a completely new idea for solving problems of group decision-making under uncertainty. In this approach, we use L-R-type Generalized Fuzzy Numbers (GFNs) to get the degree of hesitancy for an alternative under a certain criterion. Therefore, the classical COMET method was adapted to work with GFNs in group decision-making problems. The proposed extension is presented in detail, along with the necessary background information. Finally, an illustrative numerical example is provided to elaborate the proposed method with respect to the support of a decision process. The presented extension of the COMET method, as opposed to others' group decision-making methods, is completely free of the rank reversal phenomenon, which is identified as one of the most important MCDM challenges.

Keywords: Hesitant Fuzzy Sets, L-R-Type Generalized Fuzzy Numbers, Multi-Criteria Group Decision-Making (MCGDM), Characteristic Objects Method (COMET).

27: **Zafar, S.** (2017). Some new classes of sequentially Cohen-Macaulay binomial edge ideals. *Utilitas Mathematica, 105*, 173-189. **(JCR)**

Abstract: Not available.

28: Azam, M., & **Azmi, S. A. M.** (2017). Cracking of charged polytropes with generalized polytropic equation of state. *The European Physical Journal C, 77*(2), 113. **(JCR)**

Abstract: We discuss the occurrence of cracking in charged anisotropic polytropes with generalized polytropic equation of state through two different assumptions; (i) by carrying out local density perturbations under a conformally flat condition (ii) by perturbing anisotropy, polytropic index and charge parameters. For this purpose, we consider two

different definitions of polytropes that exist in literature. We conclude that under local density perturbations scheme cracking does not appear in both types of polytropes and stable configuration is observed, while with the second type of perturbation cracking appears in both types of polytropes under certain conditions.

Keywords: Parametric, Perturbation Compact, Distribution Perturbation, Scheme Polytropic Index.

29: **Azmi, S. A. M.**, & Azam, M. (2017). Cracking of anisotropic cylindrical polytropes. *The European Physical Journal C, 77*(6), 385. **(JCR)**

Abstract: We study the appearance of cracking in charged anisotropic cylindrical polytropes with generalized polytropic equation. We investigate the existence of cracking in two different kinds of polytropes existing in the literature through two different assumptions: (a) local density perturbation with conformally flat condition, and (b) perturbing polytropic index, charge and anisotropy parameters. We conclude that cracking appears in both kinds of polytropes for a specific range of density and model parameters.

30: Azam, M., & **Azmi, S. A. M.** (2017). On cracking of charged anisotropic polytropes. *Journal of Cosmology and Astroparticle Physics, 2017*(01), 040. **(JCR)**

Abstract: Recently in [1], the role of electromagnetic field on the cracking of spherical polytropes has been investigated without perturbing charge parameter explicitly. In this study, we have examined the occurrence of cracking of anisotropic spherical polytropes through perturbing parameters like anisotropic pressure, energy density and charge. We consider two different types of polytropes in this study. We discuss the occurrence of cracking in two different ways (*i*) by perturbing polytropic constant, anisotropy and charge parameter (*ii*) by perturbing polytropic index, anisotropy and charge parameter for each case. We conclude that cracking appears for a wide range of parameters in both cases. Also, our results are reduced to [2] in the absence of charge.

31: **Asjad, M. I.,** Khan, I., Ahmad, M., Shah, N., & Nazar, M. (2017). Heat and mass transport of differential type fluid with non-integer order time-fractional Caputo derivatives. *Journal of Molecular Liquids, 229*, 67-75. **(JCR)**

Abstract: Natural convection flow of differential type fluid with non-integer order Caputo-fractional derivatives is investigated in this study. The non-dimensional temperature, concentration, and velocity fields are solved by using the Laplace transform method. There is no such result regarding second grade fluid with non-integer order Caputo fractional derivatives established. The obtained solutions are expressed in terms of G-function, Mittage-Leffler function, Robotnov-Hartley and Wright's function. Some known solutions from literature are recovered as a limiting case. Expression for Nusselt and Sherwood numbers with non-integer and integer order, respectively, are also determined. Numerical computations and graphical discussion were made to observe influence of Caputo-time fractional parameter α and second grade parameter α_2 on the fluid flow. A comparison for second grade and viscous fluid for non-integer and integer order is also depicted. It is also observed that ordinary fluids have greater velocities than fractional fluids. This shows that how non-integer order fractional parameter affects the fluid flow.

Keywords: Fractional Calculus, Natural Convection, Newtonian Heating, Second Grade Fluid,

Exact Solutions, Chemical Reaction, Mass Diffusion.

32: **Asjad, M. I.**, Shah, N. A., **Aleem, M.**, & Khan, I. (2017). Heat transfer analysis of fractional second-grade fluid subject to Newtonian heating with Caputo and Caputo-Fabrizio fractional derivatives: A comparison. *The European Physical Journal Plus, 132*(8), 340. **(JCR)**

Abstract: The present study is a comparative analysis of unsteady flows of a second-grade fluid with Newtonian heating and time-fractional derivatives, namely, the Caputo fractional derivative (singular kernel) and the Caputo-Fabrizio fractional derivative (non-singular kernel). A physical model for second-grade fluids is developed with fractional derivatives. The expressions for temperature and velocity fields in dimensionless form as well as rates of heat transfer are determined by means of the Laplace transform technique. Solutions for ordinary cases corresponding to integer order derivatives are also obtained. Numerical computations for a comparison between the solutions of the problem with the Caputo time-fractional derivative, problem with Caputo-Fabrizio time-fractional derivative and of the ordinary fluid problem were made. The influence of some flow parameters and fractional parameter αα on temperature field as well as velocity field was presented graphically and in tabular forms.

33: Butt, A. R., Abdullah, M., Raza, N., & **Asjad, M. I.**, (2017). Influence of non-integer order parameter and Hartmann number on the heat and mass transfer flow of a Jeffery fluid over an oscillating vertical plate via Caputo-Fabrizio time fractional derivatives. *The European Physical Journal Plus, 132*(10), 414. **(JCR)**

Abstract: In this work, semi analytical solutions for the heat and mass transfer of a fractional MHD Jeffery fluid over an infinite oscillating vertical plate with exponentially heating and constant mass diffusion via the Caputo-Fabrizio fractional derivative are obtained. The governing equations are transformed into dimensionless form by introducing dimensionless variables. A modern definition of the Caputo-Fabrizio derivative has been used to develop the fractional model for a Jeffery fluid. The expressions for temperature, concentration and velocity fields are obtained in the Laplace transformed domain. We have used the Stehfest's and Tzou's algorithm for the inverse Laplace transform to obtain the semi analytical solutions for temperature, concentration and velocity fields. In the end, in order to check the physical impact of flow parameters on temperature, concentration and velocity fields, results are presented graphically and in tabular forms.

34: De la Sen, M., **Abbas, M.**, & **Saleem, N**. (2016). On optimal fuzzy best proximity coincidence points of fuzzy order preserving proximal $\Psi(\sigma, \alpha)$-lower-bounding asymptotically contractive mappings in non-Archimedean fuzzy metric spaces. *SpringerPlus*, *5*(1), 1478. **(JCR)**

Abstract: This paper discusses some convergence properties in fuzzy ordered proximal approaches defined by {(gn, Tn)}—sequences of pairs, where g : A → A is a surjective self-mapping and T : A → B, where Aand Bare nonempty subsets of and abstract nonempty set X and (X, M, ∗, ≺) is a partially ordered non-Archimedean fuzzy metric space which is endowed with a fuzzy metric M, a triangular norm * and an ordering ≺. The fuzzy set M takes values in a sequence or set {Mσn } where the elements of the socalled switching rule {σn} ⊂ Z+ are defined from X × X × Z0+ to a subset of Z+. Such a switching rule selects a particular realization of M at the nth iteration and it is parameterized by a growth evolution sequence {αn} and a sequence or set {ψσn } which belongs to the so-called Ψ (σ, α)-lower-bounding mappings which are

defined from [0, 1] to [0, 1]. Some application examples concerning discrete systems under switching rules and best approximation solvability of algebraic equations are discussed.

Keywords: Fixed Points, Best Proximity Points, Fuzzy Set, Fuzzy Metric, Optimal Fuzzy Best Proximity Coincidence Points, Proximal, Ψ (Σ, A)-Lower-Bounding Mapping, Ψ (Σ, A)-Lower-Bounding Asymptotically Contractive Mapping, Switching Rule.

35: Sharif, M., & **Manzoor, R.** (2018). Stability of oscillating gaseous masses in massive Brans–Dicke gravity. *International Journal of Modern Physics D, 27*(01), 1750172. **(JCR)**

Abstract: This paper explores the instability of gaseous masses for the radial oscillations in post-Newtonian correction of massive Brans–Dicke (BD) gravity. For this purpose, we derive linearized perturbed equation of motion through Lagrangian radial perturbation which leads to the condition of marginal stability. We discuss radius of instability of different polytropic structures in terms of the Schwarzschild radius. It is concluded that our results provide a wide range of difference with those in general relativity and BD gravity.

Keywords: Brans–Dicke Theory, Hydrodynamics, Instability, Newtonian and Post-Newtonian Regimes.

36: Sharif, M., & **Manzoor, R**. (2017). Static axially symmetric models and structure scalars in self-interacting brans–dicke gravity. *Communications in Theoretical Physics, 68*(1), 39. **(JCR)**

Abstract: This paper investigates static axially symmetric models in self-interacting Brans–Dicke gravity. We discuss physically feasible sources of models, derive field equations as well as evolution equations from Bianchi identities and construct structure scalars. Using these scalars and evolution equations, the inhomogeneity factors of the system are evaluated. It is found that structure scalars related to double dual of Riemann tensor control the density inhomogeneity. Finally, we obtain exact solutions of homogenous isotropic and inhomogeneous anisotropic spheroid models. It turns out that homogenous solutions reduce to Schwarzschild type interior solutions for a spherical case. We conclude that homogenous models involve homogenous distribution of scalar field whereas inhomogeneous correspond to inhomogeneous scalar field.

37: **Ali, A**. (2017). Comment on "Topological indices study of molecular structure in anticancer drugs". *Journal of Chemistry, 2017*. **(JCR)**

Abstract: Not available.

38: **Ali, A**., & Du, Z. (2017). On the difference between atom-bond connectivity index and Randić index of binary and chemical trees. *International Journal of Quantum Chemistry, 117*(23), e25446. **(JCR)**

Abstract: This article is devoted to establishing some extremal results with respect to the difference of two well-known bond incident degree indices [atom-bond connectivity (*ABC*) index and Randić (*R*) index] for the chemical graphs representing alkanes. More precisely, the first three extremal trees with respect to $ABC - R$ are characterized among all n-vertex binary trees (the trees with maximum degree at most 3). The n-vertex chemical trees (the trees with maximum degree at most 4) having the first three maximum $ABC - R$ values are also determined.

Keywords: Atom-Bond Connectivity Index, Binary Trees, Chemical Trees, External Values, Randic Index.

39: **Ali, A.,** & Bhatti, A. A. (2016). A note on the minimum reduced reciprocal Randi\'c index of n-vertex unicyclic graphs. *arXiv*, 1-10. **(NR)**

Abstract: The graph having the minimum reduced reciprocal Randi´c index is characterized among the class of all unicyclic graphs with fixed number of vertices.

Keywords: Topological index, Reduced Reciprocal Randi´C Index, Unicyclic Graph.

40: Hasni, R., & **Ali, A**. (2017). Some remarks on "The forgotten topological index of some drug structures": *Acta Medica Mediterranea*, *33*(2), 203-204. **(JCR)**

Abstract: In this letter, most (five out of six) of the closed form formulas reported in the paper [W. Gao, M. R. Farahani, L. Shi, The forgotten topological index of some drug structures, Acta Medica Mediterranea, 2016, 32: 579] are obtained in alternative way, either from already known results or from the general expression, derived from the already known graph quantities.

41: Shafique, S., & **Ali, A**. (2017). On the reduced second Zagreb index of trees. *Asian-European Journal of Mathematics, 10*(04), 1750084. **(JCR)**

Abstract: The current note is devoted to investigate the trees, which maximize or minimize the reduced second Zagreb index among all nn-vertex trees with fixed number of segments. This note also involves development of some results, which may be used to characterize the extremal trees with respect to the aforementioned index among all nn-vertex trees having fixed number of branching vertices.

Keywords: Topological Index, Reduced Second Zagreb Index, Segment, Branching Vertex, Tree.

42: **Saleem, N**., **Abbas, M**, & Raza, Z. (2017). Fixed fuzzy point results of generalized Suzuki type F-contraction mappings in ordered metric spaces. *Georgian Mathematical Journal*. **(JCR)**

Abstract: The aim of this paper is to introduce generalized Suzuki type F-contraction fuzzy mappings and to prove the existence of fixed fuzzy points for such mappings in the setup of complete ordered metric spaces. An example is provided to show the validity of our results, followed by couple of remarks about the comparison of obtained results with the existing results in the literature. An application of our result to the domain of words is also presented.

Keywords: F-Contraction, Fixed Fuzzy Point, Fuzzy Mapping, Fuzzy Set, Approximate Quantity.

43: Gao, W., Nadeem, M., **Zafar, S**., **Zahid, Z.,** & Farahani, M. (2017). On the para-line graphs of certain nanostructures based on topological indices. *University Politehnica of Bucharest Scientific Bulletin Series B-Chemistry and Materials Science, 79*(4), 93-104. **(JCR)**

Abstract: Topological indices are valuable in the study of QSAR/QSPR. There are numerous applications of graph theory in the field of structural chemistry. In this paper, we computed generalized Randić, general Zagreb, general sum-connectivity, ABC, GA, ABC4 and GA5 indices of the Para-line graph of V-Pantacenic nanotube, H-Pantacenic nanotube and V-Pantacenic nanotorus.

Keywords: Topological Indices, Para-line Graph, Nanostructures.

44: **Zafar, S.** (2017). Some new classes of sequentially Cohen-Macaulay binomial edge ideals. *Utilitas Mathematica, 105*, 173-189. **(JCR)**

Abstract: We study some classes of graphs G and its binomial edge ideals with their algebraic properties. In this context the notion of sequentially Cohen-Macaulay is a natural generalization of Cohen-Macaulay property seldom among the binomial edge ideals. So we investigate classes of sequentially Cohen-Macaulay binomial edge ideals. Moreover there are examples of binomial edge ideals that are not sequentially Cohen-Macaulay.

Keywords: Binomial Edge Ideal, Sequentially Cohen-Macaulay Ring.

45: Zhang, X., Sardar, M. S, **Zahid, Z.**, Rezaei, M., & Farahani, M. R. (2017). Computing Sanskruti index of capra-designed planar benzenoid series Cak(C6). *International Journal of Pure and Applied Mathematics, 115*(4). **(SJR)**

Abstract: Let G = (V, E) be a molecular graph, such that vertices represent atoms and edges are chemical bonds. The Sanskruti index of a graph G is a topological index was defined as S(G) = P uv∈E(G) (SuSv Su+Sv−2) 3 where Su is the summation of degrees of all neighbors of vertex u in G. This connectivity indices is very important and they has a prominent role in chemistry. In this paper, we focus on the structure of Capra-designed planar benzenoid series Cak(C6) (k ≥ 0) and compute on this above topological descriptor.

Keywords: Molecular Graph, Benzenoid, Capra Operation, Topological Index, Sanskruti Index.

46: Mahmood, W., & **Zahid, Z**. (2017). A note on endomorphisms of local cohomology modules. *Bulletin of the Korean Mathematical Society, 54*(1), 321-329. **(JCR)**

Abstract: Let I denote an ideal of a local ring (R, m) of dimension n. Let M denote a finitely generated R-module. We study the endomorphism ring of the local cohomology module Hc I (M), c = grade(I, M). In particular there is a natural homomorphism HomRˆI (Mˆ I , Mˆ I) → HomR(Hc I (M), Hc I (M)), where ˆ· I denotes the I-adic completion functor. We prove sufficient conditions such that it becomes an isomorphism. Moreover, we study a homomorphism of two such endomorphism rings of local cohomology modules for two ideals J ⊂ I with the property grade(I, M) = grade(J, M). Our results extends constructions known in the case of M = R (see e.g. [8], [15], [16]).

47: Nadeem, M. F., **Zafar, S**., & **Zahid, Z** (2017). Some topological indices of L(S(CNCk[n])). *Journal of Mathematics, 49*(1), 13-17. **(HEC-X Cat.)**

Abstract: A topological index is a function which associates real number to the graphs. Graph theory is significant in the subject of structural chemistry. In this paper we calculated Rα, Mα, χα, ABC, GA, ABC4 and GA5 indices of L(S(CNCk[n])).

Keywords: Line Graph, Topological Indices, Nanocones, Subdivision Graph.

48: Shah, N. A., **Asjad, M. I**., & **Miraj, F**. (2017). Exact solutions of time fractional free convection flows of viscous fluid over an isothermal vertical plate with caputo and caputo-fabrizio derivatives. *Journal of Prime Research in Mathematics, 13*. **(SJR)**

Abstract: The unsteady time fractional free convection flow of an incompressible Newtonian fluid over an infinite vertical plate due to an impulsive motion of the plate and constant temperature at the boundary is analyzed. The old (Caputo) and new (Caputo-Fabrizio) fractional derivative approaches have been used to develop a physical model and a comparison has been

drawn between their solutions. Boundary layers equations in non-dimensional form are solved analytically by the Laplace transform technique. Exact solutions for velocity and temperature are obtained in terms of Wrights function. The expressions for rate of heat transfer in both cases are also determined. Solutions for integer order derivatives are obtained as limiting case. Numerical computations were made through software Mathcad and observed some physical aspects of fractional and material parameters are presented. It is found that the rate of heat transfer of Caputo-Fabrizio model have higher values than Caputo one as we increased the value of fractional parameter and fractional fluids tend to superpose to that of ordinary fluid.

Keywords: Viscous Fluid, Free Convection, Vertical Plate, Caputo and Caputo-Fabrizio Fractional Derivative, Exact Solutions, AMS Subject, Primary, 14H50, 14H20, 32S15.

49: Bashir, Z., Wątróbski, J., **Rashid, T.**, **Zafar, S.**, & Sałabun, W. (2017). chaotic dynamical state variables selection procedure based image encryption scheme. *Symmetry, 9*(12), 312. **(JCR)**

Abstract: Nowadays, in the modern digital era, the use of computer technologies such as smartphones, tablets and the Internet, as well as the enormous quantity of confidential information being converted into digital form have resulted in raised security issues. This, in turn, has led to rapid developments in cryptography, due to the imminent need for system security. Low-dimensional chaotic systems have low complexity and key space, yet they achieve high encryption speed. An image encryption scheme is proposed that, without compromising the security, uses reasonable resources. We introduced a chaotic dynamic state variables selection procedure (CDSVSP) to use all state variables of a hyper-chaotic four-dimensional dynamical system. As a result, less iterations of the dynamical system are required, and resources are saved, thus making the algorithm fast and suitable for practical use. The simulation results of security and other miscellaneous tests demonstrate that the suggested algorithm excels at robustness, security and high speed encryption.

Keywords: Chaotic Maps, Chaotic Dynamical Systems, Time-Varying Delays.

50: Rezaei, M., Sardar, M. S., **Zafar, S.**, & Farahani, M. R. (2017). Narumi-katayama and modified narumi-katayama indices of graphs. *Journal of Prime Research in Mathematics, 13*, 08-15. **(HEC Y-Cat.)**

Abstract: Let G be a simple connected molecular graph in chemical graph theory, then its vertices correspond to the atoms and the edges to the bonds. Chemical graph theory is an important branch of graph theory, such that there exits many topological indices in it. Also, computing topological indices of molecular graphs is an important branch of chemical graph theory. Topological indices are numerical parameters of a molecular graph G which characterize its topology. In the present study we compute and report several results of the Narumi-Katayama and modified NarumiKatayama indices for some widely used chemical molecular structures.

Keywords: Zagreb Indices, Narumi-Katayama Index, Multiple Zagreb Index, Chemical Molecular Structures, Bridge Graph, Triangular Benzenoid, AMS Subject, 05C12, 05C90.

51: **Saleem, N.**, Ansari, A., Pavlović, M., & Radenović, S. (2017). Some new results in the framework of Sb-metric spaces. *Scientific Publications of the State University of Novi Pazar Series A: Applied Mathematics, Informatics and mechanics, 9*(2), 151-165. **(NR)**

Abstract: In this paper, we consider Sb− metric space as a generalization of metric space. Also we obtained some common fixed point results using C–class function with refinement inequality in Sb–metric spaces. Further, we present one example, which shows that obtained results are proper generalization of the results in literature.
Keywords: Common Fixed Point, C -Class Function, Refinement Inequality, Sb–Metric Space.

52: **Javaid, M.** (2017). Minimizing graph of the connected graphs whose complements are bicyclic with two cycles. *Turkish Journal of Mathematics, 41*(6), 1433-1445. **(JCR)**

Abstract: In a certain class of graphs, a graph is called minimizing if the least eigenvalueof its adjacency matrix attains the minimum. A connected graph containing two or three cycles is called a bicyclic graph if its number of edges is equal to its number of vertices plus one. In this paper, we characterize the minimizinggraph among all the connected graphs that belong to a class of graphs whose complements are bicyclic with two cycles.
Keywords: Adjacency Matrix, Least Eigenvalue, Bicyclic Graphs.

53: **Saleem, N**., & Beloul, S. (2017). Common fixed point theorems for weakly subsequentially continuous mappings in modified intuitionistic fuzzy metric spaces. *Universal Journal of Applied Mathematics, 5*(5), 96-105. **(NR)**

Abstract: The aim of this paper is to establish some common fixed point results for two weakly subsequentially continuous and compatible of type (E) pairs of self mappings via implicit relation in modified intuitionistic fuzzy metric spaces, also we give an example to illustrate our results.
Keywords: Common Fixed Point, Weakly Subsequentially Continuous, Compatible of Type (E), Modified IFMS.

54: Gao, W., **Sardar, M. S., Zafar, S., & Zahid, Z** (2017). Coordinate descent based ontology sparse vector computing strategy and its applications. *Cluster Computing*, 1-15. **(JCR)**

Abstract: In recent years, as a semantic analysis and computational tool, ontology has been widely applied in many engineering applications. Many cases suggests that it's confronted with countless big data source with the complex data structures. In order to relieve the dilemma, the sparse learning algorithms are introduced into the ontology similarity measuring and ontology mapping. In this setting, it should be a high dimensional expression of each ontology vertex, and the ontology algorithm should extract key component information effectively. Under such background, we consider the ontology sparse vector learning algorithm and application in different engineering applications. In this article, by means of coordinate descent minimization tricks, we present the ontology sparse vector optimization strategy and discuss the different transformation in different settings. At last, the new ontology sparse vector learning proceeding is applied to four engineering applications respectively to get its efficiency verified.
Keywords: Ontology, Similarity Measure, Ontology Mapping, Sparse Vector.

55: Vetro, C., **Abbas, M**., & Suleiman, Y. (2017). A simulation function approach for best proximity point and variational inequality problems. *Miskolc Mathematical Notes, 18*(1), 3-16. **(JCR)**

Abstract: We study sufficient conditions for existence of solutions to the global optimization problem minx2A d.x;f x/; where A; B are nonempty subsets of a metric space .X; d / and f W A ! B belongs to the class of proximal simulative contraction mappings. Our results unify, improve

and generalize various comparable results in the existing literature on this topic. As an application of the obtained theorems, we give some solvability theorems of a variational inequality problem.

Keywords: Best Proximity Point, Fixed Point, Simulation Functions, Variational Inequality Problems.

56: Alofia, A. S. M., Al-Mazrooeib, A. E., Leyewc, B. T., & **Abbas, M**. (2017). Common fixed points of α− dominated multivalued mappings on closed balls in a dislocated quasi b-metric space. *Journal of Nonlinear Sciences and Applications, 10*(7), 3456-3476. **(JCR)**

Abstract: In this paper, we introduce the concept of α−dominated multivalued mappings and establish the existence of common fixed points of such mappings on a closed ball contained in left/right K−sequentially complete dislocated quasi b-metric spaces. These results improve, generalize, extend, unify and complement various comparable results in the existing literature. Our results not only extend some primary results to left/right K−sequentially dislocated quasi b-metric spaces but also restrict the contractive conditions on a closed ball only. Some examples are presented in support of our new results. Finally as an application, we obtain some common fixed point results for single valued mappings by an application of the corresponding results for multivalued valued mappings satisfying the contractive conditions more general than Banach type and Kannan type contractive conditions on closed balls in a left K−sequentially complete dq b-metric space endowed with an arbitrary binary relation.

Keywords: Left/Right K−Sequentially Complete, Dislocated Quasi B-Metric Spaces, A−Dominated Multivalued Mapping, Closed Ball, Common Fixed Point.

57: Alolaiyan, H. A., Ali, B., & **Abbas, M**. (2017). Fixed point results of Edelstein-Suzuki type multivalued mappings on b-metric spaces with applications. *Journal of Nonlinear Sciences and Applications, 10*(3), 1201-1214. **(JCR)**

Abstract: We obtain Edelstein-Suzuki type theorems for multivalued mappings in compact b-metric spaces. Moreover, we prove the existence of coincidence and common fixed points of a hybrid pair of mappings that satisfies Edelstein-Suzuki type contractive condition. We present some examples along with a comparison with results in existing literature. In the end, we present some corollaries in the metric spaces with applications in best approximation theory. c 2017 All rights reserved.

Keywords: Edelstein-Suzuki, Metric Space, Multivalued Mapping, Best Approximations, Fixed Point.

58: **Azam, M. K**., Farid, G., & **Rehman, M. A**. (2017). Study of generalized type K-fractional derivatives. *Advances in Difference Equations, 2017*(1), 249. **(JCR)**

Abstract: In this paper, the generalized type *k*-fractional derivatives are introduced and their semi-group, commutative and inverse properties are presented. These derivatives can be reduced to other fractional derivatives by substituting the values of the parameters involved. The Mellin transform of generalized Caputo type *k*-fractional derivative is also found.

Keywords: Generalized K-Fractional Derivative, Generalized Caputo Type K-Fractional Derivative, Mellin Transform.

59: **Ijaz, S**., Saleem, N, & **Munawar, S**. (2017). Slip effect on the magnetohydrodynamics channel flow in the presence of the across mass transfer phenomenon. *Journal of Applied Mechanics and Technical Physics, 58*(1), 54-62. **(JCR)**

Abstract: This paper deals with the slip effect on the across mass transfer (AMT) phenomenon in a three-dimensional flow of a hydromagnetic viscous fluid in a channel with a stretching lower wall. Both walls of the channel are considered to be porous so that the AMT phenomenon can be established. The governing equations are solved analytically. The accuracy of the series solution is proved by comparing the results with a numerical solution. The slip condition is observed to be helpful in reducing the viscous drag on the stretching sheet.

Keywords: Across Mass Transfer (Amt), Analytical Solution, Channel Flow, MHD, Slip Condition.

60: Javaid, M., Liu, J.-B., **Rehman, M. A,** & Wang, S. (2017). On the certain topological indices of Titania Nanotube TiO2 [m, n]. *Zeitschrift für Naturforschung A, 72*(7), 647-654. **(JCR)**

Abstract: A numeric quantity that characterises the whole structure of a molecular graph is called the topological index that predicts the physical features, chemical reactivities, and boiling activities of the involved chemical compound in the molecular graph. In this article, we give new mathematical expressions for the multiple Zagreb indices, the generalised Zagreb index, the fourth version of atom-bond connectivity (ABC_4) index, and the fifth version of geometric-arithmetic (GA_5) index of $TiO_2[m, n]$. In addition, we compute the latest developed topological index called by Sanskruti index. At the end, a comparison is also included to estimate the efficiency of the computed indices. Our results extended some known conclusions.

Keywords: Connectivity Index, Molecular Graphs, Sanskruti Index, Titania Nanotube.

61: Leyew, B. T., & **Abbas, M**. (2017). A soft version of the Knaster–Tarski fixed point theorem with applications. *Journal of Fixed Point Theory and Applications, 19*(4), 2225-2239. **(JCR)**

Abstract: In this paper, first, we define a partial order on a soft set (F, A) and introduce some related concepts. Then, using the concept of a soft mapping introduced by Babitha and Sunil (Comput Math Appl 60(7):1840–1849, 2010), a soft version of Knaster–Tarski fixed point theorem is obtained. Some examples are presented to support the concepts introduced and the results proved herein. As an application of our result, we show that the soft Knaster–Tarski fixed point theorem ensures the existence of a soft common fixed point for a commuting family of order-preserving soft mappings.

Keywords: Soft Set, Soft Complete Lattice, Soft Knaster–Tarski Fixed Point, Soft Order Preserving, Soft Least (Soft Greatest) Fixed Point.

62: Rubbab, Q., Mirza, I. A., **Siddique, I**., & Irshad, S. (2017). Unsteady helical flows of a size-dependent couple-stress fluid. *Advances in Mathematical Physics, 2017*. **(JCR)**

Abstract: The helical flows of couple-stress fluids in a straight circular cylinder are studied in the framework of the newly developed, fully determinate linear couple-stress theory. The fluid flow is generated by the helical motion of the cylinder with time-dependent velocity. Also, the couple-stress vector is given on the cylindrical surface and the nonslip condition is considered. Using the integral transform method, analytical solutions to the axial velocity, azimuthal velocity, nonsymmetric force-stress tensor, and couple-stress vector are obtained. The obtained solutions incorporate the characteristic material length scale, which is essential to

understand the fluid behavior at microscales. If characteristic length of the couple-stress fluid is zero, the results to the classical fluid are recovered. The influence of the scale parameter on the fluid velocity, axial flow rate, force-stress tensor, and couple-stress vector is analyzed by numerical calculus and graphical illustrations. It is found that the small values of the scale parameter have a significant influence on the flow parameters.

63: **Siddique, I**., & Mirza, I. A. (2017). Magneto-hydrodynamic free convection flows of a viscoelastic fluid in porous medium with variable permeability heat source and chemical reaction. *Results in Physics, 7*, 3928-3937. **(JCR)**

Abstract: The unsteady free convection flow, with heat and mass transfer, of an electrically conducting viscoelastic fluid, through a porous medium of variable permeability is investigated. The flow domain is a half space, bounded by a vertical porous plate, with the constant heat flux, constant concentration and a rectilinear translation in its plane with constant velocity. The applied magnetic field of uniform strength is perpendicular to the plate and the magnetic lines of force are fixed relative to plate or, to fluid. Permeability of the porous medium decreases exponentially, with respect to time t, relative to a constant mean value. The closed forms of the temperature, concentration and velocity fields are determined by means of the Laplace transform and method of separation of variables. Numerical calculations are carried out and graphically displayed in order to study the effects of several parameters such as Hartmann number, permeability of porous medium, Prandtl number, heat source/sink parameter, Schmidt number, chemical reaction parameter. The numerical results show that, if the applied magnetic field is fixed to the plate the fluid flows more slowly than if the magnetic field is fixed to fluid. If the magnetic field strength is high, the fluid moves more slowly than into weak magnetic fields.

Keywords: Viscoelastic Fluid, Free Convection, Magnetic Field, Porous Medium, Variable Permeability.

64: Tahir, M., **Asjad, M. I.**, Raza, N., Abdullah, M., & **Aleem, M**. (2017). Wall slip and non-integer order derivative effects on the heat transfer flow of Maxwell fluid over an oscillating vertical plate with new definition of fractional Caputo-Fabrizio derivatives. *Results in Physics, 7*, 1887-1898. **(JCR)**

Abstract: This article is focused on natural convection of unsteady flow of generalized Maxwell fluid over an oscillating vertical flat plate with constant temperature at the boundary. The Maxwell fluid with classical derivatives, describing one dimensional flow has been generalized to non-integer order derivatives known as fractional derivative with term of buoyancy. A modern definition of fractional derivative, recently introduced by Caputo and Fabrizio has been used to formulate the considered problem. Semi analytical solutions of the dimensionless problem have been obtained by using the Laplace transform. The solutions for temperature, velocity and shear stress are obtained with numerical inversion techniques of Laplace transform namely, Stehfest's and Tzou's algorithms. At the end, graphical illustrations for temperature, velocity, Nusselt number and shear stress are plotted. We have studied especially the influence of fractional parameter on temperature, velocity and shear stress respectively. We have observed that temperature can be enhanced for increasing the fractional parameter α while velocity and shear stress can be increased by decreasing the value of fractional parameter α.

Keywords: Free Convection, Slip, Maxwell Fluid, Oscillation, Caputo-Fabrizio Fractional

Derivatives, Stehfest's and Tzou's Algorithms.

65: Nazar, M., Ahmad, M., **Asjad, M. I**., & Shah, N. A. (2017). Double convection of heat and mass transfer flow of MHD generalized second grade fluid over an exponentially accelerated infinite vertical plate with heat absorption. *Journal of Mathematical Analysis, 8*(6), 28-44. **(NR)**

Abstract: Influence of non-integer order fractional parameter and magnetic field is studied on a generalized second grade fluid model with double convection caused due to simultaneous effects of heat and mass transfer induced by temperature and concentration gradients. Additional effects of heat generation and chemical reaction are also considered. A generalized model of second grade fluid consists of three partial differential equations of momentum, heat, and mass transfer with corresponding initial and boundary condition is formed with non-integer order Caputo time fractional derivative. Exact solutions for temperature, concentration, and velocity fields in terms of special functions are developed by means of Laplace transform method. A comparison of results is plotted graphically for second grade and Newtonian fluids, and interesting behavior of the flow was seen. It shows how fractional derivative controls the fluid flow for small and large time and found that.

66: Khan, I., Ahmad, M., Shah, N. A., & **Asjad, M. I**. (2017). Effects of non-integer order time fractional derivative on coupled heat and mass transfer of MHD viscous fluid over an infinite inclined plane with heat absorption. *International Journal of Innovative Research in Science Engineering and Technology, 6*(9). **(NR)**

Abstract: Influence of a non-integer order fractional derivative is studied on a MHD generalized viscous fluid model with double convection, caused due to simultaneous effects of heat and mass transfer induced by temperature and concentration gradients. The fluid is considered over an inclined plane moving exponentially accelerated with time dependent of heat and mass at the boundary. Additional effects of heat generation and chemical reaction are also considered. The idea of non-integer order Caputo time fractional derivative is used and exact solutions for temperature, concentration and velocity in dimensionless form are developed. At the end, the graphically illustration is presented and discussed in details for embedded parameters including fractional parameter of order α.

Keywords: Natural Convection Flow, MHD, Caputo Fractional Derivative, Heat Absorption, Exact Solution, Exponentially Accelerated, Inclined Plane, Chemical Reaction.

67: Zubair, M., Azmat, H., & **Noureen, I**., (2017), Dynamical analysis of cylindrically symmetric anisotropic sources in f(R, T) gravity. *European Physical Journal C*, 77(3), 1-10. **(JCR)**

Abstract: In this paper, we have analyzed the dynamical stability of shearing viscous anisotropic fluid with cylindrical symmetry in f(R,T)f(R,T) theory. We have chosen two viable f(R,T)f(R,T)models for dynamical analysis, and explored their nature and role for stable stellar configuration. Modified field equations and corresponding dynamical equations have been constructed, perturbation approach is adopted to deal with complexity of these equations. With the help of perturbed dynamical equations, the evolution equation has been established to analyze the role of shear viscosity and pressure anisotropy on dynamics of cylindrical system. The adiabatic index ΓΓ is used to investigate the instabilities appearing in Newtonian (N) and post-Newtonian (pN) approximations. Some conditions are found for material variables that are required to meet the stability criterion. We compare the outcomes

of our analysis with the results of various models available in literature to reach at more comprehensive conclusion.

Keywords: Collapse, f(R,T)f(R,T) Gravity, Covariant Divergence, Dark Source Constituents, Adiabatic Index.

68: Hussain, A., Arshad, M., & **Abbas, M**. (2017). New type of fixed point result of F-contraction with applications. *Journal of Applied Analysis and Computation, 7*(3), 1112-1126. **(JCR)**

Abstract: The purpose of this paper is to prove theorem which generalize the corresponding results of Rhoades [B. E. Rhoades, Two New Fixed Point Theorems, Gen. Math. Notes, 2015, 27(2), 123-132]. This paper is to introduce the notion of dynamic process for generalized F contraction mappings and to obtain coincidence and common fixed point results for such process. It is worth mentioning that our results do not rely on the commonly used range inclusion condition. We provide some examples to support our results. As an application of our results, we obtain the existence and uniqueness of solutions of dynamic programming and integral equations. Our results provide extension as well as substantial generalizations and improvements of several well known results in the existing comparable literature.

Keywords: Coincidence Point, Generalized Dynamic Process, F-Contraction, Integral Equations, Dynamic Programming.

69: Jawad, A., Rani, S., & **Saleem, M**. (2017). Cosmological study of reconstructed f(T) models. *Astrophysics and Space Science, 362*(4), 63. **(JCR)**

Abstract: In this paper, we construct f(T) models by using some dark energy models taking FRW space-time under reconstruction scenario. These dark energy models consist of pilgrim dark energy model with event horizon and Granda-Oliveros as infrared cutoff and higher order time derivatives of Hubble parameter. Using these models we drive the cosmological parameters such as equation of state, square speed of sound and omega(T) - omega'(T) plane taking power-law form of scale factor. We discuss these parameters graphically for different values of scale factor parameter. The first and second models represent quintessence and phantom era with stable behavior and freezing region for smaller values of scale factor parameter. The third model shows unstable behavior while phantom era of the universe.

Keywords: F(T) Gravity, Event Horizon, Granda-Oliveros Cut-Off, Pilgrim Dark Energy.

70: Butt, A. S., Ali, A., **Tufail, N**., & Mehmood, A. (2017). Entropy production in mixed convective magnetohydrodynamic flow of nanofluid over a linearly stretching sheet. *Journal of Nanofluids, 6*(2), 379-389. **(JCR)** **(SKT Campus)**

Abstract: The current article focuses on the investigation of entropy generation effects in mixed convective magneto-hydrodynamic nanofluid flow past a stretching surface. The effects of viscous and joule dissipation are also incorporated in the present problem. By utilizing suitable similarity variables, the equations that govern the transport phenomena are transformed into nonlinear ordinary differential equations. These converted equations are then solved numerically through fourth fifth order Runge-Kutta-Fehlberg method with shooting procedure. The obtained results are compared with the previously existing studies under certain limiting cases. A thermodynamical analysis of the problem has been carried out and the effects of variation in physical parameters on flow, heat transfer and nanoparticle concentration are discussed by using tables and graphs. Moreover, the influence of these parameters on entropy

production is examined by plotting graphs of local entropy generation number and averaged entropy generation number. A detail comprehensive analysis of the problem has been done and the results are interpreted qualitatively.
Keywords: Entropy Generation, Mixed Convection, Magnetic Field, Nanofluid.

71: Okeke, G. A., & **Abbas, M**. (2017). A solution of delay differential equations via Picard–Krasnoselskii hybrid iterative process. *Arabian Journal of Mathematics, 6*(1), 21-29. **(JCR)**
Abstract: The purpose of this paper is to introduce Picard-Krasnoselskii hybrid iterative process which is a hybrid of Picard and Krasnoselskii iterative processes. In case of contractive nonlinear operators, our iterative scheme converges faster than all of Picard, Mann, Krasnoselskii and Ishikawa iterative processes in the sense of Berinde (Iterative approximation of fixed points, 2002). We support our analytic proofs with a numerical example. Using this iterative process, we also find the solution of delay differential equation.
Keywords: Fixed-Points, Strong-Convergence, Population, Stability, Model, Mappings, Loops.

72: Khan, S. H., & **Abbas, M**. (2017). Common fixed point results for a Banach operator pair in cat(0) spaces with applications. *Communications Faculty of Sciences University of Ankara-series A1 Mathematics and Statistics, 66*(2), 195-204. **(JCR)**
Abstract: In this paper, sufficient conditions for the existence of a common fixed point for a Banach operator pair of mappings satisfying generalized contractive conditions in the frame work of CAT(0) spaces are obtained. As an application, related results on best approximation are derived. Our results generalize various known results in contemporary literature.
Keywords: CAT(0) Space, Common Fixed Point, Best Approximation, Banach Operator Pair.

Conference Papers

1. **Saleem, N**. (2017, May 4-5). *On optimal coincidence best proximity points in partially ordered fuzzy metric spaces" published in "Fixed point theory and its applications*. Paper presented at first National Conference on Mathematics, Sargodha, Pakistan.
Abstract: The main objective of this paper is to deal with some properties of interest in two types of fuzzy ordered proximal contractions of cyclic self-mappings T integrated in a pair T , g of mappings. In particulFar, g is a non-contractive fuzzy self-mapping, in the framework of non-Archimedean ordered fuzzy complete metric spaces and T is a p-cyclic proximal contraction. Two types of such contractions (so called of type I and of type II) are dealt with. In particular, the existence, uniqueness and limit properties for sequences to optimal fuzzy best proximity coincidence points are investigated for such pairs of mappings.

2. **Saleem, N**. (2017, May 11-15). *Optimal coincidence best proximity point results in fuzzy metric spaces.* Paper presented at 12th International Conference on Recent Advances in Pure and Applied Mathematics (ICRAPAM-2017), Aydin, Turkey.
Abstract:Not available.

3. **Saleem, N**. (2017). *Fixed points of Suzuki type generalized multivalued mappings*. Paper presented at the Third International Conference on Pure and Applied Mathematics, Sargodha, Pakistan.

Abstract: The aim of this paper is to introduce a class of multivalued mappings satisfying a Suzuki type generalized contractive condition in the framework of fuzzy metric spaces and to present fixed point results for such mappings. Some examples are presented to support the results proved herein. As an application, a common fixed point result for a hybrid pair of single and multivalued mappings is obtained. We show the existence and uniqueness of a common bounded solution of functional equations arising in dynamic programming. Our results generalize and extend various results in the existing literature.

4. **Saleem, N**. (2017). *Optimal coincidence point results in partially ordered non-Archimedean fuzzy metric spaces*. Paper presented at the International Conference on Mathematics and its Applications, Lahore, Pakistan.

Abstract: In this paper, we introduce best proximal contractions in complete ordered non-Archimedean fuzzy metric space and obtain some proximal results. The obtained results unify, extend, and generalize some comparable results in the existing literature.

5. **Javaid, M**. (2017). *Characterization of the minimizing graphs in the certain family of graphs*. Paper presented at the 2nd UMT International Conference on Pure And Applied Sciences, Lahore, Pakistan.

Abstract: The adjacency matrix A(G) = [a_(i,j)] of the graph G is a matrix of order n, where a_(i,j) = 1 if v_i is adjacent to v_j and a_(i,j) = 0 otherwise. In a certain class of graphs, a graph is called minimizing if the least eigenvalue of its adjacency matrix attains the minimum. In this presentation, we characterize the minimizing graph among the various families of graphs whose complements are connected.

6. **Javaid, M**. (2017). *On the characterization of minimizing graphs*. Paper presented at the 2017 International Conference on Mathematics and Its Applications, Lahore, Pakistan.

Abstract: Not available.

School of Engineering

Department of Civil Engineering

Journal Articles

1: Hassan, W., Ahmad, M., Farooq, A., **Ajwad, A.**, Ali, H. Q., & Ilyas, Y. (2017). Correlation of maximum laboratory dry density and optimum moisture content of soil with soil parameters. *NFC IEFR Journal of Engineering and Scientific Research, 5*(1), 1-6. **(NR)**

Abstract: The correlation of compaction properties of soil with various soil parameters are investigated in this study. These correlations were derived through graphically analysis. Soils samples were collected from ten cities of Punjab, Pakistan. The maximum dry density and optimum moisture content (O.M.C) are the compaction properties of soil, which is related to many of soil parameters that included Atterberg index (liquid limit (LL), plastic limit (PL), and plastic index (PI)), percentage of fines (silt, sand), coefficient of uniformity (Cu) and coefficient of curvature (Cc). The relationship of maximum dry density and percentage of fines (silt, sand), optimum moisture content and percentage of fines are the most important relations. These relationships provide a key role in the construction of highways. The effect on the maximum dry density of various kinds of soil, quantity of fines, and types of fines and distribution of the grain size become decided through a sensitivity evaluation that measured the effect of those parameters on acquired maximum dry density By measuring these correlations some unique behavioral developments have been analyzed and we conclude that properly-graded soils have better dry density than poorly graded when the soils have the equal fines content, further it became discovered that plastic fines have a tendency to boom the maximum dry density.

2: **Ajwad, A.**, **Ilyas, U.**, **Shafiq, M.M. I.**, **Usman, M.**, & **Jawad, M.** (2017). Effect of locally available aggregate shape on properties of fresh and hardened concrete. *NFC IEFR Journal of Engineering and Scientific Research, 5*. **(NR)**

Abstract: The coarse aggregate fraction in concrete occupies at least 50% of its volume; the mineralogy and surface properties of coarse aggregate exert a considerable influence on the properties of concrete. This paper presents the study regarding effect of different shapes of coarse aggregate on properties of fresh and hardened concrete manufactured by mixing indigenous materials. Three shapes of aggregate i.e., flaky, elongated and rounded, were used keeping water cement ratio 0.60 and concrete cast in two mix ratios (1:2:4 and 1:1.5:3). For each mix ratio, 6 batches were cast with varying proportions of these shapes. Nine cubes and eighteen cylinders were cast for each batch. For workability, slump test was performed on each batch in fresh state. For compressive strength, 3 cubes and 3 cylinders from each batch were tested after 3, 7, and 28 days respectively. Similarly, for tensile strength, split cylinder test was performed on 3 cylinders from each batch after 3, 7, and 28 days respectively. ASTM and British standards are followed during testing. Fine and coarse aggregates used were conforming to standard sieve requirements. The results of study show that the shape of aggregate has a

significant effect on the performance of concrete. Workability of concrete increases with increasing ratio of rounded aggregates. Similarly, Compressive as well as Tensile strengths of concrete increase with increasing ratio of rounded aggregates. However, compressive strength of concrete with elongated particles is more than with flaky particles while Tensile strength of concrete with flaky particles is more as compared to the concrete using elongated particles.

Keywords: Coarse Aggregate, Aggregate Shape, Compressive Strength, Workability, Tensile Strength.

3: Chaudhry, M.A., Zafar, A., & **Ajwad, A.** (2017). Investigation regarding safety concerns on construction sites in Punjab, Pakistan and their remedial measures. *The Nucleus*, *54*(2), 121-126. **(HEC Y-Cat.)**

Abstract*:* In the last two decades, there has been tremendous increase in construction projects for the development of Pakistan. Safety at construction sites is one of the most important performance indicators in the construction industry. This study was aimed at collecting data from construction sites regarding safety requirements at different stages of the construction projects. Data was accumulated from 25 different projects of Punjab region by supplying questionnaire to the site engineers and managers involved in the construction work assigned to different national and local contractors. The questionnaire was revised by discussion with the senior personnel and experienced engineers to collect useful information about the necessary safety requirements. Mainly the questions were concerned with the environmental policies and safety measures required against hazards. The collected data was processed and conclusions drawn to recommend that the construction companies comply with the ISO 14000 standards related to environmental management.

4: **Ajwad, A**., Qureshi, L. A., & Zahid, M. (2017). Sustainable transport measures, acceptance rate in Lahore. *Technical Journal, 22*(II), 2-8. **(HEC Y-Cat.)**

Abstract: Sustainability defined as development meeting needs of the present without compromising on the ability of future generations to meet their own needs, has become a wide area of study in Civil Engineering. It has particularly become important in the transportation sector as a result of non-renewable fuel depletion, energy insecurity, traffic congestion, air pollution, global climate change and so many other negative issues. Sustainable transportation aims to tackle all these issues while providing other advantages. Furthermore sustainability is steadily gaining more footholds in the construction industry and is now one of the main expected competencies in a Civil Engineer. This paper focuses on the economical implications of sustainable transport measures. Furthermore it focuses on user rating and acceptance of these measures and how that affects their economical repercussions. In this research, A questionnaire was come up with aim to monitor user acceptance and rating of sustainable transport measures in the city of Lahore. It was found that public transportation has a very high rating and user acceptance whereas car sharing has low user acceptance in Lahore region. The research uses the data on user acceptance and rating to evaluate the economical impacts of sustainable transport measures. From the user acceptance and rating, it can be concluded that congestion charging would have a positive economical impact if it was employed in the area. However it has to be reiterated that the survey only reflected the views and opinions of only a small percentage of the population. Sustainable transport measures have both positive and negative impacts, which are social, economical and environmental. However the positive

impacts, as seen in this research outweighs the negative ones especially in terms of economical impacts.

Keywords: Sustainability, Economy, Congestion, Public Transport, Car Sharing.

5: **Firdous, R., Ilyas, U.**, Akram, A., & Adnan, M. (2017). Evaluation of mechanical properties of concrete containing silica fume from a local source in Pakistan. *Proceedings of the Pakistan Academy of Sciences. A. Physical and Computational Sciences, 54*(2), 119-125. **(HEC X-Cat.)**

Abstract*:* Concrete is one of the most commonly used construction materials with cement being its main ingredient. Since the construction industry is expanding rapidly, the cost of cement used in concrete is also increasing. In order to meet its growing demand and address the adverse effects on account of its production process, alternate cheap materials are needed to be developed. Silica Fume is a well-known pozzolanic material which when partially replaced with cement, enhances the mechanical and chemical properties of concrete and mortar. In present experimental research, compressive strength and modulus of rupture of concrete containing silica fume as secondary cementitious material have been evaluated. Silica fume was obtained from a local source in Pakistan. The incorporation of silica fume resulted in higher water demand in comparison with control concrete mixture. Replacement of cement with silica fume was by weight of cement in ratios of 0%, 10%, 15% and 20%. The incorporation of silica fume improved the later-age strength as compared to early-age strength. It was also noted that the highest compressive strength and flexural tensile strength have been achieved by 15% replacement of silica fume with cement at all ages.

Keywords: Silica Fume, Concrete Compressive Strength, Modulus of Rupture, Pozzolanic Material, Mechanical Properties.

6: **Ilyas, U.**, Farooq, S., Qazi, A., & Ilyas, M. (2018). Progressive collapse of RC frame under different levels of damage scenarios. *The Nucleus, 54*(4), 232-241. **(HEC Y-Cat.)**

Abstract*:* Progressive Collapse analysis of Reinforced Concrete (RC) frame was carried out using commercial software i.e. SAP2000. The RC frame consisting of nine stories was selected and designed as per Pakistan Building Code. Two damage patterns were considered for the progressive collapse analysis; damage at corner column and damage at edge column. The General Services Administration loading criterion is followed to carry out Linear Static Analysis with 40%, 80% and fully damaged scenarios. In addition to Linear Static Analysis, Nonlinear Linear Static Analysis and Nonlinear dynamic Analysis was also carried out to assess the vulnerability of the structure exposed to progressive collapse. After that results were analyzed to determine the nature and intensity of structural damage due to column failure. It was found that edge column with longer spans has more damage potential as compared with smaller spans in Linear Static Analysis. However, in Non Linear Static Analysis and Non Linear Dynamic Analysis, the hinges are at their initial stages in all cases and progressive collapse is less critical. Therefore, Linear Static Analysis based on General Services Administration guidelines is more conservative than Nonlinear Linear Static Analysis and Non Linear Dynamic Analysis.

7: **Ajwad, A., Ilyas, U., Shafiq, M.M. I., & Rashid, M. U.** (2017). Effect of addition of pozzoplast as additive on local soil stabilization. *NFC IEFR Journal of Engineering and Scientific Research, 5*. **(NR)**

Abstract*:* The one most important technique used in construction especially in pavement and

foundation is soil stabilization because it improves the engineering properties of soil such as durability, volume stability and strength. In this study the Pozzoplast, a processed siliceous (fly ash) is used as stabilizing agent for non-plastic soil collected from district Lahore Punjab. Preparation of soil sample was done by adding varying amount of Pozzoplast (5, 10, and 20% by weight). Basic properties of soil such as plasticity index, cohesion, angle of internal friction, optimum moisture content (OMC), unconfined compressive strength, maximum dry density (MDD) and shear strength were determined. All tests were carried out according to the provision of the relevant ASTM specifications. Test results showed that when fines increase, liquid limit, angle of internal friction and OMC increases and, MDD and cohesion decreases. Unconfined compressive strength also improved drastically. Detail research analysis shows that for the stabilization of non-plastic soil as well as high plastic soil, the appropriate amount of pozzoplast (processed fly ash) was observed to be 20% of soil by weight.

8: **Rashid, M. U., Noman, M., & Sajjad, U**. (2017). Comparative analysis of ballastless track system design using analytical and numerical tools. *Technical Journal, 22*(4), 2-9. **(HEC Y-Cat)**

Abstract*:* Railways is becoming faster, with high speed running vehicles exerting wheel loads on tracks could become critical for track quality and the overall lifecycle. To cope with such high loads state of the art ballastless track systems could be a long term solution and to increase its acceptance under tight economic boundary conditions, Finite Element Modeling (FEM) is a powerful tool optimize the design. This study examines the reliability and verification of FE Models with analytical tools. Firstly, using analytical tools, the Zimmermann and the Westergaard methods, continuously reinforced concrete pavement (CRCP) slab with various cracking distances are designed followed by numerical design and analysis. Design includes both traffic and temperature loadings. Comparative design analysis is then carried out between analytical and numerical tool to evaluate the impact of input parameters on each of the tools. The finite element package SOFiSTiK is used to model ballastless track design. The verification of FE- model is also done based on calibrations, results and boundary conditions to check reliability, behavior and working. Lastly author gives some guidelines for the model verification.

9: **Rashid, M. U., Haider, S. S., Latif, M., & Raja, N. A.** (2017). Multi-objective optimization for irrigation deficit through cascade reservoirs. *European Water, 59*, 323-329. **(NR)**

Abstract*:* Reservoirs play a strategic role in the rapid monetary growth of the world by providing numerous benefits. However, the reduction in appropriate sites along with environmental and social apprehensions has resulted in curtailment of new reservoirs around the world in 21st century. There is a potential of benefits available from existing reservoirs which have not been capitalized. To move forward in this context, the optimized benefits from reservoirs must be attained. Reservoirs operation optimization considering sediment evacuation (RESOOSE), a recently developed model which combines multiple reservoirs operation and sediment evacuation with Genetic Algorithm based optimization module, had been used in the study. The objective function of optimizing the irrigation deficits was developed. The RESOOSE model was then applied to optimize the irrigation deficits of Tarbela and Diamer Basha Reservoirs in Pakistan. The average annual irrigation shortages, sediment evacuation, hydropower and flood damages of existing rule curves had been computed as 6.9 billion m3 , 21.534 million m3 , 36.9 billion Kw and 616.2 million US$ which were used as constraints. The irrigation shortages had been minimized by optimized rule curves without

reducing these benefits from existing values. The optimized operation of the selected multiple reservoirs reduce the irrigation shortages to 5.95 billion m3 (13.7% reduction). The study suggests change in existing operation of Tarbela and Diamer Basha Reservoirs due to enhanced benefits. Reducing irrigation deficits will certainly help in achieving the objective of exploiting the potential benefits of from cascade reservoirs.

Keywords: Tarbela, Diamer Basha, Optimization, Multi-Objective, Genetic Algorithm, RESOOSE Model, Irrigation Deficit, Irrigation Shortage.

10: Subhan, F., Kanwal, H., Sulaiman, M., Naeem, M. M., **Shafiq, M. M. I.**, Sajjad, U., ... Aqdas, A. (2017). National road crash injuries – An estimation and comparison with previous national studies. *The Nucleus, 54*(4), 210-213. **(HEC Y-Cat)**

Abstract: Every year, approximately 1.24 million fatalities and 20 to 50 million non-fatal injuries occur worldwide due to road traffic collisions. This poses a serious social and economic challenge to all countries around the world. Effective road safety measures can only be introduced if the extent of the problem is thoroughly explored. Pakistan faces a similar problem and in spite of a rapidly growing population and sharp increase in vehicle fleet size, no real efforts have been made to obtain estimates of the number of injuries resulting from road traffic crashes every year. This study presents a survey to estimate the annual road crash injuries for Pakistan using data provided by Reputed world Organizations, including WHO (World Health Organization), IRF (International Road Federation), WB (World Bank), using two different measures of relative road safety. Annual road crash injuries for Pakistan were estimated using annual crash injuries data from seventy-four countries having vital registration systems. Results of this study were compared with past national studies on road crash injuries estimation which showed vast discrepancies due to use of insufficient or highly under-reported data or the use of flawed methods by those studies.

Keywords: Road Traffic Crashes, Traffic Collisions, Road Crash Injuries, Estimating Collisions, Relative Road Safety Measures, Safety Improvement.

11: **Ajwad, A., Ilyas, U., Rashid, M. U., & Shafiq, M. M. I.** (2017). Assessing strengthening techniques of bonding overlay concrete to existing concrete elements. *NFC IEFR Journal of Engineering and Scientific Research, 5*(2), 15-18. **(HEC Z-Cat)**

Abstract: Concrete is the most widely used construction material around the world because of its high strength and low cost as compared to alternatives. However, concrete structures tend to deteriorate over time due to various factors which include sulphate attack, severe weather conditions etc. and that is why concrete structures require repairing works after a certain span of time. The problem that arises is that the bonding between old and fresh concrete is poor and most of the times structures do fail at the interface. Commonly, mechanical methods are used which normally involves roughening of surface of old concrete before the addition of fresh concrete but in modern market, number of chemicals are available in market that can contribute to the bonding strength at the interface. This research covers both type of methods for bonding which includes roughening of surface as mechanical method and addition of locally available bonding agent in different compositions as chemical method. Also concrete that was added on top of old surface was of different types to check whether that would have any effect on the bonding at the interface. It was found out that the bonding agent did improve the bond strength at the interface by 20 percent although it did not have any effect on the compressive

strength of concrete.

Keywords: Concrete Bonding, Mechanical, Chemical, Bonding Agent, Mix Ratio.

Conference Papers

1. Qureshi, L.A., **Ajwad, A**., & Shuja, N. S. (2017, March 6-8). *Effect of adding glass fibre reinforced concrete topping on flexural behaviour of hollow core slab units.* Paper presented at the 2017 eleventh International Conference on High Performance Concrete & 2nd Concrete Innovation Conference (HPC & CIC 2017), Tromsø, Norway.
Abstract: Not available.

2. **Rashid, M. U**., Haider, S. S., Latif, M., & Raja, N. A. (2017, July 5-9). *Multi-objective optimization for irrigation deficit through cascade reservoirs.* Paper presented at tenth World Congress on Water Resources and Environment "Panta Rhei", Athens, Greece.
Abstract: Not available.

3. **Rashid, M. U**. (2017, October 8-14). *Improving irrigation water management by modernization of structural and operational reforms*. Paper presented at the 23rd International Congress On Irrigation and Drainage, Mexico City, Mexico.
Abstract: Not available.

4. **Sajjad, U**. (2017, December 13-14). *Monitoring the field performance of different techniques of repairing the rigid pavement*. Paper presented at the National Conference on Rehabilitation and Strengthening of Structures, Lahore., Pakistan.
Abstract: Not available.

5. **Rashid, M. U**., & Raja, N. A. (2017, July 5-9). *Multi-Objective optimization for irrigation deficit through cascade reservoirs* Paper presented at the tenth World Congress on Water Resources and Environment "Panta Rhei", Athens, Greece.
Abstract: Not available.

6. **Ajwad, A**. (2017, December 13-14). *Assessing the non-destructive testing methods for hardened concrete and their reliability*. Paper presented at the National Conference on Rehabilitation and Strengthening of Structures (NCRSS 2017), Lahore., Pakistan.
Abstract: Not available.

7. **Ajwad, A**. (2017, December 13-14). *Evaluation of fiber reinforced concrete elements through numerous non-destructive methods*. Paper presented at the National Conference on Rehabilitation and Strengthening of Structures (NCRSS 2017), Lahore., Pakistan.
Abstract: Not available.

8. **Ajwad, A**. (2017, December 13-14). *Study of crack repair in reinforced concrete structure using suitable materials*. Paper presented at the National Conference on Rehabilitation and Strengthening of Structures (NCRSS 2017), Lahore., Pakistan.
Abstract: Not available.

Department of Electrical Engineering

Journal Articles

1: Usman, A., Shah, E., Satishprasad, N. B., Chen, J., Bohlemann, S. A., **Shami, S. H.**, ... Adibi, A. (2017). Interposer technologies for high-performance applications. *IEEE Transactions on Components, Packaging and Manufacturing Technology, 7*(6), 819-828. **(JCR)**

Abstract: This paper explores the current state of the art in silicon, organic, and glass interposer technologies and their high-performance applications. Issues and challenges broadly encompassing electrical, mechanical, and thermal properties of these interposer technologies are discussed along with the proven and under research solutions pertaining to these challenges. An evaluation of high-performance applications for these three technologies provides a useful insight into the role of interposers for such applications. This paper is an effort to evaluate and compare the viability of silicon, organic, and glass interposer technologies for high-performance applications. This paper also discusses the future trends, promising advancements, and market requirements with special emphasis on glass interposer technologies as evaluated to be the most viable option for the future high-performance applications.

2: **Ullah, I.**, Lv, H., Whang, A. J. W., & Su, Y. (2017). Analysis of a novel design of uniformly illumination for Fresnel lens-based optical fiber daylighting system. *Energy and Buildings, 154*, 19-29. **(JCR)**

Abstract: Recently, advanced daylighting has become an important part of sustainable architecture design to increase visual comfort and illuminate deep interior spaces. Daylighting systems based on solar concentrators and fiber optical transmission have attracted a lot of research attention. In this paper, the authors propose a daylight collection and transmission design to transmit the concentrated light more uniformly into the optical fibers employing two optical elements: an eight-fold Fresnel lens as the primary optical element (POE) and an octagonal spherical fiber connector as the secondary optical element (SOE). In addition, a bi-layer prismatic optical panel acting as a diffuser is proposed in order to distribute light more uniformly in the interior space. The proposed designs of those optical elements are verified by ray-tracing simulation for achieving the required illumination level. The simulation results have shown that the combination of the proposed POE and SOE transmits light more uniformly into the bundle of optical fibers, and meanwhile the light diffuser provides relatively even illuminance distribution on a working plane. This shows a considerable advancement to the optical fiber daylighting designs. A case study shows the transmission efficiency of the proposed design is about 10% better than other common designs.

Keywords: Optical Fiber Daylighting, Uniform Illumination, Eight-Fold Fresnel Lens, Octagonal Spherical Secondary Optical Element, Bi-Layer Prismatic Panel.

3: **Kaleem, F. M.**, Guergachi, A., & Krishnan, S. (2017). Hierarchical decomposition based on a variation of empirical mode decomposition. *Signal, Image and Video Processing, 11*(5), 793-800. **(JCR)**

Abstract: Adaptive methods of signal analysis have proved a very useful tool for analysis of non-stationary signals. This is due to the ability of these methods to adapt to the local structures of the signals being analysed, as these methods are not constrained by a fixed basis. Empirical mode decomposition (EMD) is among the more recent data-adaptive signal decomposition methods, which decomposes a given signal into modes which are hierarchically arranged based on their frequency content. In this paper, we will present a novel adaptive hierarchical decomposition scheme based on a novel modification of EMD, namely empirical mode decomposition-modified peak selection (EMD-MPS). EMD-MPS allows a time-scale-based signal decomposition, thereby allowing control over the decomposition process, not possible in the original EMD algorithm. Using time-scale-based decomposition and the properties of EMD-MPS, a given signal can be decomposed into octave frequency bands, with the centre frequency of the separated modes given by the frequency separation criterion of EMD-MPS. The spectral limits of the separated bands are established, and their relation with the centre frequency derived empirically. The method is validated by its application to simulated and real signals.

Keywords: Empirical Mode Decomposition, Hierarchical Decomposition, Adaptive Data Analysis.

4: **Zeb, K**., Ali, S. M. N., Khan, B. Q., Mehmood, C. A., Tareen, N. K., **Uddin, W**., ... **Haider, A**. (2017). A survey on waste heat recovery: Electric power generation and potential prospects within Pakistan. *Renewable and Sustainable Energy Reviews, 75*, 1142-1155. **(JCR)**

Abstract: Waste heat recovery system plays a pivotal role for heat extractions in every energy consuming sector. Thermo-Electric Module converts this waste heat into useful work done as “electric energy”. Electric energy thus produced possesses many promissory benefits, such as: (a) energy storage in DC batteries, (b) running various loads in residential, commercial and industrial sector, (c) exporting power to grid, thus earning valuable revenues, (d) maintain economic growth of plant, and (e) environment friendly system. Recently, among various renewable energy technologies, Waste Heat Recovery (WHR) is paid much consideration in commercial, residential, and industrial sectors. In past decade, a number of WHR technologies are developed and improved. In this paper, relevant research works are reviewed regarding existing technologies of WHR. Thermoelectric Generator (TEG) is one of extensively emerging WHR technique among existing technologies. TEG with promising features, such as: simpler structure, vast scalability, solid state operation, the absence of toxic residuals, a long life span of reliable operation, no noise or vibration, and lack of chemical reaction or moving parts. Basic principle of TEG with its series and parallel arrangement for voltage and current enhancement is also reviewed. Our work described a standalone thermoelectric module generate 1–125 W whose modular arrangement produces ~5 kW and the wattage improvement is defendant on array size. The potential application of TEG in various applications are comprehensively discussed and described. A detailed description to Pakistan energy status and WHR potential especially in Cement Industry is assessed in this survey. Finally, the TEGs model in Matlab/SimScape for direct heat energy harvesting with DC/DC converter is simulated, as a case study of “Officer Colony, Abbottabad, Pakistan”.

Keywords: Waste Heat Recovery, Thermoelectric Generator, Figure of Merit, Organic Rankine Cycle, Kalina Cycle.

5: **Zeb, K**., Ali, Z., Saleem, K., **Uddin, W**., Javed, M. A., & Christofides, N. (2017). Indirect field-oriented control of induction motor drive based on adaptive fuzzy logic controller. *Electrical Engineering, 99*(3), 803-815. **(JCR)**

Abstract: Recently, Asynchronous Motors are extensively used as workhorse in a multitude of industrial and high-performance applications. Induction Motors (IM) have wide applications in today's industry because of their robustness and low maintenance. A smart and fast speed control system, however, is in most cases a prerequisite for most applications. This work presents a smart control system for IM using an Adaptive Fuzzy Logic Controller (AFLC) based on the Levenberg–Marquardt algorithm. A synchronously rotating reference frame is used to model IM. To achieve maximum efficiency and torque of the IM, speed control was found to be one of the most challenging issues. Indirect Field-Oriented Control (IFOC) or Indirect Vector Control techniques with robust AFLC offer remarkable speed control with high dynamic response. Computer simulation results using \(\hbox {MATLAB/Simulink}^{{\textregistered }}\)Toolbox are described and examined in this study for conventional PI and AFLC. AFLC presents robustness as regards overshoot, undershoot, rise time, fall time, and transient oscillation for speed variation of IFOC IM drive in comparison with classical PI. Moreover, load disturbance rejection capability for the designed control scheme is also verified with the AFL controller.

Keywords: Induction Motor (IM), Indirect Field-Oriented Control (IFOC), Pulse Width Modulation (PWM), PI control scheme Fuzzy Logic Controller (FLC), Levenberg–Marquardt (LM).

6: Abas, N., Khan, N., **Haider, A.,** & **Saleem, M. S.** (2017). A thermosyphon solar water heating system for sub zero temperature areas. *Cold Regions Science and Technology, 143*, 81-92. **(JCR)**

Abstract: Heating without global warming is a key challenge being faced by world community today. In this regard, harvesting solar energy to meet domestic hot water demand of cold regions is attempted as an alternative design solution. Low solar insulation, chilly winds and sub-zero temperatures have been identified as major hindrances in harnessing solar energy in cold regions. A thermosyphon driven supercritical CO_2 fluid based solar water heating system is developed for use in subzero temperature areas. The solar collector consists of parallel U-tubes inserted in fins inside the evacuated glass tubes. Special arrangements in manifolds and evacuated glass tubes were applied to make it possible to stop the reverse thermosyphon. Optimal heat transfer refrigerants were studied for this solar heating system. At ambient temperature range of 30 to 35 °C range, CO_2 refrigerant easily attains 75 °C with collector efficiency ranging from 80 to 85%. When the hot refrigerant is passed through helical coil counter flow type heat exchanger, the inlet water temperature increases from 26 to 55 °C giving off a temperature gradient of 29 °C, resulting in efficient heat transfer of system. The system provides 23 °C greatest temperature difference (GTD), 14 °C lowest temperature difference (LTD) and 18.13 °C log mean temperature difference (LMTD). This innovative solar water heater can perform adequately in subzero temperatures where water based systems fail to perform well due to freezing. The proposed system is a promising alternate for utilization of low grade heat in cold regions.

Keywords: Sub-Zero Temperature Areas, Solar Water Heating, Global Warming, Evacuated Glass Tube Collectors.

7: Khan, N., Goldwasser, S. M., Abas, N., Kalair, A. R., & **Haider, A**. (2017). Experimental investigation of unidentified helium–neon lasers. *Applied Optics, 56*(36), 10030-10039. **(JCR)**

Abstract: The helium–neon (HeNe) laser used to be a staple in every industrial or university lab having anything to do with photonics, as well as in numerous commercial products such as barcode scanners. They are now less common but still essential for many areas of research and education, and may turn up without any documentation. This paper describes an interesting experience of attempting to operate a HeNe laser without any prior information about its input–output specifications. A HeNe tube was encapsulated in a plastic cover with a copper-foil-wrapped power supply jack attached to it. It was like an optoelectronic gadget without any mention of its operating instructions, wiring, or power requirements. This HeNe laser was investigated as part of a research methods course case study. One week's testing and investigation led us to conclude that the plasma tube was either defective due to mirror misalignment or internal contamination. As a result of this troubleshooting experience, a well-engineered investigation procedure was developed for testing HeNe lasers. A systematic approach helped to prioritize investigation of mirror alignment, mirror coating damage, possible debris inside the cavity, and power supply problems. General guidelines as well as this specific diagnostic experience can be very useful for laser technicians and engineers.

8: Khan, N., Kalair, A., Abas, N., & **Haider, A**. (2017). Review of ocean tidal, wave and thermal energy technologies. *Renewable and Sustainable Energy Reviews, 72*, 590-604. **(JCR)**

Abstract: Ocean tidal currents, water waves and thermal gradients are a great source of renewable energy. Ocean tidal, osmotic, wave and thermal sources have annual potentials of 800, 2,000, 8000–80,000 and 10,000–87,600 TWh, which are more than global 16,000 TWh/y electricity demand. Ocean wave generators produce relatively lower output, however, four to eleven meters tidal range stations have large power generation capacities. Abundant ocean heat energy potentially harvested using ocean thermal energy conversion (OTEC) devices and ocean thermo-electric generators (OTEG). Tidal stations may be tidal range or current types, but a wave energy converter (WEC) may be an oscillating water column (OWC), overtopping, heaving, pitching and surging devices. Ocean thermal energy can be harnessed by open, close Rankine cycles, thermo-electric generators and osmotic power plants. Large bays like Turnagain (USA), Annapolis/Minas Passage (Canada), Seven Barrages/Pentland Firth (UK), La Rance (France), Garorim (South Korea) and Mezen/Penzhin (Russia) have huge tidal current power generation capacities. Power Potential from tidal current stations is more than WEC devices which in turn is more than osmotic, OTEC and OTEG technologies. This paper reviews the current state-of-the-art of tidal, wave, OTEC and OTEG ocean energy technologies.

Keywords: Ocean Energy, Tidal Current, Wave Converter, Otec, Oteg, Osmotic Power.

Conference Papers

1. **Ahmad, J., Iqbal, W.,** & **Butt, M. A**. (2017, March 2-4). *Implementation and performance evaluation of three reconfigurable FFT cores for application in software defined radio system*. Paper presented at the International Conference on Electrical Engineering (ICEE). Lahore, Pakistan

Abstract: Fast Fourier Transform (FFT) is computationally an efficient algorithm that transforms a function in time domain to function in frequency domain. All 3G and 4G wireless technologies

use OFDM and FFT is an integral block of transceiver loop. In this paper three FFT architectures are designed that fall within the Cooley-Tukey class of algorithms. These FFT designs are targeted for OFDM applications especially in future generations of Software Defined Radio (SDR) systems. The FFT is performed on 64-point complex valued input samples with 16-bit precision. Each core is optimized for a combination of area, power, and speed. The design is targeted for a partially reconfigurable FPGA platform such as Xilinx Virtex-4 or above. The FFT cores have been simulated in ModelSim and synthesized using Xilinx ISE software. The cores can be readily downloaded on to target FPGA board to check for run time configurability. The performance evaluation of these cores show that they run at clock frequency of about 80MHz.
Keywords: Software Defined Radio, Fast Fourier Transform, OFDM, FPGA.

2. **Azeem, B.**, **Ullah, Z.**, Rehman, F., Mehmood, C. A., Ali, S. M., Khan, B., ... **Zeb, K.**, **Haider, A.** (2017, October 24-26). *Robust neural network scheme for generator side converter of doubly fed induction generator.* Paper presented at IEEE Symposium on Recent Advances in Electrical Engineering, Islamabad, Pakistan.
Abstract: Not available.

3. Farid, U., **Ullah, Z.**, Hussain, I., Ali, S. M., Khan, B., Mehmood, C. A. (2017, October 24-26). *Statistical analysis of environment and climate drifts on energy profile of smart grid consumers.* Paper presented at IEEE Symposium on Recent Advances in Electrical Engineering, Islamabad, Pakistan.
Abstract: Not available.

4. Ali, S. M., Jawad, M., **Ullah, Z.**, Khan, B., Mehmood, C. A., & Farid, U. (2017, October 24-26). *Low voltage ride through schemes of grid-interfaced dfig: a comparative study under grid faults.* Paper presented at IEEE Symposium on Recent Advances in Electrical Engineering, Islamabad, Pakistan.
Abstract: Not available.

5. **Iqbal, A.**, **Ahmed, S. S.**, **Tauqeer, M. D.**, **Sultan, A.**, & **Abbas, S. Y.** (2017). *Design of multifunctional autonomous car using ultrasonic and infrared sensors*. Paper presented at the International Symposium on Wireless Systems and Networks (ISWSN'17), Lahore, Pakistan.
Abstract: Not available.

6. **Javed, A.**, **Tariq, H.**, & **Khalid, A.** (2017, November 19-22). *Implementation of IR sensors in thru-beam and diffuse-reflective modes for obstacle detection*. Paper presented at the International Symposium on Wireless Systems and Networks (ISWSN), Lahore, Pakistan.
Abstract: The field of obstacle detection is very popular and vast these days. Lot of technologies has been developed for obstacle-detection phenomenon in recent years. Sensors are the main entity in these technologies. Systems' ability to detect an object, sensitivity, range, cost and quality, all are dependent on the fact that which type of sensors are being used is these systems. So intensive understanding for working of these detectors is mandatory to choose the best sensor according to the application-design. For this purpose, it is very necessary to understand the electronic and physical build of the sensors. Infrared sensors are most often used sensors in obstacle and motion detector systems. This study accounts for understanding

the implementation of infrared sensors by using two photoelectric phenomena, Thru-beam and Diffuse- Reflection, to analyzing their function and suitability with respect to different applications. Proteous ISIS 7 is used for simulations. Practically measured results are also shown. Both simulation and experimental results are found in good agreement with theoretical knowledge.

Keywords: Sensor Phenomena And Characterization, Receivers, Transmitters, Light Emitting Diodes, Transistors, Intelligent Vehicles.

7. **Iqbal, A., Ahmed, S. S., Tauqeer, M. D., Sultan, A., & Abbas, S. Y**. (2017, November 19-22). *Design of multifunctional autonomous car using ultrasonic and infrared sensors*. Paper presented at the International Symposium on Wireless Systems and Networks (ISWSN), Lahore, Pakistan.

Abstract: The daily routine problems that common man faces on roads while commuting are becoming a serious problem with each passing day. People get late and meet accidents. The model of autonomous car presented in this research paper aims to solve these issues by taking humans off the wheels, so that they do not have to drive anymore and the risk of accidents, getting late and traffic congestions can be reduced to a minimum. This car is able to follow the track, overtake other cars, detect obstacles, take sharp bends and turns, follow traffic signals and turn on its lights under low light conditions. Circuit diagrams for performing all these functions have been presented and the mechanical model of the car has also been shown in the paper, which is practically implemented and successfully run by the authors.

Keywords: Automobiles, DC motors, Autonomous automobiles, Roads, Robot Sensing Systems, Transmitters, Acoustics.

Department of Energy Engineering

Journal Articles

1: Usman, M., **Imran, M**., Yang, Y., Lee, D. H., & Park, B.S. (2017). Thermo-economic comparison of air-cooled and cooling tower based Organic Rankine Cycle (ORC) with R245fa and R1233zde as candidate working fluids for different geographical climate conditions. *Energy, 123*, 353-366. **(JCR)**

Abstract: This article compares the part-load operation of air cooled and cooling tower based low-medium temperature geothermal Organic Rankine Cycle (ORC) systems installed at different geographical locations. Working fluid R245fa was compared with a newer competitor R1233zde for thermo-economic performance, environment-friendly and efficient system integration. Monthly averaged, weather data is used to simulate ambient conditions of Ulsan, London, Vegas and Kuala Lumpur. Mathematical models for condenser part load operation were formulated for both air cooled and mechanical draft wet cooling tower based systems. Numerical study and experimental validation was performed for the condenser when wet cooling tower based system was investigated. The ORC system design was optimized for maximum power output to grid and operational control optimization was performed on the heat sink to achieve maximum power output at different ambient or off-design conditions.

Economic analysis was performed by comparing the capital investment/kW and levelized cost of electricity (LCOE) over the lifetime of the system. Based on the economic analysis, the results reveal that R1233zde has potential to replace R245fa working fluid when the source temperature is higher (around 145 °C). Cooling tower based system are preferable for hot dry regions while air-cooled systems can be implemented with R1233zde for Ulsan and London.

Keywords: Organic Rankine Cycle (ORC), Part-load Operation, R1233zde, Air Cooled Condenser, Cooling Tower.

2: **Imran, M**., Usman, M., Yang, Y., & Park, B. S. (2017). Flow boiling of R245fa in the brazed plate heat exchanger: Thermal and hydraulic performance assessment. *International Journal of Heat and Mass Transfer, 110*, 657-670. **(JCR)**

Abstract: Present study deals with the flow boiling of R245fa, a commercial working fluid used in organic Rankine cycle, in brazed plate heat exchanger with chevron angle of 45 degree and 60 degree. The effects of the heat flux, mass flux rate of refrigerant, saturation temperature on convective heat transfer coefficients are investigated. The operating conditions of the experiment are as mass flux: 30–40 kg m^{-2} s^{-1} quality at evaporator inlet: 0.1–0.8, heat flux: 2–15 kW m^{-2}. The heat transfer result suggests a nucleate boiling dominant process in the evaporator. The convective heat transfer coefficient showed a strong dependence on the heat flux and vapor quality at evaporator inlet. Moreover convective heat transfer coefficient show a linear relationship with mass flux of the refrigerant. It is worth mentioning that heat transfer coefficient is higher at higher saturation temperature and chevron angle. Based on the experimental data, empirical correlations were developed for the prediction of heat transfer coefficients and frictional pressure drop of refrigerant R245fa in brazed plate heat exchanger.

Keywords: Flow Boiling, Organic Rankine Cycle, R245fa, Two Phase, Plate Heat Exchanger, Pressure Drop, Convective Heat Transfer.

3: Park, B. S., **Imran, M**., Hoon, I. Y., & Usman, M. (2017). Thermo-economic optimization of secondary distribution network of low temperature district heating network under local conditions of South Korea. *Applied Thermal Engineering, 126*, 117-133. **(JCR)**

Abstract: A secondary distribution network of a low temperature district heating system is designed and optimized for a residential apartment complex under the local conditions of South Korea in the TRNSYS simulation environment. The residential apartment complex is a typical example of Korean residential apartment. The Apartment complex has 15 floors, 4 apartments on each floor and each apartment has heating surface area of 85 m^2. The supply temperature of the hot water is reduced from 65 °C to 45 °C and the temperature difference between supply and return line is varied from 18 °C to 27 °C. The corresponding heat loss from secondary network, pumping power and area of domestic hot water heat exchanger unit for each supply temperature and temperature difference for required heating load of the apartment complex are calculated. Results indicate that when supply temperature is decreased from 65 °C to 45 °C, area of heat exchanger is increased by 68.2%, pumping power is also increased by 9.8% and heat loss is reduced by 15.6%. These results correspond to a temperature difference of 20 °C, the standard temperature difference in South Korea residential heating system. Economic assessment of the secondary distribution network shows that the supply temperature of 55 °C and 60 °C are economically more feasible than 65 °C and 45 °C.

Keywords: District Heating, Optimization, 4th Generation District Heating, Secondary Network, TRNSYS, Low Temperature District Heating.

4: **Imran, M**., Usman, M., Im, Y. H., & Park, B. S. (2017). The feasibility analysis for the concept of low temperature district heating network with cascade utilization of heat between networks. *Energy Procedia, 116*, 4-12. **(JCR)**

Abstract: Recently, low temperature district heating networks (LTDH) have received attention in district heating and cooling market due to their benefits in terms of efficiency, greenhouse gas reduction, flexibility to use renewable energy sources and economic benefits. In this work, physical and techno-economical aspects of the new concept of cascade types with high temperature district heating (HTDH) return is utilized to supply heat at low temperature networks. The HTDH return water temperature is around 45^{o}C and supply of LTDH can be set around 60^{o}C. The return water temperature of HTDH return line at 45^{o}C can be raised to 60^{o}C with the help of heat pump. A detailed study of major components, network design, pressure drop, heat loss and power consumption was performed to formulate an annual, hourly, based energy simulation to assess the techno-economic feasibility of the systems for different types of customers (residential & commercial) The economics were also analysed in terms of internal rate of return (IRR) and the results show that IRR for residential buildings varies from 14 ~ 17%. In order for the successful realization of the proposed system in the market new sustainable systems encouragement in government level is desired to be provided in the form of renewable energy target/certificates or CO2 reduction incentives especially at the initial stage of the commercialization of the model.

Keywords: Low Temperature District Heating, Heat Pump, Cascade Heat Utilization.

5: Rudiyanto, B., Illah, I., Pambudi, N. A., Cheng, C.-C., Adiprana, R., **Imran, M**., ... Handogo, R. (2017). Preliminary analysis of dry-steam geothermal power plant by employing exergy assessment: Case study in Kamojang geothermal power plant, Indonesia. *Case Studies in Thermal Engineering, 10*, 292-301. **(SJR)**

Abstract: The objectives of this study are to perform the exergy analysis and ambient temperature optimization of the Kamojang geothermal power plant by employing Engineering Equation Solver (EES). The geothermal capacity is 55 MW and the field is vapor-dominated reservoir with temperature 245 °C. In the initial state temperature, pressure and mass flow data are collected from the plant operation. The study results show that system has overall efficiency of 35.86% which means that only 111,138.92 kW electrical power can be extracted from 309,000 kW thermal power being produced by 10 production wells of Kamojang. This low efficiency is due to irreversibility associated with different processes and components in the system. The largest irreversibility occurs in condenser due to which 53% of total energy is disposed into the environment. Ambient temperature at Kamojang varies from 17 to 20 °C. The effect of this variation in temperature is also investigated and it is observed that higher temperature does not have any significant impact on system efficiency.

Keywords: Geothermal, Exergy, Thermodynamic, Optimization, Indonesia, Kamojang.

6: **Imran, M**., Pambudi, N. A., & Farooq, M. (2017). Thermal and hydraulic optimization of plate heat exchanger using multi objective genetic algorithm. *Case Studies in Thermal Engineering,*

10, 570-578. **(SJR)**

Abstract: In this paper thermal and hydraulic optimization of water to water chevron type plate heat exchanger is presented. The optimization is performed using the multi objective genetic algorithm in MATLAB optimization environment. Constrain matrix is a set of different geometrical parameters of plate heat exchanger within the logical bounds. The two objective functions are pressure drop of hot side and heat transfer. Due to conflicting nature of these objective functions, no single solution can satisfy both of the objective function simultaneously. The increase in heat transfer will results in increase in pressure drop, therefore, optimization results are presented as Pareto Front. Multi objective genetic algorithm tool was employed to find a set of optimum solution which was trade-off between pressure drop and heat transfer. At the end, sensitivity analysis was performed to analyse the effect of geometrical parameters of heat exchanger on thermal and hydraulic performance. The sensitivity results show that the heat transfer and pressure drop are greatly affected by the vertical port centre distance, plate spacing and number of thermal plates.

Keywords: Thermal Optimization, Hydraulic Optimization, Plate Heat Exchanger, Multi Objective Genetic Algorithm, Heat Transfer, Pressure Drop.

7: Usman, M., **Imran, M**., Lee, D. H., & Park, B.S. (2017). Experimental investigation of off-grid organic Rankine cycle control system adapting sliding pressure strategy under proportional integral with feed-forward and compensator. *Applied Thermal Engineering, 110*, 1153-1163. **(JCR)**

Abstract: This article presents an experimental investigation of an organic Rankine cycle control system in off-grid island mode. A robust control system is required for a reliable autonomous operation of the system without human intervention to manage the fluctuations in demand and produce. Sliding pressure control strategy is used to meet the varying demand in load by changing evaporation pressure using a proportional-integral algorithm. The system was subjected to load disturbance and its performance was tested on an off-grid organic Rankine cycle test bed system. An improved scheme based on proportional-integral, feed-forward and lead-lag compensator was proposed and tested for same operating conditions and same load disturbance. It was found that the new scheme was able to track the expander rotational speed in a better way and system recovers to set point speed in nearly half the time compared to proportional-integral based scheme.

Keywords: Organic Rankine Cycle (ORC), Control System, Sliding Pressure Strategy, Proportional Integral, Feed-Forward, Set Point Tracking.

8: Alvi, J. Z., **Imran, M**., Pei, G., Li, J., Gao, G., & Alvi, J. (2017). Thermodynamic comparison and dynamic simulation of direct and indirect solar organic Rankine cycle systems with PCM storage. *Energy Procedia, 129*, 716-723. **(JCR)**

Abstract: A thermodynamic comparison between a novel direct solar ORC system (DSOS) and indirect solar ORC system (ISOS) is carried out in this study. A phase change material (PCM) heat storage unit is integrated with both systems to ensure the stability of power generation. Water and R245fa are selected as a heat transfer fluids (HTFs) for ISOS and DSOS respectively. However, R245fa is used as working fluid for both systems. Weekly, monthly and annual dynamic simulations are carried out to compare the performance of both systems using hourly weather data of Islamabad, Pakistan. ISOS has shown 1.71% system efficiency and able to

provide 34.02 kW/day power while DSOS has shown 4.5 times higher system efficiency and 2.8 times higher power on annual basis. Numerical model for the PCM storage is developed and validated with the previous experimental data. Average annual amount of energy stored by PCM during charging phase for ISOS is 4.24 MW/day higher than DSOS. However, in comparison with ISOS, DSOS has delivered 33.80 kW/day more power to HTF during discharging phase of the PCM on annual basis. Maximum benefits of PCM storage are observed during the summer season compared to the winter season at selected operating conditions. Furthermore, average annual increment in capacity factor by using PCM storage are found to be 21.71% and 17% for DSOS and ISOS respectively.

Keywords: ISOS, DSOS, PCM Storage, Capacity Factor.

9: Pambudi, N. A., Fasola, M., Perdana, L. V., Laurensia, R., Wijayanto, D. S., **Imran, M**., & Saw, L. H. (2017). Performance evaluation and optimization of fluidized bed boiler in ethanol plant using irreversibility analysis. *Case Studies in Thermal Engineering, 10*, 283-291. **(SJR)**

Abstract: This research aims to evaluate the performance of a fluidized bed boiler in an ethanol production plant through exergy and irreversibility analysis. The study also includes the optimization of the pre-heater and the deaerator in order to improve the system efficiency. Operational data from the ethanol production plant was collected between 2015 and early 2016. The total exergy derived from the fuel was determined to be 7783 kJ/s, while the exergy efficiency of the system was found to be 26.19%, with 2214 kJ/s used in steam production, while 71.55% was lost to component irreversibility and waste heat from the pre-heater. The exergy efficiencies of individual components of the system such as the boiler, deaerator, and pre-heater were found to be 25.82%, 40.13%, and 2.617%, respectively, with the pre-heater having the lowest efficiency. Thus, the pre-heater has the highest potential to significantly improve the efficiency of the boiler system. The optimization of the pre-heater shows that a rise in temperature in the outlet of the pre-heater positively affects the exergy efficiency of the deaerator.

Keywords: Exergy Analysis, Fluidized Bed Boiler, Ethanol, Performance Assessment, Irreversibility.

10: **Asim, M**., Imran, M., Leung, M. K. H., Kumar, N. T. U., Martin, A. R., & Kashif, F. (2017). Experimental analysis of solar thermal integrated MD system for cogeneration of drinking water and hot water for single family villa in Dubai using flat plate and evacuated tube solar collectors. *Desalination and Water Treatment*, 92, 46-59. **(JCR)**

Abstract: This paper presents the experimental analysis performed on solar thermal integrated membrane distillation (MD) system using flat plate and evacuated tube collectors. The system will be utilized for cogeneration of drinking water and domestic hot water for single family in Dubai comprising of four to five members. Experiments have been performed in Ras Al Khaimah Research and Innovation Centre (RAKRIC) facility. The experimental setup has been installed to achieve the required production of 15-25 L/d of drinking water and 250 L/d of hot water for domestic purposes. Experiments have been performed on MD setup at optimized flow rates of 6 L/min on hot side and 3 L/min on cold side for producing the desired distillate. The hot side and cold side MD temperature has been maintained between 60 degrees C and 70 degrees C, and 20 degrees C and 30 degrees C. The total annual energy demand comes out to be 8,223 kWh (6,000 kWh is for pure water and 2,223 kWh for hot water). The optimum aperture areas

for flat plate and evacuated tube collector field have been identified as 8.5 and 7.5 m(2), respectively. Annual energy consumption per liter for pure water production is 1, 0.85 and 0.7 kWh/L for different MD hot and cold inlet temperatures.

Keywords: Membrane Distillation, RAKRIC, Flat Plate Collectors, Evacuated Tube Collectors, Annual Energy Demand.

Department of Industrial Engineering

Journal Articles

1: **Munir, N.**, Rehman, A., & **Qazi, F. D.** (2017). Tracking of non-linearity growth caused by imbalance using Hilbert transform. *Insight-Non-Destructive Testing and Condition Monitoring, 59*(1), 32-37. **(JCR)**

Abstract: Non-linearities affect every mechanical system, sooner or later. Imbalance, misalignment, looseness, breathing cracks and Coulomb friction are some of the most common causes of non-linearities. In this paper, the Hilbert transform, a power signal processing technique, is used to detect and track non-linearities caused by imbalance. To detect non-linearity and its growth, a machine fault simulator (also referred to as a vibration simulator) was used. The simulator was divided into four regions: (a) disc drive end; (b) disc non-drive end; (c) motor drive end; and (d) motor non-drive end. Frequency domain responses were measured on the horizontal and vertical axes of all four defined regions. Frequency response functions (FRFs) were generated for the first peak frequency (1X). Succeeding harmonics, being less sensitive to detecting imbalance, were ignored. The FRFs were then processed through the Hilbert transform and the results were analysed by incorporating Hoaui's correction terms to avoid truncation errors. The results clearly demonstrate that the Hilbert transform can successfully detect non-linearity and its growth caused by imbalance.

Keywords: Exergy Analysis, Fluidized Bed Boiler, Ethanol, Performance Assessment, Irreversibility.

2: Asad, M., **Naeem, A. A.**, **Ashraf, S. R.**, & **Rabbani, M. T.** (2017). Numerical approach on the design of a sustainable turning insert. *Proceedings of the Pakistan Academy of Sciences. A. Physical and Computational Sciences, 54(4), 339–345.* **(HEC-X Cat.)**

Abstract: To decrease the energy footprint of a machined product, a novel turning insert design is reported in this article. Two geometrical models of the turning inserts, i.e., a commercially available design of insert; and proposed design of insert, were used to numerically simulate the turning operation. FEM-based coupled temperature displacement simulations were carried out for orthogonal turning operations for A2024-T351. Reasonable associations of numerical results with experimentation were found. Numerical simulation results showed the efficacy of the new design of the insert in quantitative reduction of energy inefficient byproduct of machining named as “Burr”. Additionally, an improved tool life was also predicted.

Keywords: Machining Simulation, Burr Formation, Turning, Aluminum Alloy 2024-T351.

Conference Papers

1. **Nizami, S.**, **Qazi, F. D.**, **Chaudhary, I. A.**, (2017). *Occupational health and safety practices in automotive parts manufacturers sector of Pakistan.* Paper presented at First International Conference on Industrial Engineering and Management Applications, Jamshoro, Sindh, Pakistan.

Abstract: Organizations around the globe are bound by law to provide a safe work environment for people engaged at various workplaces. Unfortunately, Occupational Health and Safety (OHS); a field concerned with safety, health and welfare of people employed at workplaces, is one of the most neglected areas in Pakistan. Due to harsh working conditions, injuries occurring in the manufacturing sector; particularly the automotive parts manufacturing sector, are on the rise and workers' indifference towards safe work environments adds fuel to the fire. This study has been undertaken to observe the level of implementation of Occupational Health and Safety in automotive parts manufacturers sector of Pakistan and to identify the barriers that management personnel face in their efforts to establish a health and safety culture in their workplaces. As a result of this study, improvement measures to be taken in the wake of the said barriers are proposed.

2. **Ashraf, S. R.**, & Abbas, S. N. (2017). *Mixed balancing by using of sub-assembly parallels shop*. In Proceedings of the First International Conference on Industrial Engineering and Management Applications (93-98) Jamshoro, Sindh, Pakistan.

Abstract: Line balancing is vital for smooth and efficient running of all assembly line processes. Automotive, electrical appliances and others industries usually assembled different model in same line in order to avoid huge capital expenditure incurred for separate line. Line balancing of mixed model assembly line is easier if the variation of process time among different models are less or negligible, but in case of larger variation it becomes challenging. The challenging task is to find out ratio of model mix, sequence and quantity of each model been produced per shift or per day. In order to optimize Mixed-Model Assembly line concept of parallel sub assembly shop had been used. Mathematical model using linear programming and work leveling method had been used for line balancing and deciding the amount of work to be performed on parallel sub assembly shops. Mathematical model provide a correlation between Product Mix Assembly line and Sub-assembly shops. This paper aims to handle the optimization of Product Mix Assembly line complication in the assembling of different models at same line, line balancing and sub assembly parallel shop.

Keywords: Mixed Model Assembly Line, Parallel Sub-Assembly Shop, Line Optimization.

Department of Mechanical Engineering

Journal Articles

1: **Sultan, T.**, **Ahmad, Z.**, Anwar, Z., & Khurram, M. S. (2017). Impact of asymmetric lamp positioning on the performance of a closed-conduit UV reactor. *Ain Shams Engineering Journal, 8*(2), 225-235. **(JCR)**

Abstract: Computational fluid dynamics (CFD) analyses for the performance improvement of a closed-conduit ultraviolet (UV) reactor were performed by changing the lamp positions from symmetric to asymmetric. The asymmetric lamp positioning can be useful for UV reactor design and optimization. This goal was achieved by incorporating the two performance factors, namely reduction equivalent dose (RED) and system dose performance. Four cases were carried out for asymmetric lamp positioning within the UV reactor chamber and each case consisted of four UV lamps that were simulated once symmetrically and four times asymmetrically. The results of the four asymmetric cases were compared with the symmetric one. Moreover, these results were evaluated by using CFD simulations of a closed-conduit UV reactor. The fluence rate model, UVCalc3D was employed to validate the simulations results. The simulation results provide detailed information about the dose distribution, pathogen track modeling and RED. The RED value was increased by approximately 15% by using UVCalc3D fluence rate model. Additionally, the asymmetric lamp positioning of the UV lamps had more than 50% of the pathogens received a better and a higher UV dose than in the symmetric case. Consequently, the system dose performance was improved by asymmetric lamp positioning. It was concluded that the performance parameters (higher RED and system dose performance) were improved by using asymmetric lamp positioning.

Keywords: Water Disinfection, UV Reactor, Fluence Rate, UV Lamps, CFD, RED.

2: **Ahmad, Z.**, Sultan, T., Zoppi, M., Abid, M., & Jin Park, G. (2017). Nonlinear response topology optimization using equivalent static loads - case studies. *Engineering Optimization, 49*(2), 252-268. **(JCR)**

Abstract: Nonlinear structural optimization is fairly expensive and difficult, because a large number of nonlinear analyses is required due to the large number of design variables involved in topology optimization. In element density based topology optimization, the low density elements create mesh distortion and the updating of finite element material with low density elements has a severe effect on the optimization results in the next cycles. In order to overcome these difficulties, the equivalent static loads method for nonlinear response structural optimization (ESLSO) primarily used for size and shape optimization has been applied to topology optimization. The nonlinear analysis is performed with the given loading conditions to calculate equivalent static loads (ESLs) and these ESLs are used to perform linear response optimization. In this paper, the authors have presented the results of five case studies with material, geometric and contact nonlinearities showing good agreement and providing justification of the proposed method.

Keywords: Topology Optimization, Equivalent Loads, Nonlinear Analysis, Nonlinear Response Optimization, Finite Element Method.

3: **Saghir, S.,** Ilyas, S., Jaber, N., & Younis, M. I. (2017). An experimental and theoretical investigation of the mechanical behavior of multilayer initially curved microplates under electrostatic actuation. *Journal of Vibration and Acoustics, 139*(4), 040901. **(JCR)**

Abstract: We investigate the static and dynamic behavior of a multilayer clamped-free–clamped-free (CFCF) microplate, which is made of polyimide, gold, chromium, and nickel. The microplate is slightly curved away from a stationary electrode and is electrostatically actuated. The free and forced vibrations of the microplate are examined. First, we experimentally investigate the variation of the first natural frequency under the electrostatic direct current (DC) load. Then, the forced dynamic behavior is investigated by applying a harmonic alternating current (AC) voltage superimposed to a DC voltage. Results are shown demonstrating the transition of the dynamic response of the microplate from hardening to softening as the DC voltage is changed as well the dynamic pull-in phenomenon. For the theoretical model, we adopt a dynamic analog of the von Karman governing equations accounting for initial curvature imperfection. These equations are then used to develop a reduced-order model (ROM) based on the Galerkin procedure to simulate the mechanical behavior of the microplate. We compare the theoretical results with the experimental data and show excellent agreement among the results. We also examine the effect of the initial rise on the natural frequencies of first three symmetric–symmetric modes of the plate.

Keywords: Topology Optimization, Equivalent Loads, Nonlinear Analysis, Nonlinear Response Optimization, Finite Element Method.

4: Asif, M., Dehwah, A. H. A., **Ashraf, F.**, Khan, H. S., Shaukat, M. M., & Hassan, M. T. (2017). Life cycle assessment of a three-bedroom house in Saudi Arabia. *Environments, 4*(3), 52. **(JCR)**

Abstract: The building sector is one of the crucial stakeholders in the global energy and environmental scenario. Life cycle assessment (LCA) is a tool widely used to evaluate the environmental performance of buildings, materials and activities. Saudi Arabia has a rapidly growing construction sector with over $1 Trillion of ongoing projects. The housing sector, annually needing over 2.32 million new residential units in coming years, is yet to entertain environmental performance of buildings in its list of priorities. The present work undertakes a LCA study of a three-bedroom modern villa located in Dhahran. Providing the structural details of the villa, an account of the 18 main construction materials in terms of quantity and application has been produced. Embodied energy of these materials has been estimated adopting cradle-to-gate' approach. Environmental impacts of the materials have been modeled with the help of SimaPro software. The results suggest that concrete accounts for more than 43% of the total embodied energy of the house and is also the predominant material in terms of the overall environmental impacts. Steel is the second most prominent material both in terms of quantity and embodied energy.

Keywords: Buildings, Sustainability, Life Cycle Assessment, Embodied Energy, Environment, Materials.

Institute of Communication and Cultural Studies

ICCS

Journal Articles

1: **Khan, A.**, **Nazneen, M.**, **Ahmad, S. S.**, & **Khalid, A.** (2017). A comparative analysis of effectiveness of learner-centered approach and teacher-centered approach in writing skills of undergraduate students. *Linguistics & Literature Review, 3*(2), 1-17. **(UMT)**

Abstract: The research article investigates the effectiveness of Learner Centered Approach on the development of writing skills of undergraduate students. It is an experimental study on 60 undergraduate students of first semester in University of Management and Technology, Lahore. The participants were divided into two groups of 30. One group was taught through the Learner Centered Approach and the other was taught through Teacher Centered Approach. A pre-test was conducted at the start of the experiment to assess the performance of students at initial stage. The Teacher Centered Class was taught writing skills through Teacher Centered based activities and the Learner Centered Class was taught writing skills through Learner Centered activities. At the end of the experiment, a post test was conducted in order to assess the effect of the two approaches on the writing performance of the students. Ten (10) activities were conducted in total. IELTS assessment method was used to assess the performance of students in the pre-test, post-test and in the activities conducted during the experiment. The quantitative analysis was done through SPSS 21. The scores of the pre-test and post-test were compared to determine the approach that had relatively more positive effects on the writing skill of students. The results of the study show that the Learner Centered Approach is more effective in developing writing skills of undergraduate students at University of Management and Technology, Lahore.

Keywords: Teacher Centered Approach, Learner Centered Approach, Writing Skills.

2: **Khan, A. A.**, & **Khalid, A.** (2018). Pashto-English codeswitching: Testing the morphosyntactic constraints of the MLF model. *Lingua, 201*, 78-91. **(JCR)**

Abstract: This study examines the morphosyntactic constraints on Pashto-English codeswitching. The framework for the present research is based on the widely attested code-switching model, the Matrix Language Frame (MLF) Model and 4-M model (Myers-Scotton and Jake, 2000, Myers-Scotton and Jake, 2009). In order to investigate these constraints, 25 clips from the Pashto speech community have been transcribed and analyzed. The two constraints, the Morpheme Order (MO) constraint and the System Morpheme (SM) constraint of MLF Model are supported by the data. The Pashto-English bilingual data empirically support Myers-Scotton Matrix Language Frame Model and 4-M model (1993, 2002, 2009) and in the entire data set, not a single counter example has been recorded. The present study supports the idea that Pashto-English bilingual data is asymmetrical in structure, where English is the Embedded Language (EL) and Pashto is the Matrix Language (ML) responsible for the well-formedness and morphosyntactic frame. The study reveals that the subject-verb agreement, morpheme order,

and the late system morpheme (bridge, outsider) play a crucial role to maintain the morphosyntactic frame of the Pashto language. The study validates the Differential Access Hypothesis (Myers-Scotton, 2006, Myers-Scotton, 2002; Myers-Scotton and Jake, 2009) in that the late system morphemes are triggered at the threshold level in order to uphold the structure.

Keywords: Morphosyntactic Constraints, Light Verb Constructions, Codeswitching, Morpheme Order Principle, System Morpheme principle.

Conference Papers

1. **Ashfaq, N**., & **Abid, F**. (2017, July 7-8). AIDA model: *A source of attraction in promoting children products' advertisements*. Proceedings of LILA 17 / IV International Linguistics and Language Studies Conference (93-98), Istanbul, Turkey.

Abstract: Not available.

2. Sarfaraz, R., **Abid, F**., & **Ashfaq, N**. (2017, October 12-14). *Discourse analysis of the speeches of Michelle Obama: A reflection of pronouns and identity.* Paper presented at third International Conference of the Linguistic Association of Pakistan, Karachi, Pakistan.

Abstract: This paper aims to analyze the speeches of Michelle Obama in light of identity and pronouns, and the way they are being implemented are the focal points investigated in the paper. Teun Van Dijk is a well-known name in discourse studies, and his model of CDA analysis is one of the most powerful approaches in the domain. His model involves three dimensions of ideology analysis namely, discourse, sociocognition and social analysis. Two of the speeches of Michelle Obama have been selected randomly on the basis of their relevant content and availability. First speech was addressed to "Democratic National Convention" (2012) and the second speech is taken from "Democratic presidential nominee's campaign rally in Salem, N.C. To evaluate her speeches discussion has been done by using CDA model of Van Dijk. (2001) Qualitative approach has been used as no statistical data has been involved. Her speeches seem appropriate and relevant to the above mentioned CDA model therefore a keen observation has been done. Speech has been analyzed at different levels. It has been found that Michelle Obama uses a lot of pronouns like "I", "You" and "We" etc in a variety of ways that reflects identity and a strong sense of belonging. She is trying to endorse values and ethics by using powerful and watchfully chosen pronouns which reveal identity and leave therapeutic effects on her audience. She smoothly drifts from "My" to "Our" and "I" to "You" to demonstrate a strong connection between people and her life, particularly by using real life examples. She skillfully uses repetition in her speeches to leave mark on her audience's mind. Thus, it proves that, a politician's pronominal use of language explains about one's diverse identity, particularly one's combined and shared identity. This also strongly reflects a politician's aim to connect to the audience by certain sociocognitive practices, to which they can relate. The schema of this research is to demonstrate the fine amalgamation of identity and pronoun through the prism of Van Dijk CDA model. Furthermore, this study will open doors for the innovative entities in terms of analyzing speeches through a different dimension. The basic purpose of the research is to understand the use of personal pronouns and identity, to seek meaning under the surveillance of Van Dijk CDA model.

Keywords: Identity, Personal Pronoun, CDA, Speech, Discourse.

3. **Qureshi, N. A., Abid, F**., & **Niazi, A**. (2017). *The use of Hindi words by Pakistani children: An effect of Hindi dubbed cartoon viewing*. Paper presented at the fifth International Conference on Research in Education (ICORE 2017), Lahore, Pakistan.

Abstract: Not available.

Institute of Clinical Psychology

ICP

Journal Articles

1: **Durrani, S. M., Mahmood, Z.,** & **Saleem, S.** (2017). The development and validation of temperament scale for university students. *FWU Journal of Social Sciences, 11*(1). **(HEC Y-Cat.)**

Abstract: Temperament is said to be more functionally related to behavior then the structural view of personality. This research describes an attempt to develop a temperament scale for the use of clinical and research with student population. In Phase I, different temperaments were elicited from 40 university students (20 males and 20females). Phase II comprised the expert validation of final collated list of 60 items. After pilot study, 441 university students (M 20.91, SD 1.83) were given Student Temperament Scale (STS) and Big Five Inventory (BFI, Benet-Martinez & John, 1998). The exploratory factor analysis produced six factors namely Apprehension, Impulsivity, Cautiousness, Introversion, Submissiveness and Extroversion. The scale had high face, construct, and concurrent validity along with high test retest reliability scores and internal consistency. The results are discussed in cultural implication of temperament in student counseling service.

Keywords: Temperament, University Students, Culture, Reliability and Validity.

2: **Yaseen, F., Mahmood, Z.**, & **Saleem, S**. (2017). Assessment of perceived psycho-social health in emigrants'wives: Preliminary findings. *Gomal University Journal of Research,* (Special Issue I) 51-62. **(HEC Y-Cat.)**

Abstract: This study is an attempt to identify and develop a scale that would assess Perceived Psychosocial issues in the wives of emigrants. For this purpose, 20 wives of emigrants were interviewed to extract a list of items related to their psycho-social health issues in the absence of husbands. A list of (23 items) was administered to 150 emigrants' wives. Principal Component Factor Analysis revealed three factors named Somatic, Low Mood and Social Isolation. The scale revealed adequate psychometric properties and suggested that wives living without husbands are prone to these three psycho-social health problems in our culture. The use of Perceived Psychosocial Health in the wives of emigrants (PPHWE) to identify and assess mental health of left- behind wives due to emigration of husband is proposed

Keywords: Psycho-Social, Emigrants Wives, Assessment.

3: **Suneel, I**., **Mahmood, Z**., & **Saleem, S**. (2017). Roles and mental health functioning of adult children of alcoholic fathers in Pakistan. *Pakistan Journal of Psychological Research, 32*(1), 317-332. **(HEC Y-Cat.)**

Abstract: It has been amply demonstrated through clinical practice and research that alcoholism not only affects the individual, but the family as well (Olmsted, Crowell, and Waters, 2003). The affects are numerous ranging from nonclinical to clinical problems (Barnard and McKeganey, 2004). Moreover, one of the salient features is that the family members of the

alcoholics, especially, the children regardless of age develop certain psychosocial roles in order to deal with the chaos in the family caused by the parent's alcoholism (Daylon, 2012). The present study was aimed to study the mental health functioning, the roles assumed by the adult children of alcoholics, and also the relationship between the two variables. In order to achieve the aim, data were collected from private rehabilitation centers where the fathers were admitted for treatment of alcoholism and the family were counseled on out-patient basis. To determine the mental health functioning General Health Questionnaire (Goldberg and Williams, 1988) was used and for the roles Role Identification Scale (Samuel, Mahmood, and Saleem, 2014) was administered on 400 participants with age range 18-25 years with equal gender distribution. The results showed two sets of complimentary roles in the family and their significant relationship with mental health functioning. The relationship between the variables was discussed in context of indigenous family structure and cultural practices along with implications of the study.

4: **Khawar, H., Jabeen, A., Mahmood, Z., & Saleem, S**. (2017). Predictive relationship among attachment styles, psychosexual and mental health problems in married females. *Journal of Pakistan Psychiatric Society, 14*(3), 17-20. **(HEC Y-Cat.)**

Abstract: **Objective**: To investigate the relationship between partners attachment style, psychosexual and mental health problems in married females. STUDY DESIGN Cross sectional study design. **Place and Duration of Study**: Different hospitals and gyne clinics of city Lahore, the study was carried out during the period of October, 2015 to September, 2016. **Subjects And Methods**: A sample of 160 married females with age range 20 - 35years (M= 28.22, SD= 3.40) was approached for data collection by using purposive sampling strategy and they were given three measures were including Attachment Pattern Questionnaire for Adults (AQA), Female Psychosexual Problems Scale (FPSPS) and Depression Anxiety Stress Scale (DASS). **Results**: A significant positive correlation was found between psychosexual and mental health problems in females. The results of hierarchal regression analysis revealed that low maternal education level, avoidant attachment style with their partner, and having high psychosexual problems score were the significant positive predictors of mental health problems. **Conclusion**: It can be concluded that married females who have less educated mothers, have insecure attachment style with their partners and experiencing more psychosexual problems suffer from more mental health problems in their lives.

5: **Mahmood, S. N**., & **Jabeen, A**. (2017). Application of occupational therapy using behavior therapy techniques with cerebral palsy. *Pakistan Pediatric Journal, 41*(4), 256-259. **(HEC X-Cat.)**

Abstract: The current case study highlights the use of Occupational Therapy model in devising the management plan of cerebral palsy whereas Behavior Therapy techniques to execute the model. A 13 years old boy with Cerebral Palsy was assessed and managed over a period of 4 months in Special Education School, Lahore, Pakistan in 2016. The assessment included clinical interview of client's teacher, behavioral observations in different settings administration of Children's Adaptive Behavior Scale (CABS) and Bender Gestalt Test (BGT). The preliminary psychological investigation revealed his suspected problem to be Intellectual Disability Disorder (Mild level) with Cerebral Palsy as evidenced by his medical report. The management plan was devised embracing the basic principle of Occupational Therapy to promote independence that was executed through Behavior Modification techniques. The total number of sessions with the

client was 23 with approximately 40 minutes duration of each session. An obvious difference was observed before and after the execution of therapeutic interventions.

Keywords: Occupational Therapy, Behavior Therapy, Cerebral Palsy and Intellectual Disability.

6: **Shahzadi, M.**, & **Saleem, M**. (2017). Cannot live without performing act: A case study. *International Journal of Medical Research & Health Sciences, 6*(12), 49-52. **(JCR)**

Abstract: Obsessive-Compulsive Disorder (OCD) is psychological disorder that leads to many other psychological problems such as tic disorder, anxiety disorder, depression disorder and so on. The symptoms of Obsessive-Compulsive Disorder can be managed by medication and various psychological strategies such as distraction techniques, thought stopping and response prevention.

Keywords: Psychological Disorder, Distraction Techniques, Thought Stopping, Response Prevention.

7: **Saleem, S.**, **Pervaiz, S.**, & **Mahmood, Z**. (2017). Attachment styles, emotional and behavioral problems in shantytown and mainstream school going adolescents. *Journal of Pakistan Psychiatric Society, 14*(4), 32-35. **(HEC Y-Cat)**

Abstract: **Objective**: To investigate the relationship of attachment styles and emotional and behavioral problems (EBP) in children living in shanty towns and mainstream. STUDY DESIGN Cross sectional research design.

Place and Duration of Study: The study was conducted in different schools of shantytown and general society.

Subjects and Methods: 408 participants were selected (half of the sample from shanty town and half from main stream). Two groups were selected with the age range of 12-18 years (M, 14.62, SD. 1.59). Attachment patterns Attachment Questionnaire for Children and the School Children's Problems Scale were used to assess attachment styles and emotional and behavioral problems.

Results: The results indicate that shanty town adolescents had more ambivalent attachment with parents, further they scored significantly higher on Anxiousness, Academic Problems, Aggression and overall mental health problems than mainstream counterparts. Whereas, mainstream adolescents scored higher on Withdrawn and Somatic problems. Adolescents with Ambivalent attachment style tend to score significantly higher on Anxiousness, Rejection, Somatic and Overall SCPS.

Conclusion: It can be concluded that shanty town adolescents had ambivalent attachment that may lead to more EBP.

8: **Saleem, S., Mahmood, Z. Daud, S**. (2017). Perceived parenting styles in Pakistani adolescents: A validation study. *Pakistan Journal of Psychological Research, 32(*2), 487-509. **(HEC X-Cat)**

Abstract: Parenting styles are said to have profound impact on child's development. However, these are largely influenced by culture and its philosophy. The present study aimed to develop a valid and reliable scale for measuring perceived parenting styles for Pakistani culture. In Phase-I of the study, phenomenological approach was used to explore parenting styles from 60 adolescents. The recorded verbatim of participants resulted into a list of 66 items which were further validated in Phase-II by 8 school psychologists. The final list of 60 items was converted into a self-report measure (i.e., Parenting Styles Scale for Adolescents) and in Phase-III, a try out

study was conducted to determine user friendliness and comprehension of items on a sample of 30 students. Lastly, in Phase-IV, 473 students (49% boys and 51% girls) selected through multistage sampling were given the newly developed measure along with the Attachment Questionnaire for Children (Muris, Mesesters, van Melick, and Zwambag, 2001) to measure construct and concurrent validity. Exploratory Factor Analysis resulted into four factors namely Caring, Affectionate, Controlling, and Punitive Parenting Styles. The scale showed high internal consistency, test-retest reliability, and concurrent validity. Results are discussed in terms of cultural implications and gender differences.

9: **Butt, M. G., Mahmood, Z., & Saleem, S**. (2017). Self report measure for borderline personality traits in clinical population. *Journal of Postgraduate Medical Institute, 31*(4), 414-419. **(HEC X-Cat)**

Abstract: **Objective:** To develop an indigenous self-report measure for borderline personality traits in a clinical sample. Methodology: During the first phase, phenomenology was explored by conducting in-depth interviews of 15 diagnosed patients. The repeated and dubious responses were screened out that resulted in the production of a league table. Five experienced clinical psychologists and five psychiatrists validated the items and as a result, 33 items of the scale were retained out of 44 items. This preliminary study was conducted on 81 diagnosed participants (24 males and 57 females) who were selected through purposive sampling technique. All the participants were diagnosed by expert psychologists and psychiatrists.

Results: Factor analysis revealed two factors namely mood liability and insecure dependence respectively. Significant positive correlation was found between Borderline personality traits scale (BPTS) and Zanirini borderline personality disorder scale (ZAN-BPDS). The internal consistency of the scale was excellent with Cronbach's alpha value of .87.

Conclusion: The scale can be used on Pakistani population without any language or comprehension barrier.

Keywords: Mood Liability, Insecure Dependence, Borderline Personality Traits.

Conference Papers

1. **Daud, S.,** & **Mahmood, Z**. (2017, March 9-10). *Burnout tendencies in university administrative staff: A psychometric study.* Paper presented at first International Conference on Clinical Psychology and The Developing World: Issues and Solutions, Lahore, Pakistan.

Abstract: Not available.

2. **Daud, S.,** & **Mahmood, Z**. (2017, August 12-14). *Burnout tendencies and mental health issues in university administrative staff*. Paper presented at World Conference on Science, Technology and Medicine, Dubai, U.A.E.

Abstract: Not available.

3. **Ameen, Z**. (2017, August 12-14). *Cognitive behavior therapy for shyness: A cultural perspective*. Paper presented at World Conference on Science, Technology and Medicine, Dubai, U.A.E.

Abstract: Not available.

4. **Jabeen, A**. (2017). *Effectiveness of rapport building with an autistic child: A case study*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

5. **Jbeen, A**. (2017). *Enhancing social skills of children with Down's syndrome using social skills training program*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

6. **Jabeen, A**. (2017). *Wonders of reinforcement: Case study of an undermined child*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

Institute of Islamic Banking

IIB

Journal Articles

1: Ahmad, S., **Kalim, R.**, & Kaleem, A. (2017). Academics' perceptions of bullying at work: Insights from Pakistan. *International Journal of Educational Management, 31*(2), 204-220. **(JCR)**

Abstract: **Purpose:** Despite an extensive history of research into workplace bullying and the psychosomatic harm associated with it in western contexts, research into the occurrence and manifestation of bullying behavior in the academic workplaces of non-western countries is sparse. In response to this gap, the purpose of this paper is to start a research conversation by reporting an empirical enquiry into the occurrence, forms and perceptions of workplace bullying among academics in Pakistan.

Design/methodology/approach: This study was conducted with a representative sample of academics in a large Pakistani province through a cross-sectional survey.

Findings: This study reveals that workplace bullying is prevalent among academics in the Pakistani context, with up to half of them regularly exposed to practices such as excessive work monitoring, undermining of professional competence, lack of recognition of work contributions and obstruction of important work-related matters.

Research limitations/implications: The findings underscore the need for developing broader institutional actions, clear policies and grievance procedures to discourage bullying at work in Pakistan. Higher educational managers will find the results useful for development of anti-bullying policies and codes of conduct.

Originality/value: This is the first study to examine the perceptions, occurrence and demographic risk factors associated with workplace bullying among academics in the Pakistani context.

Keywords: Pakistan, Workplace Bullying, Academics.

2: Khan, M. M. S., Shafiq, B., & **Farrukh, I**. (2017). An empirical analysis of banking sector in pakistan: Islamic versus conventional banks. *International Journal of Islamic Economics and Finance Studies, 3*(1). **(NR)**

Abstract: **Purpose** – The purpose of this study is to determine the impact of service quality being provided by the Islamic and Conventional banks on customer's judgments towards their satisfaction level on different parameters of Islamic banks in the region of Lahore, Pakistan.

Design/Methodology/Approach – A questionnaire was formulated to obtained data from the 300 respondents using a convenience sampling technique. T-tests, correlation, ANOVA and regression analysis used to test the extent of relationship among service quality (SQL) and customer satisfaction (CS) for the both banking sectors of Pakistan.

Findings – The consequences depicts that there is a strong positive association among SQL and CS in the banking segment. Further results illustrates that the extent of affiliation among SQL and CS is larger in Islamic banks as contrasted to conventional banks.

Originality/Value/Implications – In Pakistan, there are fewer studies that raised the issue of SQL and CS in Islamic and Conventional banks within in a single study. Also, as Islamic banking is a new phenomena which is getting increasing market share in terms of market size and deposits, so this comparison is also of great importance. This study has a number of inferences for bankers, policy makers and academicians. This principle has been applied in many fields such as contiguity relations, urban schemes, and market regulations. Today, asymmetric information, externalities and market failures may be considered in this context.

Keywords: Banking, Service Quality, Customer Satisfaction.

3: **Gillani, S. H. B.,** Khan, M. M. S., & **Ijaz, F**. (2017). Factors reinforcing Pakistan halal food industry to be the world halal food hub. *Journal of Education and Social Sciences*, *6*, 31-43. **(NR)**

Abstract: Halal is becoming a universal sign for quality assurance and standard of living. The world market for halal goods and services is rising into influential energy pitch of world commerce and finance. Halal products and Islamic Financial Services (IFS) have a market share of one trillion USD annually. The aim of this study was to survey the potential and expectations of halal food producers, distributors and consultants anticipate in promoting Pakistan halal food industry as a potential halal food hub. The study explored the halal food producer's awareness, perception, religious beliefs and the market strategies government adopted to fortify the Pakistan halal food industry. Shariah compliance standards were also analyzed. The study found that Pakistani food producers and distributors perceived that most of the Muslim consumers prefer halal food items, and a proper advertising and marketing strategy of Pakistan halal food could be a competitive advantage in this regard. Some policy actions are needed to be established as governance of halal is unsystematic in Pakistan. This study will be of great significance to the policy makers, marketers and food manufacturers in Pakistan.

Keywords: Halal, Government, Marketing, Food Industry, Pakistan.

4: **Ayaz, M**. & Mansoori, M. T. (2017). Strengthening corporate governance regime for Islamic banks in Pakistan: Focusing on the principles of amana¯ and mas'¯ ul¯ iyah. *Journal of Islamic Business and Management, 7*(2), 178-196. **(HEC Y-Cat)**

Abstract: The debate on the topic of Corporate Governance (CG) witnessed a substantial boost in the wake of the unprecedented financial crisis of 2008, and previously, the collapses of big corporations and banks in 1990s. The governance failure has been found as the key factor behind this debacle. The CG in Islamic perspective got attention from the scholars and researchers soon after the Islamic Banking Institutions (IBIs) emerged. Nevertheless, Islamic CG faced some issues such as incompetency of the board of directors, absence of effective risk management policies, moral hazards, and non-compliance of Shar¯ı'ah principles. The goal of compliance with Islamic law has also been added to the CG and the State Bank of Pakistan (SBP), as regulator, issued a Shar¯ı'ah Governance Framework (SGF) in this respect. However, a separate statutory law for the governance of IBIs is non-existent. Hence, the IBIs follow conventional regime, which failed to cater the specific requirements of IBIs. The research adopts qualitative inquiry method for deeper analysis. The governance of the IBIs should be in the hands of such competent CG players, who comply with the principles of am¯anah (trusteeship) and mas'¯ul¯ıyah (accountability) in addition to other capabilities. There are certain provisions in the existing CG regime, compatible with these principles, but the same do not ensure good governance. Further, to the best of our knowledge, no CG player is punished

for non-compliance with the provisions of the SGF. We suggest proper punitive actions for the Shar¯ı‘ah non-compliances. Various scholars have discussed CG principles, but they did not check any legal regime to verify the degree of compatibility of its provisions with those principles. This study is an effort to fill the gap by assessing the compatibility of the provisions of the existing SGF with the Islamic principles of Am¯anah and Mas’¯ul¯ıyah with respect to IBIs in Pakistan.

Keywords: CG, Compatibility, Islamic Banks, Am¯anah, Mas’¯ul¯ıyah, SGF.

5: Oybekovich, A. G., Shah, H. S., & **Ayaz, M**. (2017). The role of the Zakat system during the colonial-period in Malaysia and Uzbekistan: A comparative analysis. *Islamic Banking and Finance Review, 04,* 40-54. **(UMT)**

Abstract: During the colonial period, the zakat system in both Uzbekistan and Malaysia experienced serious changes due to imperial powers' intervention. The zakat system was an important source of economy for these states. This paper highlights the zakat practices of pre-colonial and colonial Uzbekistan and Malaysia, and clarifies the nature of encounters of different civilizations such as Islamic and Christian in these regions. The main objective of this study is to find similarities and differences in the imperialists' influence on structural level of taxation and zakat systems between the countries studied. This study reveals that there are similarities such as in the administration of zakat collection after the arrival of the imperial powers, where in both countries, the colonial powers appointed supervisors over local zakat collectors, in order to control revenues. This research also found some important differences that arose because of the intervention of the colonialists, where British helped in establishing centralized zakat collection, whereas Russians totally abolished zakat system by turning it into conventional taxation.

Keywords: Zakat, Zakat Institution, Colonialism, Muslim Society.

6: Hassan, A., & **Saleem, S**. (2017). An Islamic microfinance business model in Bangladesh: Its role in alleviation of poverty and socio-economic well-being of women. *Humanomics, 33*(1), 15-37. **(JCR)**

Abstract: **Purpose** -The main purpose of this study is two-fold: first, it aims to confirm or disapprove a positive relationship between Islamic microfinance and the socio-economic welfare of women and, second, it aims to explore the perspective in which Islamic microfinance packages function in Bangladesh and the system of their performance can be enhanced.
Design/methodology/approach -Based on structured questionnaires' survey, this study addressed two research questions: What should be anticipated from the programmes of Islamic microfinance on the well-being of beneficiaries and under what circumstances would such programmes be more useful?
Findings -The main result of this study shows that growth in women's revenue and resources played an important role in improving women's financial freedom and sense of self-possession. A significant policy endorsement in this study is that it is essential to redirect Islamic microfinance to spread in the developmental activities which will drive to contribute towards the well-being of the recipients in the long run.
Originality/value -Examination of the Rural Development Scheme of Islami Bank Bangladesh is undertaken, aiming to critically review their Islamic microfinance programme in the matter of fighting poverty in Bangladesh and to suggest to diversify the Islamic microfinance scheme to

spread in the developmental activities which will drive to contribute towards the well-being of the recipients in the long run.

Keywords: Business Model, Islamic Microfinance, Women's Well-Being.

Conference Papers

1. **Kalim, R**. (2017, May 9). *Channel of Islamic banking financing effect on growth*. Paper presented at the first International Conference on Economic, Lahore, Pakistan..

Abstract: Not available.

2. **Kalim, R**. (2017, July 30-August 3). *Does investment decision of Islamic banking maximize deposit return?* Paper presented at the International Academic Conference on Business 2017, New York, USA.

Abstract: Not available.

3. **Farooq, W**. (2017, November 9-10). *Effect of open innovation on busniess performance: Moderating role of external environmental factors*. Paper presented at the second International Conference on Dynamic Innovation (ICDI 2017), Malaysia.

Abstract: Not available.

4. **Azeem, M. U**. (2017). *Explaining performance under threats of terrorism: Effects of anxiety and religiousness*. Paper presented at the Academy of Management Conference, USA.

Abstract: This study investigates the relationship between employees' perceptions of the threat of terrorism and job performance, as well as a potential mediating effect of job-related anxiety and moderating effect of religiousness on this relationship. Multisource, time-lagged data from employees and their supervisors in Pakistan reveal that an important reason that perceived threats of terrorism diminish job performance is the anxiety that employees experience at work. Employees' religiousness buffers the negative effect of perceived threats of terrorism on job-related anxiety though, such that the relationship is mitigated when their religiousness is high. Finally, the results indicate the presence of moderated mediation: The indirect effect of perceived threats of terrorism on job performance is not as strong at higher levels of religiousness. In external environments in which terrorism presents a credible threat, organizations can therefore consider the religiousness of their employees as a resource for countering their anxiety.

School of Architecture and Planning

SAP

Journal Articles

1: **Malik, S.**, **Tariq, F.**, & **Awan, M. Y. (**2017). Urbanization and transforming urban form of Asian cities - cases of Bangkok, Tokyo & Mumbai. *International Journal of Engineering Research in Mechanical and Civil Engineering (IJERMCE), 2*(6), 539-543. **(NR)**

Abstract: Cities under the influence of urbanization around the globe have experienced new shifts in urban policies and development. The paper discusses the transformation of Asian megacities through urbanization and the response of cities towards this paradigm of urbanization in terms of infrastructure policies and urban planning. The study is broadly divided into two sections. The first section is about urbanism and its connection with smooth working of cities. The second section is structured on impacts of urbanization with particular focus on how the urbanization is transforming the urban form Asian cities. This pattern of urban development being rapidly implied at more than one place at a time around the globe, demands for comparison of regional policies to effectively deal with impacts of urbanization for the sustainable growth of cities.

Keywords: Urbanization, Cities, Urban Form, Urbanism, Transformation.

2: Asim, M., **Gulzar, S.**, Ali, M. M., & **Shirwani, R. K**. (2017). Study on impediments and success of building byelaws implementation in Lahore, Pakistan. *Journal of Research in Architecture & Planning, 22,* 34-42. **(HEC Y-Cat.)**

Abstract: Building regulations are a silent protector to the general public. These are mostly not well recognized unless a situation arises where regulations are felt inadequate or not enforced. In Lahore a number of authorities are present for the same purpose. This research aims at studying the building regulations of the city's four different authorities i.e. Lahore Development Authority (LDA), town Municipal Administration (TMA), Lahore Cantonment Board (LCB) and Model Town Cooperative Society (MCS), and assesses the underlying causes for their implementation failures and successes. Along with reviewing the international practices, the study identifies respondents from the general public and building officials and thus tabulates the obtained results for analyzing the efficiency of a building authority. Socio-economic surveys as well as interview surveys have been conducted, in the light of which the working of all four authorities in relevance to different attributes have been assessed. The results reveal that the MCS has the most efficient building regulations mechanism and portrays an overall satisfactory condition. Recommendations have been made to identify tools for better implementation of building bye laws as well as provide an insight to the user for legalized building construction.

Keywords: Building Bye Laws, Implementation, Building Control Authorities, Lahore.

3: **Khilat, F.**, **Awan, M. Y.**, **Malik, S.**, & **Mujahid, B**. (2017). Documenting the architectural characteristics of Cathedral church of resurrection, Lahore. *Journal of Research in Architecture*

& Planning, 22, 43-52. **(HEC Y-Cat)**

Abstract: The Cathedral Church of the Resurrection is a spectacular, monumental structure having distinctive features of Gothic architecture located on Mall Road, Lahore. In the nineteenth century, British rulers developed this road as the foremost city centre after they established their government in the area. Other important buildings situated on this road are High Court, General Post Office, Town Hall, Montgomery Hall, Punjab University, Atchison College, churches and cathedrals. Among various structures, the enormity of this Cathedral reflects its glory, in cosmic green meadows. The artistic style of Gothic architecture introduced by the British is truly represented in this monument. Every day, many Christians visit here to perform their sacramental obligations. In addition, the Cathedral includes its adjacent missionary school, known as Lahore Cathedral School. The structure seems to be intact; but, closer examination reveals the reality of major aspect in need of attention. The research was carried out by closely scrutinizing numerous fragments of the Cathedral through surveys and photography. The paper highlights the distinct character of the monument by assessing its architectural features in detail and concluding various measures needed to conserve the monument's heritage.

Keywords: Gothic, Architecture, Church, Monument, Cathedral.

4: **S. Malik** , **F. Tariq** , & Maliki, N. (2017). Study of environmental impact assessment (EIA) process in Scotland, Malaysia and Pakistan. *Technical Journal, 22*(3). **(HEC Y-Cat.)**

Abstract: Environmental Impact Assessment, known by its abbreviation EIA, is a planning tool to sustain the natural environment in its outstanding place by evaluating the consequences of a planned activity before putting into practice. Today the developed countries as well as the developing countries are undertaking EIAas the precautionary measure to judge the aftereffects of new developments at the planning stage ensuring the wellbeing of ecosystems. The origin of EIAtook place in 1969 in the form of a domestic law by United States through initiating National Environmental Policy Act. Over the time period of many years, now many countries including the third world countries have started following the US set example by incorporating the study of EIA into their officially authorized system. In addition to this, a number of researches have revealed that EIA can play important role in contributing sustainable environment by supporting the technical and scientific understanding and their improvement in different fields, providing guidance in design of development projects, enhancing the governance of system and most importantly by modifying the attitudes of the society. For this reason, the role of EIA in the social, physical and environmental sectors has become significant. This paper will look into the mechanism of three different nations as how they are implementing this concern in their institutions. The paper, therefore, concisely reviewed the substantive processes of EIA, in the cases of Scotland, Malaysia and Pakistan.

Keywords: Assessment, Environmental Impact, Malaysia, Scotland, Pakistan.

5: **Khilat, F**. & **Tariq, F.** (2017). Conceptual framework of an ideal Muslim capital: Comparison between early Muslim capital of Baghdad and Islamabad. *Journal of Islamic Thought and Civilization, 7*(1), 71-88. **(UMT)**

Abstract: According to Islamic teaching the Muslim capital city should incorporate fundamental elements of socio- economic enrichment and also a hospitable glance for its visitors. Various cities in the history of Islamic world performed as administrative capitals such as Medina,

Damascus, Kufa, Baghdad, Isfahan, Mash'had etc. Among these Baghdad was the first major purpose built capital city founded at the bank of river Tigris by the Muslims. It had a radial plan with social interactive spaces at its centre. In the modern times, we have the example of Islamabad which was also planned as the capital of Islamic Republic of Pakistan. The current research compares these two capital cities in order to discover the features which an Islamic world capital city should incorporate and depict. Furthermore, it will generate some general rules for planning capital city for the governing bodies of Islamic republics which would be helpful in futuristic facets.

Keywords: Islamic, capital, Baghdad, Islamabad, Urban, Planning, Design.

Conference Papers

1. **Khilat, F.**, **Kamran, M.**, & **Malik, I**. (2017, March 24-25). *Strategy for the up-gradation of a slum/squatter settlement: Case study of Sattu Katla village, Lahore*. Paper presented at International Conference on Urban and Regional Planning: Urban Resilience and Adaption, Karachi, Pakistan.
Abstract: Not available.

2. **Malik, A. M., Awan, M. Y., Rashid, M.,** & **Chaudary, N. Y.** (2017, March 9-10). *Improving navigation in visually impaired children: An interior design proposal.* Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues and Solutions, Lahore, Pakistan.
Abstract: Not available.

3. **Malik, I.**, **Malik, A. M.**, & **Rashid, M**. (2017, April 24-27). *The dynamics of markets - A case study of Liberty market Lahore*. Paper presented at IAPEX-2017 Convention on Conservation of Heritage, Lahore, Pakistan.
Abstract: Not available.

4. **Chaudary, N. Y.**, **Awan, M. Y.**, Jalil, A., & **Malik, A. M**. (2017, March 9-10). *Psychological behavior of children and learning through design*. Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues and Solutions, Lahore, Pakistan.
Abstract: Not available.

5. **Malik, A. M.**, **Awan, M. Y.**, & **Rashid, M**. (2017, March 13-14). *The sustainable ethnicity of old founded streets of Lahore - A case study of walled city.* Paper presented at sixth International Conference on Civil, Architectural and Environmental Sciences (CAES-17), Dubai, UAE.
Abstract: Not available.

6. **Rashid, M.**, & **Malik, A. M**. (2017). *Sustainable buildings - An approach towards smart cities; effect of orientation and glazing material on the heat gain in semi-arid climate (A case study of Lahore).* Paper presented at sixth Invention to Innovation Summit - Punjab 2017, Lahore, Pakistan.
Abstract: Not available.

7. **Malik, I**., **Malik, A. M**., & **Rashid, M**. (2017, April 24-25). *The dynamics of markets and its effects on the cultural norms- A case study of Lahore*. Paper presented at IAPEX-2017 Conservation of Heritage Exploring New Contexts, Lahore, Pakistan.
Abstract: Not available.

8. **Malik, S**., & **Jamil, F**. (2017, March 9-10). *The dynamics of psychological approach in designing spaces - A study of architecture students.* Paper presented at 1st International Conference on Clinical Psychology and the Developing World Issues, Challenges and Solutions, Lahore, Pakistan.
Abstract: Not available.

9. **Malik, S**., **Tariq, F**. & **Awan, M. Y**. (2017). *Urbanization and transforming urban form of Asian cities – Cases of Bangkok, Tokyo & Mumbai.* Paper presented at International Conference on Civil, Architecture, Environment and Waste Management, Dubai.
Abstract: Not available.

10. **Jamil, F**. & D. S. (2017, May 09-11). *Historical development of dado ornamentation in Mughal architecture.* Paper presented at 15th International Conference on Studies Repairs and Maintenance of Heritage Architecture, Wessex Institute, Alicante, Spain.
Abstract: Not available.

11. **Gulzar, S**. (2017, September 16-17). *Deterioration morphologies of historic ornamental panels from the mughal historic monuments of Lahore (Pakistan).* Paper presented at the IRES International Conference, Zurich, Switzerland.
Abstract: The historic ornamental panels from the historic monuments (Lahore, Pakistan) is considered to be the one of the most intricate and colourful cultural expression of unparalleled patterns, formed by an artistic interplay of geometry, proportions, pigments, materials and techniques reflecting the glorious Mughal era in the Indian subcontinent. These historic panels (mainly composed of glazed tiles) were documented in detail to study the deterioration phenomenon and the factors responsible for their rapid deterioration. This presented explorative research investigated the main types of deterioration morphologies including differential deterioration (flaking, detachments etc.), black and white crust, oxalate films, rust spots, fractures, patina and vegetation. This preliminary diagnostic study exhibited the deterioration morphologies found in selected heritage sites to develop the conservation-restoration strategy for glazed tile ornamental panels and for the preparation of preliminary treatments to stop further deterioration of these unique and irreplaceable historic assets.
Keywords: Architecture, Deterioration, Morphologies, Mughal.

12. **Gulzar, S**. (2017, October 5-7). *Chemical characterization of black stones from the 17th century Mughal Architecture.* Paper presented at second UMT International Conference on Pure and Applied Sciences, Lahore, Pakistan.
Abstract: The historic fabric should be preserved in their original styles and materials. The replacement materials should be carefully selected in terms of physical, chemical, mechanical and aesthetic compatibility. Therefore the present study characterized the historic black

colored stones from the 17th century Mughal architecture. The collected samples were initially studied with optical microscopy and X-ray powder diffraction which was further supplemented by SEM-EDS. The chemical compositions were further elaborated with XRF and inductively coupled plasma atomic emission spectroscopy to measure the major element content in addition to race elemental analysis. The results showed that there were two different groups of black stones (Group-I Limestoneâ€™s and Group-II Slates) used in the historic structures.

13: **Malik, A. M**., **Rashid, M**., & **Awan, M. Y**. (2017, September 27). *The sustainable ethnicity of old founded streets - a case study of Walled city Lahore.* Paper presented at the HEC Exhibition Celebrating 100 Years, Lahore, Pakistan.

Abstract: The streets have a natural culture to connect people and to places and assists them to commune them from places to places and similar pattern repeats itself. This continues from micro to macro level including different neighbor hoods to cities and much more thus sagging as means for commercial gatherings also acting like a small cosmos or center for commercial practices. The streets in the old founded areas of the cities are treated as places that connect and strengthen the society. This paper focuses on studying the character and distinctiveness thus the sustainable character of the streets taking up the old street culture of the walled city Lahore as to how it evolved and what strengthened it. The research was supported by literature study and speculation. The study reveals that the streets of walled city Lahore shares countless stories of its magnificent past and gives a clue regarding the historic street culture that has sustain itself yet some neighborhoods have been revitalized keeping its original context thus keeping it connected to the old founded Lahore with the new parts of the city now. The study depicts that the streets of the old founded areas of Lahore have evolved at a slow pace yet preserving most of its historic structure thus keeping its sustainability setting up some ground rules for the generation next.

14: **Malik, A. M**., Haider, S. S., & **Chaudary, N. Y**. (2017, October 3-4). *Bradlaugh hall- Abandoned archeology*. Paper presented at the second International Conference on Culture, Lahore, Pakistan.

Abstract: Urban sprawl is a worldly phenomenon which is elicited mostly by the population increase. Where there is population increase there is a need for more amenities. Lahore walled city has witnessed many such migrations to the other founded parts of Lahore leaving many vacancies left of once the known structures. Some of these abandoned structures are facing identity problems and much more. This paper is an attempt of the analytical and in depth study of such structure the Brad laugh Hall building that has a history of war heroes. The aim of this research is to develop an inclusive approach that may lead to the social revitalization and insuring sustainable cultural development of Bradlaugh Building. The research methodology is based on a detailed documentation of the structures and its impact in history thus formulizing the reasons for abandonment of such architectural legacies. The research reveals that heritage has a major role on the urban conservation and heritage of any city. Thus a successive methodology of adaptive reuse can be ensure to bring these structures back to life.

15: **Malik, A. M**., **Rashid, M**., & **Awan, M. Y**. (2017, October 24-25). *The role of architecture in identification of obstacles and spatial solutions to inclusive education*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.

Abstract: Education is a basic right of every child yet there are many barriers for the participants with special needs feel due to physical or physiological needs that are a reason they fall to the desolation caused mostly by the lack of educational facilities that should be for all. This paper attempts to outline the term 'inclusive education' in terms of democratic principles established by the international community. Then the paper attempts to discuss Pakistan's progress in adopting inclusive education by analyzing the present institutional framework of the education sector and infrastructural constraints in mainstream schools. Various case studies regarding educational centers in Pakistan's urban hubs have also been analyzed to learn the impediments in this regard. Research shows that building design is a major barrier among other challenges. This paper tends to be a review study that discusses various architectural features which can help students with visual and hearing impairments, along with cognitive/learning disabilities like the autism, ADHD and Down's syndrome. Building layout of an inclusive school has been presented as a model for making existing schools more inclusive. Benefits of inclusion are drawn not only by the disabled but also by the mainstream students.

School of Business and Economics

Department of Economics

Journal Articles

1: **Hassan, M. S.**, **Wajid, A.**, & **Kalim, R.** (2017). Factors affecting trade deficit in Pakistan, India and Bangladesh. *Economia Politica, 34*(2), 283-304. **(JCR)**

Abstract: This study explores factors that affect trade deficit in Pakistan, India and Bangladesh. After applying ARDL bounds testing approach on sample period from 1972 to 2013, this study finds evidence of long run relationship between trade deficit and its factors in Pakistan, India and Bangladesh. The findings confirm that depreciation of real effective exchange rate significantly decreases trade deficit in Pakistan and Bangladesh. Moreover, the results further disclose that as economic growth expands, trade deficit shrinks significantly in Pakistan, India and Bangladesh. The findings also show that money supply significantly enhances trade deficit in Pakistan and India. These findings are robust to various diagnostic tests which are used in the present study. Finally based on these results, it is concluded that trade deficit could be improved by targeting real effective exchange rate, per capita income and money supply in Pakistan, India and Bangladesh.

Keywords: Trade Deficit, Real Effective Exchange Rate, Economic Growth and Money Supply.

2: **Iftekhar, U.**, **Mamoon, D.**, & **Shahid, M. H.** (2017). Relationship of fiscal discipline and house hold income on money demand function in Sri Lanka. *Journal of Economics Bibliography, 4*(1), 1-9. **(NR)**

Abstract: This paper attempts to find those determinants stirring the function of money demand in Sri Lanka during 1975-2013. The empirical analysis starts from applying the unit root tests i.e. Ng-Perron. We apply ARDL bound testing approach of co-integration to scrutinize the co-integration in variables. We select independent variables like per capita GDP, interest rate, exchange rate, fiscal deficit, urban population and rural population to determine money demand function. The findings revealed that income, interest rate and fiscal deficit effect money demand significantly and positively. The exchange rate affects negatively and significantly upon money demand. The stable money demand function is found over time applying CUSUM and CUSUMSQ stability test. The model of our study strongly recommends the real demand for M2 is vital monetary aggregate in terms of policy implication including the appropriateness of model in Sri Lanka.

Keywords: Interest Rates, Money Demand, Household Income.

3: **Iftekhar, U.**, **Mamoon, D.**, & **Hassan, M. S.** (2017). How government policy and demographics affect money demand function in Bangladesh. *Turkish Economic Review, 4*(1), 66-74. **(NR)**

Abstract: Money demand has a key position in macroeconomics generally and monetary economics particularly. The improved economic condition of any country is a sign of increasing money demand and deteriorating economic climate is a sign of decreasing money demand

(Maravic & Palic, 2005). In this study, Autoregressive distributed lag (ARDL) approach of co-integration developed by Pesaran et al., (2001) is used to estimate the money demand function. Real interest rate, GDP per capita, exchange rate, fiscal deficit, urban and rural population are selected to determine money demand function in Bangladesh over the period from 1975-2013. The co-integration analysis reveals that interest rate and per capita GDP exerts significant effect upon money demand both in long run and short run as well. Both urban and rural population have significant effect on money demand in the long run and short run and money demand function is found stable over time.

Keywords: Bangladesh, Money Demand, Per Capita GDP, Real Interest Rate, Exchange Rate, Fiscal Deficit, Urban and Rural Population.

4: **Mamoon, D**., **Javed, R**. & **Abbas, R. Z.** (2017). Political instability and lessons for Pakistan: Case study of 2014 PTI sit in/protests. *Journal of Social and Administrative Sciences, 4*(1), 27-37. **(NR)**

Abstract. It's a short allegory to present the case for the importance of Political stability in the economic progress of a country. The Arab spring protests were seen as strengthening democracy in the Arab world. Notwithstanding the surprise Arab spring brought in shape of further destabilizing Middle East, a similar environment of unrest and protests in a practicing democracy like Pakistan capture same dynamics of uncertainty that dampen economic destabilization. The paper briefly covers PTI's sit in protests in year 2014 to make a case for how political instability stifled economic progress in Pakistan though momentarily.

Keywords: Political Economy, Pakistan Economy.

5: **Rabbi, A**., & **Mamoon, D**. (2017). Short term versus long term economic planning in Pakistan: The dilemma. *Journal of Economics Library, 4*(1), 30-40. **(NR)**

Abstract. For long term and sustainable economic development, countries have to start from somewhere. Thus there is a distinction between short term planning and long term goals setting. However historically countries like Pakistan have mostly fell into the trap of economic plans that focus on year to year goals setting or in other words macro economic stabilisation and usually fail to link policies with long term plans. The paper presents data that supports the hypothesis that it is the initiative of governments and not the donors to link long term economic progress with short term policies. China is a good example in this regards.

Keywords: Economic Development.

6: Anwar, A., **Arshed, N**., & Nabeela Kousar, N. (2017). Renewable energy consumption and economic growth in member of OIC countries. *European Online Journal of Natural and Social Sciences, 6*(1), 111-129. **(NR)**

Abstract. This study examines the causal relationship between economic growth, renewable energy consumption and oil prices using the data of 29 OIC (Organization of Islamic Cooperation) countries. The data are taken from 1990 to 2014. The study applies panel co-integration and causality in order to evaluate the long run and the causal relationship between the variables. Additionally, the empirical results suggest the existence of co-integration between the variables. The impact of renewable energy consumption on economic growth is positive and significant. The panel granger causality reveals the unidirectional causality between renewable energy consumption, oil prices and economic growth.

Keywords: Pedroni Co-integration, Panel Causality Test, FMOLS, DOLS.

7: **Arshed, N.**, **Alamgir, S.**, & **Aziz, O**. (2017). Structural determinants of poverty in Pakistan. *International Journal of Economics and Financial Research, 3*(1), 1-7. **(NR)**

Abstract. Poverty of the person is a frustrating hurdle for the household to acquire goods and services. Because of restricted access to resources, a poor person also falls short of his welfare targets. The determination of root causes of poverty must be the primary focus for the underdeveloped and developing economies. This study has used the labour force survey 2010 of Pakistan and extracted 21 indicators which are expected to affect the poverty profile of individuals. Principle factor analysis is used to find important indicators and logit model is used to analyse the effect of important indicators on $1.25 a day poverty status of individual. The result shows that it is the education levels, household size, and job characteristics which define the person being poor.

Keywords: Poverty, Principle Factor Analysis, Logit Model, Labor Force Survey.

8: Anwar, A., **Arshed, N.**, & Anwar, S. (2017). Socio-economic determinants of crime: An empirical study of Pakistan. *International Journal of Economics and Financial Issues, 7*(1), 312-322. **(SJR)**

Abstract. The objective of present study is to empirically examine the socio-economic determinants of crime in Pakistan. The analysis is carried out by using the annual time series data for the period 1973-2014. The dependent variable is total crime rate (per one million population), While the explanatory variables are unemployment, education, income inequality, per capita income, and deterrence variable. The study estimates, the long-run and short-run elasticities of supply of offense function by using ARDL (Autoregressive Distributed Lag model) approach.

Keywords: Deterrence, Time Series, Crime Rate, Property Crime, Violent Crime.

9: **Arshed, N.**, **Riaz, S.**, **Khan, T. M.**, & **Aziz, O**. (2017). Financial disintermediation and profitability of global Islamic banks. *European Journal of Islamic Finance, 1-11.* **(NR)**

Abstract. Recently Islamic banks are experiencing rapid growth in Islamic countries as well as non-Islamic countries. The profitability of the Islamic banks is based on the different instruments as a share of total financing. Mainly there are two categories of financing instruments are available, first is the trade based and the second is finance based. Modes of trade are instruments having low risk and fixed returns, whereas the modes of finance are instruments having high risk and possibly high returns. This study started with the proposition that both modes have different effects on the profitability as both have different roots in Islamic finance. For the analysis the data is collected which comprises of 19 full-fledged Islamic banks from 7 countries, the study used SEM framework controlling for macroeconomic effects and country effect. The results indicated that modes of finance have positive and modes of trade have a negative effect on the growth of assets and equity of Islamic banks. These results reiterate the faith-based model of Islamic finance and propose Islamic banks to promote the partnership based mode of finance, which is more socially beneficial to the banks and to the economy.

Keywords: Musharaka, Mudaraba, Ijarah, Murabaha, SEM, Islamic Banking.

10: **Arshed, N.**, **Riaz, S.**, **Mushtaq, A.**, & **Hassan, M. S.** (2017). Concept of scarcity in Islam; Natural vs. manmade resources. *Journal of Islamic Economics, Banking and Finance, 13*(1), 109-120. **(SJR)**

Abstract. Based on the argument of scarcity in the traditional and Islamic economics, this study has used the data of common resources to see any evidence of scarcity. In this study, resources are analysed with the categorical feature of naturally available resource and man-made resource. Using ARDL cointegration approach, it was found that there is an absence of resource scarcity hypothesis for the case of a long run. The structural break dummy is significant for the case of rice, natural gas, oil and coal they are positive which shows that historical prices only jumped up once, especially for the case of oil prices. The slowest convergence can be seen for the case of oil prices, which is expected as oil prices are mostly regulated and managed by the OPEC. The results supported the idea of Islamic economics that resources are actually not scarce; it is Allah who has promised to provide sustenance.

Keywords: Resource Scarcity, ARDL, Islamic Economics, JEL, Q32, P40.

11: **Hassan, M. S.**, & **Kalim, R.** (2017). Stock market and banking sector: Are they complementary for economic growth in low human developed economy? *Pakistan Economic and Social Review, 55*(1), 1-30. **(HEC Y-Cat.)**

Abstract. Abstract. In this study, the impact of stock market and banking sector development on economic growth is investigated by applying mean and common mean group estimators on the sample from 1989 to 2013 for low human developed countries. The empirical findings represent that among the proxies of banking sector development only credit to private sector leaves positive and significant effect on economic growth in case when it interacts with all the three proxies of stock market development. However, traded stocks and turnover ratio are significantly enhancing economic growth in case when these interact with banking sector development. This study also finds that both stock market and banking sector development are together required to increase economic growth in low human developed countries. This study also confirms the evidence of Lewis (1954) model for the selected countries. Lastly, this study proposes that credit to private sector from banking sector development in the light of stock market development must be given prime importance if economic growth is to be targeted in low human developed countries.

Keywords: Stock Market Development, Banking Sector Development, Economic Growth, Low Human Developed Countries.

12: Anwar N, A., **Arshed, N.**, & Anwar, S. (2017). The nexus between terrorism, investment and growth: An analysis of Muslim developing countries. *Global & Local Economic Review, 21*(1), 23. **(JCR)**

Abstract. Terrorism has greatly influenced the economies in the world; especially the Muslim economies which were on the track of development are devastated by this global calamity. This study explores the implications of inflicted terrorism on the investment and growth of 26 Muslim countries. Feasible generalized least squares (FGLS), differenced generalized method of moments (DGMM) and system generalized method of moments (SGMM) approaches were used to ensure robust results. For all specifications of estimation, we have confirmed that increase in the terrorism leads to decrease in investment directly, also it will lead to decrease in the marginal positive impact of growth on investment. The results indicate the public policy

efforts to mitigate the loss of private investment which can be done initially by public investments to ensure public safety.

Keywords: Conflict, Education, Military Expenditure, Terrorism.

13: Munir, S., Asghar, N., & **Rehman, H. U**. (2017). An analysis of the interrelationship among crime, misery index and institutional quality: A case study of Pakistan. *Journal of Political Studies, 24*(1), 383-406. **(HEC Y-Cat.)**

Abstract. The study investigates the impact of misery, institutional quality, human capital, population density and GDP per capita on crime in Pakistan over the period 1984 to 2015. The misery index is constructed and Johansen and Juselious test of co-integration is employed to check long run relationship among variables. VECM is used to explore short run and long run dynamics and Toda Yamamoto causality test for causal relationship. Results confirm significant long run relationship among crime and its determinants in Pakistan. Two channels of bidirectional causality are found active with human capital from GDP per capita and governance. Unidirectional causality runs from crime to misery and from misery to institutional quality .The study concludes that misery and poor quality of institutions have been contributing to higher crimes statistics in Pakistan for last three decades. Therefore, government should take steps to reduce misery and to improve institutional quality to mitigate criminal activities in Pakistan.

Keywords: Crimes, Misery Index, Institutional Quality, Johansen Co-Integration.

14: Asghar, N., Danish, M. H., & **Rehman, H. U**. (2017). Human capital and labour productivity: A case study of district Lahore. *Journal of Punjab University Historical Society, 30*(1). **(HEC Y-Cat.)**

Abstract. Human capital is an intangible asset of an organization. Firms always try to properly utilize their workforce through comprehensive human capital development.The main concern of an entrepreneur is not only to achieve business goals but also achieve long term survival and sustainability. This study is designed to investigate the role of human capital in labour productivity in district Lahore. For analyzing this relationship, cross sectional study is conducted and data is collected from 243 firms, which include manufacturing, trading and service sector.The empirical analysis reveals that all the sectors have heterogeneous effect of human capital on labour productivity. Education appears to be significant and positively related to labour productivity in all the sectors with greater effect in manufacturing sector. Skills and training have also noticeable effect on labour productivity. The descriptive analysis shows heterogeneous results in different sectors. Moreover, variance inflated factors and correlation matrix is also determined to detect the multicollinearity problem and there is no correlation among variables. The results of the study suggest that firms as well as government should invest more in human capital is developing skills in labour force so that it can become more productive. The study recommends that government should also provide more funds for the promotion of technical education in these countries

Keywords: Human Capital, Labour Productivity, Labour Force, Technical Education.

15: **Mamoon, D**., & Murshed, S. M. (2017). When education explains strong institutions: Trade policy also matters. *Social Indicators Research, 131*(3), 1179-1210. **(JCR)**

Abstract: This paper empirically examines the contribution of trade liberalisation to differences in the level of prosperity across nations. We compare this with the relative contribution of

institutional capacity to prosperity, as well as the role of human capital accumulation in that respect. We employ several concepts of institutional quality, trade policy and openness variables following various definitions prevalent in the literature. Unlike in the comparable study by Rodrik et al. (2004) we have (a) included a role for human capital, (b) employed six institutional variables compared to one only in Rodrik et al. (rule of law), (c) included trade policy variables, and not just openness indicators and (d) expanded the set of openness measures employed. We discover that opening up domestic markets to foreign competition by removing trade restrictions and barriers may promote economic performance. Furthermore, developing human capital is as important as superior institutional functioning for economic wellbeing. We find that openness counts for little per se in explaining income differences across countries. This is because it is an outcome and not a cause. Trade policies, and liberalisation, on the other hand, are not insignificant in explaining cross-country per-capita income variation. With regard to trade policies, export taxes are the most important in explaining cross-country per-capita income differences.

Keywords: Long Term Growth, Trade Policy, Social Development.

16: Asghar, N. and **Rehman, H. U** (2017). Knowledge sharing practices on performance: Role of intellectuals on South Asian perspective. *Pakistan Journal of Applied Economics, 27*(2), 297-329. **(HEC Y-Cat.)**

Abstract: This study seeks to investigate empirically, the relationship of knowledge sharing (KS) practices, intellectual capital (IC) practices and performance within the banking organizationsin Pakistan. It uses the amended instrument and attempts to collect data from 810 middle level managers through questionnaire of a sample of 42 banks. Structural equation model (SEM) and confirmatory factor analysis (CFA) were applied to assess the nature of relationship and overall fitness of the measurement models among the constructs. The results of confirmatory factor model reveal that all indicessatisfactorily meet the thresholds which indicate a well fit of the models.Although, the results of standardized path coefficient postulates that KS and IC practices significantly contribute to banks'performance; moreoverresults ofstandardized path coefficients reveals that human capital, structural capital, and relational capital practices, partially mediate the relationship between KS driven performance. Findings of the study support that all proposed hypotheses are statistically significant ($p<0.001$) which indicate that IC practices substantially mediate the relationship between KS driven performance; thus corroborating the argument that IC is a valuable strategic resource to leverage the performance based activities.

Keywords: Knowledge Sharing Practices, Intellectual Capital Practices.

17: **Hassan, M. S**., Tahir, M. N., **Wajid, A**., Mahmood, H., & Farooq, A. (2017). Natural gas consumption and economic growth in Pakistan: Production function approach. *Global Business Review, 19*(2), 297-310. **(SJR)**

Abstract: Natural gas is a dominant fuel in Pakistan. It offers the cheapest and a cleaner alternative source of energy. This paper examines the relationship of natural gas consumption and economic growth in Pakistan. We include capital, labor and exports in the model with multivariate framework. The ARDL bounds testing approach to cointegration and innovative accounting approach are employed to investigate the dynamic causality relationships among the variables. We find the existence of long-run relationship among the variables. Natural gas

consumption, capital, labor and exports are positively affecting economic growth in Pakistan. Furthermore, we support the natural gas consumption-led-growth hypothesis and suggest that natural gas conservation policies may retard economic growth.

Keywords: Natural Gas Consumption, Economic Growth, Pakistan.

18: **Rehman, H. U**. & **Awan, A**. (2017). The impact of financial market development on output volatility: Panel data evidence for Asian countries. *Pakistan Journal of Social Sciences, 37*(1). **(HEC Y-Cat.)**

Abstract: This research is an endeavor to empirically estimate dynamic association of output volatility and financial market development in a balanced panel of selected 22 Asian countries during 1998- 2015, covering annual observations of 18 years. The estimation strategy used in this research is System GMM. The empirical results support significant positive impact of financial development on output volatility in Asia when financial development is captured through financial depth index. The results are in line with theory and with experience of cross sections during reference period. Robust analysis is also carried out by including another financial development measure i.e. banking stability Z-score and numerical estimates are found to be strongly robust and consistent. An important policy implication is that prudent banking regulations and supervision is needed in Asia to increase financial efficiency beside excessive financialization.

19: Saeed, M. I., **Kalim, R**., & Tahir, M. N. (2017). Electronic banking and banking performance: An empirical study of Pakistan's bank. *Journal of Social Sciences, 8*(2), 64-82. **(NR)**

Abstract: The objective of the paper is to empirically investigate the impact of electronic banking proxies on banking performance. We use data for four different banks of Pakistan for the years 2005–2013. The methodology adopted in this paper is Fixed Effect Model. The findings of this paper are contrary to the conventional wisdom. The paper finds that all the proxies of e–banking have a negative significant impact on banking performance both in term of ROE and ROA. Moreover, our results show that number of ATMs have stronger significant negative impact on the performance of the banks in Pakistan. Banks intend to restrict their services which would help them to focus on bank profit or bank performance instead of market capturing.

Keywords: Banking Performance, ATMs, Online Cash Deposits, Online Cash Withdrawals, JEL Classification, G1, G21, M15.

20: Mahmood, A., **Kalim, R**., & Zahra, K. (2017). Fiscal impacts of trade liberalization in Pakistan : An application of smart model. *Journal of Business Strategies, 11*(2), 89-105. **(NR)**

Abstract: Many underdeveloped countries have experienced trade liberalization under the umbrella of international organizations in the past years. However, diverse economies have different experiences of trade liberalization. To analyze the experience of Pakistan trade liberalization, a Software for Market Analysis and Restriction (SMART) model, proposed by the United Nations Conference on Trade and Development (UNCTAD) and the World Bank is utilized for the data from 1995 to 2013. Pakistan trade liberalization has increased the overall trade and welfare of consumers but has reduced the international trade significantly. Trade liberalization policies also have significantly affected international trade tax revenue. Therefore, policymakers should follow the impacts of the policies in both long and short run.

Keywords: Developing Economies, International Trade, Trade liberalization, Trade, Welfare.

21: Mahmood, A., **Kalim, R.**, & Zahra, K. (2017). Recovery of fiscal cost of trade liberalization of Pakistan. *ARCTIC Journal Canada, 70*(10). **(NR)**

Abstract: Pakistan like other developing economies has adopted trade liberalization policy to integrate her to the global economy and undertake fiscal reforms to be able to complete her trade liberalization programs. Pakistan has reduced its tariffs in the economic history and efforts have been made to recover the fiscal cost of the trade liberlisation in the country. The objective of present study is to explore the fiscal cost of trade liberlisation in Pakistan. Using data 1951-2015 of tax revenues of Pakistan and identified 11 episodes of tariff reductions in the economic history of the country and consider whether Pakistan is able to recover those lost revenues through other tax resources. The findings of the study shows that although Pakistan being having lower tax capacity but the economy having tax friendly atmosphere and enough tax capacity to recover the loss of revenue with a short time period of 2 years and simultaneously within 10 years' time period as well therefore it is needed to improve the performance of Tax collectors through tax reforms and fair and sound fiscal and monetary policies. It is imperative in the long run, Pakistan economy having a capacity to recover the loss of revenue resulted of the trade liberlisation policies. Therefore Trade liberlisation policies adopted by Pakistan are favorable for the economic welfare of the country. It is suggested to encourage trade liberalisation policies accompanied with continue supportive monetary and fiscal policies to improve environment and trade facilitation focusing CPEC (China-Pakistan Economic Corridor) routs as well.

Keywords: JEL classifications, H10, H20, F13, O17, Taxation and development, Trade liberalization, State capacity, Tax and tariff reform.

22: **Bashir, S.**, **Aslam, M.**, Ibrahim, F., & Kaur, K. (2017). Consumer's perceived communicational risks in predicting internet-based shopping intention. *Jurnal Komunikasi, Malaysian Journal of Communication, 33*(1). **(JCR)** **(SKT Campus)**

Abstract: It is widely known in the related literature that consumer's perceived communicational risks act as a chief barrier to their online purchase decision. Though, in such regards, few of the most recent text focused precisely towards a modified fact that the consumer's shopping intention may depend on their perceived communicational risks in an online trade. Still, a very little attention has been kept to this precise concept leaving an academic gap. This research aims to contribute towards closing the research issue as such. By gathering data through existing literature, the researchers probe into the total force. The findings uncovered that the global web vendors' efforts to lessen certain types of communicational risks such as performance, financial, psychological and time will improve consumers' intentions to purchase online. Consequently, the future researches are recommended to be undertaken in order to explore and refine the measurement scales used to measure perceived communicational risk and online purchase intention. Moreover, a longitudinal study is also recommended to discover how the consumers' behavioral intention toward Internet changes over time due to the rapid development of this communicational technology.

Keywords: Online Communication, Online Shopping, Online Marketing, e-Business, Perceived Risk, Perceived Financial Risk, Trust, Purchase Intention.

Conference Papers

1. **Sial, M. H**. (2017, April 12-13). *Poverty, inequality and economic growth: A critical review of Pakistan.* Paper presented at International Conference on Social Sciences in Service of Humanity, Lahore, Pakistan.
Abstract: Not available.

2. Sarwar, G., & **Sial, M. H**. (2017, April 12-13). *Education and within groups earning inequality in Pakistan.* Paper presented at International Conference on Social Sciences in Service of Humanity, Lahore, Pakistan.
Abstract: Not available.

3. Malik, A., & **Sial, M. H**. (2017, April 12-13). *Relationship between tax revenue, tax bases and tax rates: An empirical evidence from Pakistan.* Paper presented at International Conference on Social Sciences in Service of Humanity, Lahore, Pakistan.
Abstract: Not available.

4. **Mushtaq, A**., **Arshed, N**., & **Kalim, R**. (2017, May 9). *Channel of Islamic banking financing: Effect on growth*. Paper presented at first National Conference on Economy of Pakistan: Vulnerabilities and Opportunities, Lahore, Pakistan.
Abstract: In Pakistan, the Islamic banking industry has shown a noteworthy progress particularly over the last one and half decade. State Bank of Pakistan (SBP) has been at the forefront of all major initiatives for development of the industry.However, Islamic finance industry in Pakistan has not penetrated enough to serve financial needs of small and medium enterprises (SMEs), poor households (Microfinance), agricultural financing and low cost housing.Present study is an attempt to fulfill the research gap of Islamic banking products and economic growth in Pakistan. In this study the transmission mechanism has been analyzed to indicate the effect of Islamic financial instruments on the economic growth of Pakistan .The sample consists of select variables extracted from quarterly issues of Islamic Bulletin published by State Bank of Pakistan from 2007 until 2015. The estimation is based on Vector Error Correction model. To analyze the causality we have used VAR granger causality test .The results show that Islamic banking positively affects economic growth in Pakistan .Furthermore, the Ijarah and Murabaha are significantly causing increase in islamic net financing . On the basis of these findings , it is recommended to develop proper legislation and regulation, as well as the supporting infrastructure, including the necessary skill set Future areas of research include determining better Islamic banking progress and evaluating the impact of Islamic banking on social sector development.
Keywords: Islamic Banking, Economic Growth, Islamic Banking Products, JelWords, G10, G21, F43.

5. **Kalim, R**., & **Arshed, N**. (2017, July 30-August 3). *Does investment decision of Islamic banks maximize deposit returns?* In Proceeding of International Academic Conference on Business 2017, New York, USA.
Abstract: Not available.

6. Mohsan, T., Sadiq, R., & **Arshed, N**. (2017, April 21-22). *Empirical analysis of structural income changes in commercial banks: A case of Pakistan*. Fifth Annual Business Research Conference on Managing Business in Pakistan, Lahore, Pakistan.
Abstract: Not available.

7. Sadiq, N., & **Arshed, N**. (2017, January 25-26). *Determinants of cost efficiency of Islamic banks of Pakistan*. Second Global Forum on Islamic Economics, Finance and Banking, Lahore, Pakistan.
Abstract: Not available.

8. **Arshed, N**., Riaz, S., Khan, T., & Aziz, O. (2017, January 25-26). *Financial disintermediation of profitability of global Islamic banks*. Second Global Forum on Islamic Economics, Finance and Banking, Lahore, Pakistan.
Abstract: Not available.

Department of Finance

Journal Articles

1: **Rafay, A**. & **Farid, S**. (2017). Financial integration in money markets: Evidence from SAARC region. *DLSU Business and Economics Review, 26*(2), 87-114. **(SJR)**
Abstract: The primary purpose of the study was to investigate the extent of financial integration between the four major money markets (Pakistan, India, Sri Lanka, and Bangladesh) in the SAARC region. To determine the association between these money markets, this study deployed variety of robust time series techniques such as JJ Co-integration Test, Granger Causality Test, Impulse Response Functions (IRF), and Variance Decomposition Analysis (VDC). Monthly data for the period 2007-2015 was utilized for the data analysis whereas Call Money Rates and Interbank Rates were used as proxies of money markets. The empirical findings confirmed the presence of long term relationship between the nominal interest rates in SAARC region. Additionally, the results also unveiled the existence of bi-directional causal relationship between the money markets of Pakistan, India, and Sri Lanka. It was also found that Bangladesh's money market is most rigid and unresponsive to other market in the region. This study also confirmed the existence of robust ingredients for formulation of a monetary union in the SAARC region.
Keywords: Interest Rates, SAARC, Money Markets, Monetary Union, Co-integration, IRF, VDC.

2: **Rafay, A**. & **Farid, S**. (2017). Dynamic relationship between Islamic banking system and real economic activity: Evidence from Pakistan. *Journal of King Abdulaziz University, Islamic Economics*, *30*(2), 97-114. **(SJR)**
Abstract: This study examines the rapid expansion and diffusion of Islamic banking and its relationship with real economic activity in Pakistan. Additionally, the study also highlights the functional role of Islamic banking for greater economic activity and growth in Pakistan. Two

major balance sheet items of Islamic banks (Islamic deposits and Islamic financing and investment) were used as proxies for Islamic banking development. The Large Scale Manufacturing Index (LSMI) was used as a proxy for real economic activity. Quarterly data was obtained from statistical bulletins of the State Bank of Pakistan. Robust time series techniques such as the JJ Cointegration Test, Granger Causality Test, Impulse Response Functions, and Variance Decomposition Analysis were used for the data analysis. The findings of the study unveil a significant positive and dynamic long term bi-directional causal relationship between Islamic banking and real economic activity. Furthermore, the findings also reinforce that the State Bank of Pakistan should continue promoting Islamic banking as a parallel banking system to the conventional system as it exerts a substantial positive impact on real economic activity in Pakistan.

Keywords: Islamic Banking, Islamic Deposits, Islamic Financing and Investments, LSMI Index, IRF, VDC, Economic Activity.

3: **Rafay, A.**, **Gilani, U. J.**, & **Izhar, M. A**. (2017). Investigating the performance of Islamic mutual funds: Evidence from an emerging economy. *City University Research Journal, 7*(2), 234-241. **(HEC-Y Cat.)**

Abstract: The objective of the paper is to study the performance of Islamic mutual funds by comparing their volatility with KSE-30 index of Pakistan Stock Exchange. For empirical analysis and to study the volatility behavior of KMI-30 index and KSE-30 indexed mutual funds ARCH/GARCH models are used. Factors that are considered for comparison of performance include Return, Volatility, Net Asset Value (NAV), KMI-30 Index and KSE-30 Index. Our results show that returns and volatility of Islamic mutual funds are consistent with the performance of conventional mutual funds. Furthermore our investigation shows that the volatility of Islamic mutual funds plays a little role in determining their performance, however opposite is true for conventional mutual funds. This study is important for investors in Pakistan because it can help them to diversify their investment by selecting suitable portfolios.

Keywords: ARCH, GARCH, KSE, Mutual Funds, Shariah, NAV, KMI-30, KSE-30.

4: **Ajmal, M. M.**, **Rafay, A.** & **Sadiq, R.** (2017). Pricing of Bai Salam: An analytical perspective. *International Journal of Business & Society, 18(*S1), 167-176. **(JCR)**

Abstract: Bai Salam has gained prominence as an Islamic financial instrument for financing the deficit funding units across the Islamic world. This paper uses the arbitrage-free first order conditions to set boundaries on the ra's al-mal (the price paid in Bai Salam). Among the four schools of thought (Hanafi, Maliki, Shafi and Hanbali), Hanafi jurists strictly require, for a valid Salam contract, the existence of al-musallam fihi (the underlying asset of the Bai Salam contract) at the time of contract. This paper proposes that when al-musallam fihi exists at the time of contract the ra's al-mal must be equal to the current price of the underlying asset plus the holding cost so that there is no arbitrage. For cases where al-musallam fihi does not exist at the time of contract, a closed form formula for calculation of ra's- al-mal is being proposed. The formula will ensure fair pricing of Salam contracts in order to safeguard the interests of al-musallam alayhi (the seller of the underlying asset).

Keywords: Bai Salam, Ra's Al-Mal, al-Musallam Alayhi, al-Musallam Fihi.

5: **Rafay, A.**, **Sadiq, R.** & **Ahmed, S.** (2017). Capital investment anomaly and accruals anomaly:

Independent or inter-dependent? - Evidence from South Asia. *Jurnal Pengurusan, 50*(2), 111-122. **(NR)**

Abstract: The purpose of this research is to determine the impact of "Capital investment anomaly" and "Accrual anomaly" on stock returns after controlling the size and book-to-market effects. This study aims to fill a gap regarding the implications of capital investment anomaly and accrual anomaly in South Asian economies, and primarily focused on two developing economies from SAARC region; India and Pakistan. This study uses 320 company-year observations using a sample period of 2009-2014. The sample is representative of 50% of non-financial companies selected systematically from nine different sectors included in Pakistan Stock Exchange (KSE- 100 index) and Bombay Stock Exchange (BSE-100 index) each. Selection is based on market capitalization to mitigate any bias in results. Preliminary analysis includes understanding stock performance of capital investment-based, and accrual-based portfolios, followed by stock performance of combined effect portfolios, and sector analysis. Lastly, regression analysis allows determining impact of both anomalies on returns as well as their independence or interdependence. The results of this study show that there exists a negative relationship between Stock Returns and Capital Investment/Accruals. In addition to this, we found that both anomalies are not distinct and work together and are attributed to country characteristics specific to the SAARC/South Asia region. All of the coefficients are statistically significant. The separate results for India and Pakistan are helpful for practitioners to know what strategy to adopt in order to maximize the returns. Combined results are beneficial for prospective investors. The mixed trend of returns for different sectors is useful for both managers and investors in the sense that both anomalies are independent of each other. From a theory development perspective, it reveals the differences in existing literature due to change in geographical context.

Keywords: Accruals Anomaly, Capital Investment Anomaly, India, Pakistan, Sector Analysis.

6: **Rafay, A.**, **Sadiq, R.** & **Ajmal, M. M.** (2017). Uniform framework for Sukuk-Al-Ijara – A proposed model for all madhahib. *Journal of Islamic Accounting and Business Research, 8*(4), 420-454. **(JCR)**

Abstract: Purpose: This paper aims to discuss the urgent need to develop a sound and robust universal framework that would prove helpful in creating uniform acceptability of Islamic financial instruments. Among many problems, a particular problem in developing a uniform global framework for Islamic financial instruments is the existence of different *madhahib* within Islamic Fiqh. The leading and the most prominent Sunni madhahib that have survived till today are four, the Hanbali, Shafi, Maliki and Hanafi, while the most prominent Shia madhab is the Jafari madhab.

Design/methodology/approach: The research approach was descriptive and exploratory in nature. Secondary resources were used except for a semi-structured interview with a *Shariah* scholar with the justification that his knowledge and experience regarding the subject matter may prove helpful. The methodology included a systematic review of already issued Sukuk by various madhahib. Compared to a simple narrative review of a few case studies regarding Sukuk, this methodology has a benefit to provide the reader the power to assess the review and even replicate it. The results of this systematic review are summarized in the form of tables.

Findings: Ingredients were determined that would help make a truly global Sukuk security,

a model acceptable to all madhahib of Islamic Fiqh. These ingredients include rentals, relationship between special purpose vehicle (SPV) and originator, transference to SPV, Sukuk structure, guarantee, liquidity, listing and tradability, convertibility, subordination and post-*Ijarah* price. Moreover, specific steps were also analyzed that must be taken to issue such type of Sukuk al-Ijarah.

Research limitations/implications: This study is focused only on a type of Islamic financial instrument, i.e. Sukuk whose underlying was Ijarah-based contracts. This is due to lesser global acceptability for other Islamic financial instruments including other forms of Sukuk. Based on the nature of study, purposive/judgmental sampling was done. The sample population was 40 Sukuk (nine each from Hanafi, Shafi and Maliki madhahib, five each from Hanbali and Jafari madhahib and three from non-Muslim zones). Some Sukuk were dropped due to non-availability of enough data and to keep some semblance between the impact of the madhab on financial world and the data.

Practical implications: For practitioners and regulators, on the basis of the given recommendations, it would be possible to create a standardized product, acceptable for all madhahib of Islamic Fiqh. This standardization will lead to a unified platform that can attract a larger investor pool as well as better integration. For practical purposes, the proposed model of Sukuk al-Ijarah can be replicated for other Islamic financial instruments for global acceptability.

Social implications: For an Islamic society, the expansion of Islamic economic system depends principally on unity. So integration is critical and also essential for the success of any Islamic financial instrument. When the society will move away from Riba and its associated evil, the society will move in a positive direction, while still making profits. The proposed model may also be utilized for socially responsible initiatives like protection of natural resources, advancement of renewable energy, economic development and rehabilitation to name a few.

Originality/value: Previous studies were silent on the development of comprehensive frameworks acceptable to all madhahib of Islamic Fiqh. This research study is the first study of its kind and is the first step toward integration, as it would try to suggest a global framework for Sukuk al-Ijarah that can be acceptable by the followers of any madhab of Islamic Fiqh.

Keywords: Islamic Financial Instruments, Islamic Fiqh, Madhahib, Regulatory Standards, Sukuk Al-Ijarah, Uniform Framework.

7: **Rafay, A**. & **Farid, S**. (2017). Maqasid-al-Shari'ah vs. contemporary Islamic banking and finance: The case of Pakistan. *Journal of Islamic Thought and Civilization, 7*(2), 41-51. **(UMT)**

Abstract: One of the cardinal issues in Islamic banking and finance is how to reconcile the objectives of Islamic moral economy and observed current reality? The skeptics argue that Islamic banking and finance is not contributing towards the universal goals of Islamic economic system and the paradigm contains similar moral hazards like conventional banking system. The study documents the underlying flaws and contradictions of the present-day Islamic banking with regard to maqasid-al- shari'ah. Further, the study also recommends reforms in few key areas of Islamic banking to align the goals of Islamic moral economy and contemporary Islamic banking in Pakistan.

Keywords: Islamic Banking, Maqasid-al-Shari'ah, Qur'ān, Sunnah, Pakistan, Risk.

8: **Ullah, S., Siddiqui, A. F., & Tashfeen, R.** (2017). Corporate leverage: Structural equations framework in an emerging economy. *Managerial Finance, 43*(11), 1224-1235. **(JCR)**

Abstract: Purpose: The purpose of this paper is to investigate the financing behavior of firms in Pakistan. Previous studies have investigated corporate leverage determinants within any particular industry, such as manufacturing industry, textiles industry, etc., with varying results. This is one of the few studies that examine the determinants of leveraging attitude of firms across industrial sectors for textiles, large industries, and small industries. Thus, the study provides an insight into the general debt financing behavior in Pakistan and allows a basis for comparison of the leveraging decisions across industries.

Design/methodology/approach: The study employs the structural equations methodology which captures the endogenous relationship between profitability and leverage. Thereby, eliminating bias and providing more accurate results.

Findings: The findings suggest that the leveraging decisions differ across sectors and that each industry has its own distinctive debt requirements/characteristics. The authors conclude that a singular approach taken by investors and analysts would provide inaccurate assessment of firms' debt financing policies and strategies.

Research limitations/implications: There is a limitation on data availability in emerging countries, and a larger sample would have provided more robust results. Therefore, the study has only taken three sector sub-divisions, and more industry categories would have provided in-depth insights into the industry-wise leveraging behavior.

Practical implications: This is the first study to suggest that the borrowing attitude of firms differ across industries and vary due to their specific needs. This has implications for government regulators, investors, and creditors in providing a more customized approach to analyzing and meeting the external financing needs of firms.

Originality/value: This study is the first to use simultaneous equations model to eliminate bias that is prevalent in similar studies in Pakistan. The SEM captures the endogenous relationship between profitability and leverage. The research provides important information about the underlying financing behavior across industries, which has largely been ignored.

Keywords: Profitability, Developing Economies, Structural Equation Model, Business Sectors, Corporate Leverage, Debt Financing Policies.

9: **Sadiq, R., Ehtesham, U. & Khan, T.** (2017). Sensitivity of investment to internal funds and its impact on asset sales and performance: Case of a developing economy. *Global Management Journal for Academic and Corporate Studies, 7*(2). **(HEC Y-Cat.)**

Abstract: This study aims to fulfill three main objective i.e. finding financial constraints using the model that suits Pakistani environment best, determining the impact of asset sales on investment for financially constrained firms and finally determining the impact of investment and asset sales on firm' performance. Analysis is performed on 223 financially healthy firms for the period of 10 years. This study separates the firms into constrained and unconstrained groups exploiting the techniques of four papers and finds out the best model working in Pakistani environment. Due to the linear relationship and exogeneity of age and size, SA Index is a better alternative. Moreover all the variables of SA Index are statistically significant and well supported by the literature. So, the research accepts hypothesis that SA Index is a better model for financial constraint determination. Applying this model, 98 companies are found to be

financially constrained. This paper further investigates the relationship between capital expenditure and proceeds from asset sales. The study gives strong evidence that financial constraints have a significant impact on investment. It therefore, accepts the hypothesis that sales has a significant impact on investment expenditure and that investment decisions of financially constrained firms are sensitive to internal funds. It is also evident that firm's investment decisions are significantly affected by the firm's financial constraints. Prior studies on sensitivity of investment also support these evidences. As reported by previous research, this study finds a significant and positive relation between invest decision and firm performance for financially healthy firms. It also finds a positive and significant relation between asset sales and firm performance financially healthy firms.

Keywords: Financial Constraints, Capital Expenditure, Asset Sales, Growth Opportunities.

Conference Papers

1. **Sadiq, R**., & **Rafay, A**. (2017, April 21-22). *Impact of intangible assets recognized under ias-38 on firms' value.* Paper presented at the Fifth Annual Business Research Conference on Managing Business in Pakistan, Lahore, Pakistan.
Abstract: Not available.

2. **Farid, S**. & **Rafay, A**. (2017, Mar 21-22). *Dynamic relationship between industry and stock market returns.* Paper presented at the Fourth International on contemporary issues in Business Management, Lahore, Pakistan.
Abstract: Not available.

3. **Farid, S**. & **Rafay, A**. (2017, Mar 15-16). *SME financing: A challenge in a vulnerable economy*. Paper presented at the Second International SME Conference 2017, Lahore, Pakistan.
Abstract: Not available.

4. **Nosheen, S**. (2017, Oct 6-9). *Estimation of expectes returns: Application of FF three and five factor model in a developing economy*. Paper presented at the 12th Asian Academy of Management International Conference 2017, Penang, Malaysia.
Abstract: Not available.

5. **Sadiq, R**. (2017, Jan 11-12). *Impact of value addition and value creation on firm's performance: Case of most innovative companies of the world*. Paper presented at the Sixth Asian Management Research and Case Conference (AMRC) 2017, Bangladesh.
Abstract: Not available.

6. **Nosheen, S**. (2017, October 6-9). *The role of corporate governance in innovation: Understanding the impact of corporate governance on value added intellectual captial in an emerging economy*. Paper presented at the 12th Asian Academy of Management International Conference, Penang, Malaysia.
Abstract: Not available.

Books/ Book Chapters/ Book Reviews

1: **Rafay, A.**, **Mohsan, T.** & **Sadiq, R.** (2017). *Structural mix of credit portfolios in Islamic banking system: Evidence from a South Asian economy*. In D. Mutum, M.M. Butt, & M. Rashid, (Eds.), *Advances in Islamic finance, marketing, and management: An Asian perspective* (pp. 185-210). London: Emerald Group Publishing Limited.

Abstract: Purpose: Inquiring into the role of Islamic and conventional banks regarding the core responsibility of lending is an established phenomenon. This chapter is based on key findings regarding dynamic changes in the structural mix of credit portfolios in Islamic banks and conventional banks of Pakistan.

Methodology/approach: The nature of the study is exploratory; the sample consists of 5 Islamic banks and 20 conventional banks of Pakistan comparatively evaluated for the time frame of 2008–2014.

Findings: Our findings show that for Islamic banks, there is an increasing trend in the credit portfolios as a proportion to assets as well as to equity, whereas in case of conventional banks the findings are opposite. The results further prove a positive and negative growth of credit portfolios as proportional to assets and equity in case of Islamic and conventional banks respectively. It is also observed that credit portfolios of Islamic banks are growing with higher degree as a proportion to equity as compared to proportion to assets. On the other hand, conventional banks show higher degree of decline of credit portfolios as a proportion to equity as compared to assets.

Originality/value: These findings also show that primary stakeholders in Islamic banks are more risk seekers thus more inclined towards risky investments than ordinary credits.

Keywords: Islamic Banking, Credit Portfolios, Pakistan, Equity, Investments, Risk.

Department of Management

Journal Articles

1: **Bajwa, S. U.**, **Shahzad, K.**, & **Aslam, H.** (2017). Exploring big five personality traits and gender as predictors of entrepreneurs' cognitive adaptability. *Journal of Modelling in Management, 12*(1), 143-161. **(JCR)**

Abstract: Purpose: The purpose of this study was to explore the predictive role of personality and gender in cognitive adaptability of entrepreneurs. By using the theories of personality development, social learning, situated cognition and meta-cognition, a logical relationship between personality traits, gender difference and entrepreneurs' cognitive adaptability was established.

Design/methodology/approach: Quantitative strategy and cross-sectional survey method was then deployed to empirically investigate the purposed relationships between variables of interest. Randomly selected 443 working entrepreneurs responded to the survey.

Findings: Factor analyzed structural equation modeling estimated cognitive adaptability as a second-order factor, with extroversion and neuroticism having a significant impact on cognitive adaptability. Multi-group moderation revealed a significant difference among

females and males against the same two personality traits.

Originality/value: This study in its nature is the first attempt to link Big Five personality traits with cognitive adaptability of entrepreneurs.

Keywords: Gender, Cognition, Entrepreneurship, Big Five Personality, Cognitive Adaptability.

2: **Bajwa, S. U.**, **Kitchlew, N.**, **Shahzad, K.**, & **Rehman, K. U.** (2017). Public–Private Partnership (PPP) as an interdependent form (I-Form) organization. *International Journal of Public Administration, 41*(11), 859-867. **(JCR)**

Abstract: As "public–private partnership" (PPP) is becoming a popular model among states, the debate concerning how to make it more successful is accelerating. Based on insights from contemporary organization theory (OT), the present article suggests that instead of taking PPP as "partnership" between private and public sector partners, it is rather more beneficial to construe it as inter-dependent form (I-Form) organization. Subsequently, it identifies three types of interdependencies, faced by PPP-based I-Form organizations, and furnishes a model—comprising of initial and external conditions, and interplay of internal factors—that could enable smooth functioning and performance of I-Form organization.

Keywords: Public–Private Partnerships, Organization Theory, Public Administration, Interdependent Form of Organization.

3: **Saifi, I. A.**, & **Shahzad, K.** (2017). The mediating role of job satisfaction in the relationship between organizational justice and organizational citizenship behavior. *Pakistan Journal of Commerce & Social Sciences, 11*(1). **(HEC-Y Cat.)**

Abstract: Organizational citizenship behavior (OCB) over time has emerged as a topic of debate among scholars and practitioners. What constitutes or encourages such behaviors among employees, especially when they are neither recognized nor paid, is an utmost concern. This study conceptualizes and empirically tests that demonstration of citizenship behaviors is determined by the perceptions which employees hold about the justice in their organization. Furthermore, the relationship between justice perceptions and citizenship behaviors is mediated by the level of job satisfaction among employees. In order to test this hypothesis, this study employed a quantitative strategy and crosssectional survey method for the collection of data. Data was collected from 149 employees through a self-administered structured questionnaire. Data was collected from different organizations of different sectors mainly in Lahore. Findings revealed that positive perception of employees in relation to organizational justice was a significant antecedent to employees' job satisfaction, which in turn mediated the relationship between justice perceptions and citizenship behaviors. These findings can be helpful for managers and organizational leaders to create justice in all aspects of organizational life. This study has also highlighted that job satisfaction is an important factor to promote citizenship sense through the inclusion of organizational justice. The variables selected for the model were few and it was beyond the scope of this research to incorporate all the factors. This study can improve academics' understanding of the influence that organizational justice and job satisfaction might have on employees' organizational citizenship behaviors in their jobs in the context of Pakistan.

Keywords: Organizational Citizenship Behavior, Job Satisfaction, Organizational Justice, Mediation.

4: De Clercq, D., Haq, I. U., & **Azeem, M. U**. (2017). Perceived threats of terrorism and job performance: The roles of job-related anxiety and religiousness. *Journal of Business Research, 78*, 23-32. **(JCR)**

Abstract: This study investigates the relationship between employees' perceptions of the threat of terrorism and job performance, as well as a potential mediating effect of job-related anxiety and a moderating effect of religiousness on this relationship. Multisource, time-lagged data from employees and their supervisors in Pakistan reveal that an important reason that perceived threats of terrorism diminish job performance is the anxiety that employees experience at work. Employees' religiousness buffers the negative effect of perceived threats of terrorism on job-related anxiety though, such that the relationship is mitigated when their religiousness is high. Finally, the results indicate the presence of moderated mediation: the indirect effect of perceived threats of terrorism on job performance is not as strong at higher levels of religiousness. In external environments in which terrorism presents a credible threat, organizations can therefore consider the religiousness of their employees as a resource for countering their anxiety.

Keywords: Perceived Threats of Terrorism, Job-Related Anxiety, Religiousness, Terror Management Theory, Conservation of Resources Theory.

5: **Basit, A. A**., & **Chauhan, M. A. H**. Psychometric properties of the job engagement scale: A cross-country analysis. *Journal of Management and Research, 4*(1), 1-18. **(SJR)**

Abstract: Job engagement is a motivational construct that refers to the willingness of employees to invest their physical, emotional, and cognitive energies in their jobs in a holistic and simultaneous manner. Researchers use the Job Engagement Scale (JES) to measure the above conceptualization of job engagement, whose application is recent in job engagement research and is based largely on Western samples. In order to examine how job engagement is perceived in Asian contexts, this exploratory study aimed to provide a cross-country analysis of psychometric properties of the JES. We utilized data from earlier research of the first author, which were collected from 347 Pakistani and 498 Malaysian employees worked at diverse organizations. Psychometric analyses with reliability and validity estimations were performed using the Structural Equation Modeling. Results showed good internal consistency reliability, convergent validity, and factorial validity of the JES for both Pakistani and Malaysian samples. However, psychometric properties of the JES for Pakistan outperformed those for Malaysia in all estimations. Implications for future use of the JES and limitations of the study are discussed.

Keywords: Job Engagement Scale, Structural Equation Modeling, Psychometric, Pakistan, Malaysia.

6: **Azhar, S**., & **Farooq, W**. (2017). Islamic spirituality and Islamic leader's responsibilities and impact on employees work engagement: An empirical study. *Al-Qalam, 22*(1), 64-86. **(HEC-Y Cat.)**

Abstract: Employee's Work Engagement has become an important concern for organizations as it accomplishes long run viable competitive advantages. The aim of current study was to examine the linkage amongIslamic spirituality andIslamic leadership responsibility, with the employee work engagement. Using a purposive sampling technique, the survey data utilized for this empirical research was drawn from 380 respondents from Small and Micro level

organizations in Lahore. Using SPSS software and employing regression analysis, the study tests several hypotheses that components of Islamic spirituality and Islamic leadership responsibility will exert statistically significant impacts on employee work engagement. The study found support for both main hypotheses. The model can explain over 20 % of the variance in employee work engagement. This is primarily backed by Sadakah and integrity indicators of Islamic leadership responsibility.

Keywords: Spirituality, Engagement, Quran, Beliefs, Repentance, Sadakah, Integrity.

7: **Ghaffar, A.**, & **Azhar, T. M**. (2017). The key to triumphant practices of technology in elections: It's time to reboot electoral process in Pakistan. *Journal of Management and Research, 4*(1), 19-35. **(UMT)**

Abstract: Free and fair elections guarantee the continuation of successful democratic process. Electoral process conducted on period basis is acknowledged as locus of democracy. For a sustainable democracy, free and election should be conducted on a periodic basis. This is one of the important pillars for democracy to prosper and by and large acknowledged as the locus of democracy. If the element of fairness is not present in the election, the outcome is not democracy but dictatorship and the legitimacy of the elected government will be questionable. As a result, many countries of the world have forced to use modern electoral technologies for the purpose replacing traditional paper balloting. The main issue is that these advanced ways of casting votes are not uncontroversial. For a developing country like Pakistan, it is just a beginning. The lack of political stability has made it even more difficult. The article basically suggests a roadmap for these technologies to be implemented in Pakistan, keeping in view the identical political and geographical conditions of the surrounding countries. The experiments of these countries during their implementation phase have also been considered for the purpose. The paper also concludes that despite using every possible technology, the public trust towards Election Management Body is the key. It also recommends some solutions for this challenge as well.

Keywords: Technology, Elections, Triumphant Practices, Electoral Process, Pakistan.

8: **Ayub, U.**, **Kausar, A. R.**, & Qadri, M. M. (2017). Linking human capital and organisational innovative capabilities of financial institutions: Evidence from a developing country of South Asia. *Journal of Information & Knowledge Management, 16*(04), 1750042. **(JCR)**

Abstract: Organisational collective knowledge plays an important role in innovation and also provides a competitive advantage. Human Capital (HC) is the sum total of intelligence found in individual human beings and consists of individual's learning and education, experience and expertise, and personal creativity and innovation. Researchers believed that only innovative organisations are going to survive in future in the knowledge-economy. The present research is aimed to study the impact of HC on Innovative Capability (IC) of a financial institution. This impact is empirically tested through a cross-sectional survey in which randomly selected 170 participants of a commercial bank verified the four proposed hypotheses. The findings endorsed four aspects of the study. First, HC was influenced by bank officers' skills/competence, knowledge, abilities, personal mastery and their transformational leadership role. Second, IC of the bank has been found influenced by support for innovation available to bank officers, bank officers' innovative behaviour, and tolerance for difference available to them. Third, the bank officers' leadership role, personal mastery, and their abilities were

significant and positively related to bank's IC, whereas, bank officers' knowledge was significant but negatively related to bank's IC. Finally, the fourth finding of the study suggested that bank's collective HC is having a positive relationship with bank's IC. The study would help managers to identify important HC elements suitable for financial organisations that could have an impact on its IC.

Keywords: Human Capital, Innovative Capabilities, Innovative Behaviour, Intellectual Capital, Climate for Innovation, Tolerance for Difference, Banking Sector.

9: Abaidullah, **Shah, S. S. A**., & Irum, A. (2017). Impact of leverage, ownership identity and corporate diversification on firm cash holdings - The case of sugar sector of Pakistan. *European Journal of Economics, Finance and Administrative Sciences,* (94). **(NR)**

Abstract: This paper studies the impact of leverage, ownership identity and corporate diversification on corporate cash holdings. A sample of 33 Sugar firms from non financial sector listed in KSE-100 index for the time period 1999 to 2005 have been selected. The results revels that there is positive and significant impact of leverage on corporate cash holdings. The ownership identity affects positively but insignificantly to the corporate cash holdings, showing that the identity of owners has its impact on corporate cash holdings but it is not strong predictor the firms in predicting the level of their cash holdings. Market to book ratio and size of the firm are strongly positively correlated, showing that both the variables move in the same direction. An increase in market to book ratio will increase the value of firm size. Moreover leverage and market to book ratio are highly correlated but these are strongly negatively correlated, indicating that due to the increase in market to book ratio the value of leverage will be decreased and vice versa. Diversified firms do not hold more cash reserves than the standalone firms.

Keywords: Cash Holdings, Ownership Identity, Leverage, Diversification.

10: Shahzad, K., Ahmad, F., **Bajwa, S. U**., & Rasheed, M. A. (2017). Competitiveness of Pakistan's micro and small enterprises sector. *South Asian Journal of Business and Management Cases, 6*(2), 191-195. **(SJR)**

Abstract: It was a perturbing meeting for Mujtba Akram, Head of the Industry Support Cell in Micro and Small Enterprises Development Organization (MSEDO), an organization working specifically for technology transfer and skills upgradation in industrial sectors of Pakistan. The Management Committee (MC), comprising of all eight newly appointed General Managers (GMs) and Chairman of MSEDO, has very candidly told Mujtaba that his approach to run Micro and Small Enterprises Support Cell (MSESC) has been short sighted; resultantly, both the country as well MSEDO has missed a great opportunity to augment technological competitiveness among local micro and small enterprises (MSEs). He was asked to submit a detailed explanation to the MC, in purview of the discussions held during the meeting.

Keywords: Public Policy, Industrial Development, Strategy, Micro and Small Enterprises.

11: **Ayub, U**. (2017). The notion of individuality of CEO and organizational thinking: Responsive/reflexive process in case of apple verses microsoft computers. *Organization Theory Review, 1*(1), 41-55. **(UMT)**

Abstract: Responsive or reflexive process thinking versus systemic process thinking in organizations has been a point of great discussion among different researchers and scholars.

The following paper is aimed to discuss responsive process thinking in terms of two different leadership styles in their respective organizations and along with its consequences. A responsive process has been proactive in Apple computers, and responsive process has been reactive in Microsoft computers. Individualists define the idea of self for a self-determining organization that is separate from groups and collectivists explain the self in relations to its connection to others. The role of individual in the form of Steve Jobs as a proactive leader in case of Apple computers and the role of team work in the form of Bill Gates as a reactive leader in case of Microsoft computers is discussed.

Keywords: Responsive/Reflexive, Systemic, Individualists, Collectivist.

12. **Ayub, U.**, **Kausar, A. R.**, & Qadri, M. M. (2017). Linking human capital and organisational innovative capabilities of financial institutions: evidence from a developing country of South Asia. *Journal of Information & Knowledge Management, 16*(04), 1750042. **(SJR)**

Abstract: Organisational collective knowledge plays an important role in innovation and also provides a competitive advantage. Human Capital (HC) is the sum total of intelligence found in individual human beings and consists of individual's learning and education, experience and expertise, and personal creativity and innovation. Researchers believed that only innovative organisations are going to survive in future in the knowledge-economy. The present research is aimed to study the impact of HC on Innovative Capability (IC) of a financial institution. This impact is empirically tested through a cross- sectional survey in which randomly selected 170 participants of a commercial bank verified the four proposed hypotheses. The findings endorsed four aspects of the study. First, HC was influenced by bank officers skills/competence, knowledge, abilities, personal mastery and their transformational leadership role. Second, IC of the bank has been found influenced by support for innovation available to bank officers, bank officers, innovative behavior, and tolerance for deference available to them. Third, the bank officers leadership role, personal mastery, and their abilities were significant and positively related to bank's IC, whereas, bank officers' knowledge was significant but negatively related to bank's IC. Finally, the fourth finding of the study suggested that bank's collective HC is having a positive relationship with bank's IC. The study would help managers to identify important HC elements suitable for financial organisations that could have an impact on its IC.

Keywords: Human Capital, Innovative Capabilities, Innovative Behavior, Intellectual Capital, Climate for Innovation, Tolerance for Difference, Banking Sector.

13. **Hamid, Z**. (2017). Impact of high-performance work systems on export-oriented SMEs performance: the mediating role of human capital development. *The South East Asian Journal of Management, 11*(2), 142-163. **(JCR)**

Abstract: Small and medium enterprises (SMEs) contribute substantially to the economic development, income generation, poverty reduction, and particularly job creation for both developed and developing economies. However, compared with large firms, SMEs face several challenges related to their performance and competitiveness. The role of human capital (HC) and human resource practices (HR Practices) in enhancing SMEs competitiveness and performance is vital but understudied areas. Therefore, the purpose of this study was to investigate the role of HC development between the relationship of high-performance work systems (HPWS) and export-oriented SMEs performance. Quantitative strategy and cross-sectional survey method was used to collect data from 205 managerial staff through a self-

administered structured questionnaire. HPWS had a significant positive impact on export-oriented SMEs performance. The findings of the study provide evidence that HC development plays a mediating role between HPWS and enterprises performance.

Keywords: High-Performance Work Systems, Hr Practices, Human Capital Development, Export-Oriented SMEs.

Conference Papers

1. Bhatti, O. K., Hanjra, M. A. R., Niazi, & S., **Farooq, W**. (2017, May 12-14). *Understanding power distance and service delivery in public sector of Pakistan.* Paper presented at International Conference on Social Sciences and Humanities, Skopje, Macedonia.

Abstract: Power distance represents the respect that hierarchical positions are accorded within an organization. Low power distance culture incubates an efficient rule-based administrative system in the public sector, where focus lies on serving the citizens of a country. This paper attempts to understand the role of power distance and service delivery in the public sector of Pakistan. A sample of 11 experienced respondents were selected from various public sector organizations for their views on the subject. The qualitative approach employed for this paper reveals that Pakistan's public sector is in a state of transition. The high power distance management style, a part of Pakistan's colonial inheritance, is slowly shifting to a low power distance management style driven by recent administrative reforms. As a result, low power distance culture is getting firmly entrenched in the public sector while displaying positive results measured by a marked improvement in public service delivery

Keywords: Power Distance, Culture, Service Delivery, Public Sector, Employee Behavior.

2. **Bajwa, S. U**. (2017, May 22-25). *Evaluation for improvement, in international development agencies - Learning from a pilot project in Pakistan*. Paper presented at International Doctoral 5tuden ts Conference, Zhejiang, China.

Abstract: Not available.

3. **Farooq, W**., Rafiq, U., & Naqshbandi, M. M. (2017, November 9-10). *Effect of open innovation on business performance: Moderating role of external environmental factors.* Paper presented at the second International Conference of Dynamic Innovation (ICDI 2017), Kuala Lumpur, Malaysia.

Abstract: The area of business performance has always been at the heart of strategic management. Innovation practices have been widely considered as a fundamental ingredient for achieving desirable business performance. The major purpose of this research study is to evaluate the moderating impact of external environmental factors, in between the relationship of open innovation and business performance of SMEs in Pakistan. The contingency theory is used to explain the framework of this study. The results of this study revealed, that customers and suppliers moderate the relationship, of inbound open innovation practices and business performance. Furthermore adopting open innovation practices, have a positive direct impact on business performance of SMEs. Limitations, insight for managerial implications and future research directions have also been discussed.

Keywords: Open Innovation, External Environmental Factors, Business Performance.

Department of Operations and Supply Chain

Journal Articles

1: **Ramish, A.**, **Azhar, T. M.**, & **Rasheed, H**. (2017). Building a comprehensive service supply chain conceptual framework: A step ahead, based on comparative analysis of previous frameworks. *International Journal of Services and Operations Management, 26*(1), 97-121. **(SJR)**

Abstract: The purpose of the study is to build a comprehensive supply chain framework for service industry including the ones engaging in purchasing of services, making of services and delivering the services, through the comparative analysis of models and conceptual frameworks previously existing in the literature of services supply chains. The findings of this paper also present a fresh outlook of how the service organisations can strategise while implementing proposed framework in their firms and all along their service supply chains. This comparative analysis and conceptual framework will enable the detection of the problems that surround result estimation within and across single supply chains and expand existing knowledge in the performance measurement in the service supply chain. In addition, this study should offer fundamental insights as to how service business can develop their performance systems to be converted into more effective supply chains by focusing on new dimensions.

Keywords: Supply Chain Management, Scm, Performance Measurement, Services Supply Chains, Conceptual Framework, Scor Model, Kpis, Key Performance Indicators, Comparative Analysis, Service Industry.

Conference Papers

1. **Yusuf, I**. (2017). *Dynamics of cost of quality: The case of expresspac pvt.ltd*. Paper presented at the second International Conference on Dynamic Innovation, Malaysia.

Abstract: Not available.

2. **Aslam, H**. (2017, October 6-9). *Managing supply chain risks: A case of potato chips manufacturer in Pakistan*. Paper presented at the 12th Asian Academy of Management Conference, Penang, Malaysia.

Abstract: Not available.

3. **Azhar, T. M**. (2017, October 6-9). *Measuring customer satisfaction on metro bus system in Pakistan*. Paper presented at the 12th Asian Academy of Management Conference, Penang, Malaysia.

Abstract: Not available.

4. **Aslam, H**. (2017, December 4). *Supplier development practices: A case of leading shoe retailer of Pakistan*. Paper presented at the sixth International Conference on Social Sciences Research, ICSSR 2017, Kuala Lumpur, Malaysia.

Abstract: Not available.

5. **Ramish, A**. (2017, September 27-29). *Securing wireless sensor networks enabled logistics using a hybrid intrusion detection system*. Paper presented at the 14th International Conference on Innovation and Management, Wuhan, China.
Abstract: Not available.

Department of Quantitative Methods

Journal Articles

1: Perveen, Z., **Munir, M**., & Ahmad, M. (2017). Double weibull distribution: Properties and it's application. *Pakistan Journal of Science, 69*(1), 95. **(HEC X-Cat.)**
Abstract: Basis on theoretical properties to find out the basic assumptions about double Weibull distribution were determined with different shape and scale parameters were used to find the new distribution with modified approaches of different parameters. Some characteristics of the newly proposed distribution were obtained using the existing distribution. Different properties were used to find out the cumulative distribution function, probability density function (PDF), hazard function, Reverse Hazard and survival functions. The measure of skewness, kurtosis for selected coefficients and parameters of the new distribution were also calculated. To estimate the parameters, the maximum likelihood (ML) technique was used. Mathematica software was used to draw graphical representations for different shape and scale parameters. of statistical application of the results of life data analysis. On the basis of numerical results, we found that the suggested Double Weibull Distribution was more suitable than the existing Weibull probability distributions in this study.
Keywords: Weibull Distribution, Double Weibull Distribution, Maximum Likelihood, Skewness, Moments and Methematica.

2: **Raza, S. M. M**., & **Siddiqi, A. F**. (2017). EWMA and DEWMA control charts for poisson-exponential distribution: Conditional median approach for censored data. *Quality and Reliability Engineering International, 33*(2), 387-399. **(JCR)**
Abstract: Exponentially weighted moving average (EWMA) control charts are consistently used for the detection of small shifts contrary to Shewhart charts, which are commonly used for the detection of large shifts in the process. There are many interesting features of EWMA charts that have been studied for complete data in the literature. The aim of present study is to introduce and compare the double exponentially weighted moving average (DEWMA) and EWMA control charts under type-I censoring for Poisson-exponential distribution. The monitoring of mean level shifts using censored data is of a great interest in many applied problems. Moreover, a new idea of conditional median is introduced and further compared with the existing conditional expected values approach for monitoring the small mean level shifts. The performance of the DEWMA and EWMA charts is evaluated using the average run length, expected quadratic loss, and performance comparison index measures. The optimum sample size comparisons for the specified and unspecified parameters are also part of this study. Two applications for practical considerations are also discussed. It is observed that different censoring rates and the size of shifts significantly affect the performance of the EWMA and DEWMA charts.

Keywords: Average Run Length, Ewma, Type-I Censoring, Conditional Median, Poisson-Exponential Distribution.

Department of Skills Development

Journal Articles

1: **Belal, K.** (2017). Pak-Iran relations: Evolving dynamics, prospects and approaches. *Policy Perspectives, 14*(1), 83-104. **(HEC Y-Cat.)**

Abstract: Depending on how Trump administration adjusts to the nuclear deal between Iran and the P5+1, the strategic landscape of Iran could either transform dramatically or slide back to pre-deal status quo ante. Traditionally, Iran aspires for a wider regional role to enhance its stature and assume a regional leadership position. As international politics becomes more complex and interlinked, a resurging Iran, reaching to the outer world, has implications for Pakistan. Critically speaking, Pakistan's relations with Iran are unique in the sense that these could neither be described as strategic partnership nor strategic rivalry; rather the relations have been alternating between strong friendship and competition. Thus, it is important to study and extrapolate Iran and Pakistan relations and also how this relationship could serve the long-term interests of each other in the region. The paper juxtaposes Pakistan-Iran relations in the changing regional balance of power. It looks at Pakistan-Iran relations from two angles: history of the bilateral relations; present issues and concerns that could have an impact on the future contours of the relations; and makes plausible policy recommendations for strengthening bilateral ties.

Conference Papers

1. **Rashid, U**. (2017, April 28-29). *Analyzing the impact of international investment law and human rights law on the doctrine of sovereignty*. Paper presented at 6th International Conference of the Younger Comarativists Committee (YCC) of the American Society of Comarative Law, KOC, Istanbul, Turkey.

Abstract: The current international law of foreign investment shows a marked tension between state sovereignty on the one hand and foreign investor protection on the other. This paper will look at the historical development of international investment law, both through investment treaties and through decision of international investment law tribunals. It argues that the current law favors investor protection over claims of state sovereignty. However, it can also be observed that where investment tribunals have provided a very generous and expansionist interpretation in favor of investor protection, subsequent development in both state practice and tribunals decision shows attempts to push back from such interpretation. However it remains to be seen whether international investment law would be able to provide a genuine balance between investor protection and other legitimate interests including sovereignty, human rights, environment, sustainable development and good governance.

2. **Rashid, U**. (2017, December 19-20). *UNHCR in Pakistan: Analyzing the global governance regime*. Paper presented at the first International Conference on Migration, Integration and

Social Cohesion, Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS), Quetta, Pakistan.

Abstract: United Nations High Commissioner for Refugees (UNHCR) has played a vital and indispensable role in dealing with the humanitarian crisis, caused by displacement of millions of Afghans, which has been going on for almost four decades. Since Pakistan is not a party to the 1951 Convention relating to the Status of Refugees and its 1967 Protocol and has no national legislation on the issue of refugees, UNHCR has been operating in Pakistan under the mandate provided by various agreements concluded between UNHCR and the government of Pakistan. Some of the significant areas of governance by UNHCR include: determination of refugee status on behalf of the government of Pakistan; maintenance of refugee villages in Pakistan, providing basic services to refugees living in those villages in collaboration with the Government of Pakistan and NGOs; governing the world's largest refugee return program; and its governance role in Refugee Affected and Hosting Areas (RAHA) initiative.

The last few decades have witnessed a massive increase in transfer of regulatory functions to international organizations, covering all areas of life. Traditional attitude towards increased governance by International Organizations is often encapsulated in the idea "that everything international is wonderful precisely because it is international". Without doubt global governance institutions, such as the UNHCR, are essential for promoting global welfare, through their ability to resolve coordination and cooperation problems amongst diverse actors. However, proliferation in such global governance institutions has also raised significant concerns as to the fairness of their decision making process, concerns as to democratic principles of the rule of law, concerns as to 'democratic deficit' in international organizations, concerns as to the protection of individual and collective rights and concerns as to the loss of autonomy by state to international organizations dominated by powerful countries.

UNHCR as a global governance institute is engaged in a more specific form of global governance, viz. the direct exercise of public authority over individuals, such as determination of their status in the host state, operations in the refugee camps and reparation claims. Keeping the challenges posed by global governance institutes and the more specific role played by UNHCR, notwithstanding the importance and indispensability of its work, it is important to analyse the global governance regime of UNHCR. This Paper will analyse the global governance regime of UNHCR in Pakistan, evaluating the accountability mechanisms and the operations of UNHCR in Pakistan to determine to what extent the criticism leveled at global governance by international organizations is accurate in the case of UNHCR's operations in Pakistan.

Department of Information Systems

Journal Articles

1: **Rasheed, M. A.**, **Shahzad, K.**, Conroy, C., **Nadeem, S.**, & **Siddique, M. U**. (2017). Exploring the role of employee voice between high-performance work system and organizational innovation in small and medium enterprises. *Journal of Small Business and Enterprise Development, 24*(4), 670-688. **(JCR)**

Abstract: Purpose: Employee voice has emerged as a strong predictor of positive organizational

outcomes. Grounding the theoretical model in resource-based theory; this study conceptualizes how high- performance work system (HPWS) can enhance organizational innovation of small and medium enterprises (SMEs) through voice behaviors. Specifically, the purpose of this paper is to empirically test if employee voice mediates the relationship between HPWS and organizational innovation.

Design/methodology/approach: This study used a quantitative strategy and cross-sectional survey method for the collection of data from SMEs operating in Pakistan. A list of SMEs was obtained from the federal government organization responsible for the development of SMEs in Pakistan. A self-administered structured questionnaire was distributed and 239 randomly selected SMEs responded to the survey.

Findings: Findings confirmed the conceptualized model and revealed that HPWS was significantly and positively related to employee voice and organizational innovation. Employee voice was found as a significant predictor of organizational innovation and mediating factor in the relationship between HPWS and organizational innovation.

Research limitations/implications: This study is limited in terms of variables included in the conceptual model and relatively small size of the sample that was derived from a single federal organization. More variables and SMEs can be included in future studies to get broader results and, potentially, better findings.

Practical implications: SME managers/owners can design HR function in such a way that employees will be encouraged to raise their voice and participate more in the organization. Scholars should study voice behaviors distinct from citizenship behaviors.

Originality/value: This study is the first of its kind to conceptualize the relationship between HPWS, employee voice, and organizational innovation in SMEs of Pakistan.

Keywords: Pakistan, Employee voice, Small and medium enterprises, Organizational innovation, High-performance work system, Strategic HRM.

School of Commerce and Accountancy

SCA

Journal Articles

1: **Malik, Z. F.**, **Arshed, N.**, Hassan, M. S., & **Gulzar, M.** (2017). The impact of auditor tenure on audit quality: Evidence from Pakistan. *Paradigms, 11*(2), 202-209. **(HEC Z-Cat.)**

Abstract: This study aims at examining the impact of auditor tenure on audit-quality, moreover, to observe whether the mandatory auditor-rotation will result in enhancement of audit quality. Data for the period covering 10 years (2005 till 2014) is gathered from the audited financial statements after selecting 121 companies related to non-financial sector listed in Pakistan Stock Exchange. Discretionary accruals calculated with the help of MJ Model 1991, have been used as a proxy to calculate the quality of audit. It is observed that during the early years of auditor tenure the magnitude of discretionary accruals increases, for the reason that the auditors are not equipped with required client-specific knowledge. Once the auditors acquire client-specific knowledge, the magnitude of discretionary accruals decreases, resulting in an increase in audit quality. Based on the findings of this study, it is derived that the lengthy auditor tenure does not result in a decrease in audit quality in the case of Pakistani non-financial sector organizations. The outcomes of the study suggest that the regulators and standards setters in Pakistan should reconsider their policy regarding mandatory-auditor-client relationship tenure.

Keywords: Auditor Tenure, Audit Quality, Discretionary Accruals, Modified Jones Model, Pakistan Stock Exchange.

School of Food and Agricultural Sciences

SFAS

Journal Articles

1: Khalid, S., **Khalid, N**., **Khan, R. S**., Ahmed, H., & Ahmad, A. (2017). A review on chemistry and pharmacology of Ajwa date fruit and pit. *Trends in Food Science & Technology, 63*, 60-69. **(JCR)**

Abstract: Background: Phoenix dactylifera is an instinctive plant, cultivated worldwide especially in Arab regions being an edible nutritious fruit. For this plant, Ajwa date fruit variety is distinguished among all varieties due to its richness of sugar, dietary fiber, essential mineral and vitamin contents. The unique phytochemical profile of Ajwa dates have potential to cure different diseases.

Scope and Approach: This manuscript provides an overview on pharmacological and nutritional aspects exclusively for Ajwa dates. The excellent phytochemicals profile placed Ajwa dates at top among other date varieties. Recently, new in vitro and in vivo studies prove the effectiveness of Ajwa dates. However, quantitative studies are need to understand the protective actions of Ajwa dates.

Key Findings and Conclusions: Ajwa fruit pits are also enriched with dietary fibers, lipids, minerals, and proteins. Ajwa dates are consumed not only for dietary purposes but also used for their medicinal effects against different ailments. Phytochemical studies have showed that Ajwa flesh and pits are enriched with certain phenolic and flavonoids, which have multiple effects on human health due to their strong antioxidant properties. Preclinical studies revealed that Ajwa dates have strong antioxidant, anti-inflammatory, anti-mutagenic, hepato-protective, nephroprotective and anti-cancer activities.

Keywords: Ajwa, Flesh, Pit, Phytochemicals, Flavonoids, Antioxidant, Nephroprotective.

2: **Khan, R. S**., Kiat, S. L., & Grigor, J. M. (2017). Characterization of food product innovation with reference to bioactive functional food product development in Singapore. *Asian Journal of Agricultural Sciences, 5*(2), 30-39. **(NR)**

Abstract: Functional foods, being one of the major food categories of the global health and wellness market, are becoming a major focus of new product development (NPD) in the food industry. The development of functional foods is more complex than traditional food New Product Development (NPD), calling for a concerted effort from researchers and NPD experts to explore and understand the functional food product development (FFPD) process in more detail. The current research in this field has reported that there is a need to evolve from a traditional NPD approach, towards an integrative and innovative approach involving cooperative networks and techniques of commercialization. However, there is little practical evidence on how much progress has been made to date. Therefore, this research was designed to investigate the food product innovation process of food manufacturing in the Asia-Pacific region (Singapore) with reference to functional foods development. Results report on a comparative account of NPD practices between registered Singapore food companies that are

doing some sort of functional food development (Group 1) and those that are not (Group 2). A significant difference (P<0.05) in the aims and mode of NPD between Group 1 and Group was observed. Further it was observed that food companies in Group 1 have significantly (P<0.05) more diverse external collaborations with broad aims to collaborate, in comparison with food companies in Group 2. This is a positive step toward developing an external resource base, which is essential in developing functional foods. This attitude should be encouraged in future innovation polices as being critical to value-added food product innovations in Singapore. Apart from these differences, food companies are still pursuing a traditional NPD approach (independent and closed NPD); with loose Intellectual Property protection practices irrespective of type of innovation activity. There is a need to create awareness among the stakeholders about the factors needed for developing unique and inimitable resources, and dynamic capabilities in food manufacturing.

Keywords: Food Product Innovations, Traditional NPD Process Characteristics, Functional Food Product Development Challenges.

3: **Khalid, N.**, **Khan, R. S.**, Hussain, M. I., Farooq, M., Ahmad, A., & Ahmed, I. (2017). A comprehensive characterisation of safflower oil for its potential applications as a bioactive food ingredient - A review. *Trends in Food Science & Technology, 66*, 176-186. **(JCR)**

Abstract: Background: Safflower is a multiple purpose crop generally grown for oil production. The safflower oil is considered to be a better oil since it contains higher amount of oleic and linoleic acids than other oil seed crops. Safflower oil has numerous applications in food, cosmetics, pharmaceutical and feed industry. An added advantage of safflower oil is lower cost of production thus can become an alternate option for those who cannot afford to buy olive and other functional oils.

Scope and approach: This manuscript provides a comprehensive review on critical aspects of pharmacological and nutritional applications of safflower oil. A higher antioxidantactivity renders better stability of safflower seed oil over extended storage period. Moreover, a higher content of omega six fatty acids makes it a healthier choice for consumption especially where olive oil being the only but costly choice. There has been a surge in developing innovative and efficient methods to extract safflower oil including super critical fluid and enzymatic extraction techniques.

Key findings and conclusions: A higher stability index makes it possible to encapsulate safflower oil or used it as a carrier in bioactive functional ingredient delivery systems. The functional properties of safflower oil can be used to treat skin infections, bone related disorders, menopause and atherosclerosis. Composition and distribution of phenolic contents of safflower oil has not been explored to its full potential. There is a need to conduct exclusive research on exploring the role of phenolic compounds in food and pharma industrial applications.

Keywords: Safflower Oil, Fatty Acid Distribution, Nutritional Profile, Pharmacological properties, Stability Index, Extraction Methods.

4: Amin, A., Ahmed, I., **Khalid, N.**, Osman, G., Khan, I. U., Xiao, M., & Li, W. J. (2017). Streptomyces caldifontis sp. nov., isolated from a hot water spring of Tatta Pani, Kotli, Pakistan. *Antonie van Leeuwenhoek, 110*(1), 77-86. **(JCR)**

Abstract: A Gram-staining positive, non-motile, rod-shaped, catalase positive and oxidase

negative bacterium, designated NCCP-1331T, was isolated from a hot water spring soil collected from Tatta Pani, Kotli, Azad Jammu and Kashmir, Pakistan. The isolate grew at a temperature range of 18-40 °C (optimum 30 °C), pH 6.0–9.0 (optimum 7.0) and with 0–6 % NaCl (optimum 2 % NaCl (w/v)). The phylogenetic analysis based on 16S rRNA gene sequence revealed that strain NCCP-1331T belonged to the genus Streptomyces and is closely related to Streptomyces brevispora BK160T with 97.9 % nucleotide similarity, followed by Streptomyces drosdowiczii NRRL B-24297T with 97.8 % nucleotide similarity. The DNA–DNA relatedness values of strain NCCP-1331T with S. brevispora KACC 21093T and S. drosdowiczii CBMAI 0498T were 42.7 and 34.7 %, respectively. LL-DAP was detected as diagnostic amino acid along with alanine, glycine, leucine and glutamic acid. The isolate contained MK-9(H8) as the predominant menaquinone. Major polar lipids detected in NCCP-1331T were phosphatidylethanolamine, phosphatidylinositol and unidentified phospholipids. Major fatty acids were iso-C16: 0, summed feature 8 (18:1 ω7c/18:1 ω6c), anteiso-C15:0 and C16:0. The genomic DNA G + C content was 69.8 mol %. On the basis of phylogenetic, phenotypic and chemotaxonomic analysis, it is concluded that strain NCCP-1331T represents a novel species of the genus Streptomyces, for which the name Streptomyces caldifontis sp. nov. is proposed. The type strain is NCCP-1331T (=KCTC 39537T = CPCC 204147T).

Keywords: Streptomyces Caldifontis sp. nov., Tatta Pani Hot Water Spring, Kotli, Azad Jammu and Kashmir, Pakistan.

5: Arif, S., Batool, A., **Khalid, N**., Ahmed, I., & Janjua, H. A. (2017). Comparative analysis of stability and biological activities of violacein and starch capped silver nanoparticles. *RSC advances, 7*(8), 4468-4478. **(JCR)**

Abstract: Violacein is a bacterial quorum-sensing chromophore, also referred to as 'purple treasure' for its versatile utility in the pharmaceutical, food, cosmetic and textile industries. Moreover, it provides broad spectrum biological activity that is the subject of expansive scientific research. The major limitation in the drug delivery of violacein is its hydrophobic nature that results in poor bioavailability. Nanoparticles (NPs) coupled with these drugs tend to enhance their delivery, efficacy and safety profiles. In this study, we established that violacein capped silver NPs (vAgNPs) have shown enhanced stability with 3 to 10 times higher therapeutic effect against multidrug resistant bacteria, fungi and algae compared to starch capped silver NPs (cAgNPs). The surface plasmon resonance, size, shape, crystalline nature and capping agent of these NPs were studied with UV-Vis spectroscopy, Scanning Transmission Electron Microscopy, Atomic Force Microscopy, X-ray Diffraction and Fourier Transform Infrared Spectroscopy, respectively. This comparative study examines the efficacy of vAgNPs against cAgNPs and establishes that surface capping of AgNPs with violacein yields conjugative benefits, i.e., strengthening each other's therapeutic effect, increased bioavailability of violacein, higher stability and maneuvering the therapeutic effect of vAgNPs towards Gram positive bacteria.

6: Bhatti, H. S., **Khalid, N**., Uemura, K., Nakajima, M., & Kobayashi, I. (2017). Formulation and characterization of food grade water-in-oil emulsions encapsulating mixture of essential amino acids. *European Journal of Lipid Science and Technology, 119*(6). **(JCR)**

Abstract: The present study was conducted to study the encapsulation properties of a mixture of four amino acids (AAs) in the disperse phase of water-in-oil (W/O) emulsions. Four different

AAs (methionine, lysine, threonine, and tryptophan) at 1% (w/w) each AA concentration was used in dispersed phase, while the continuous phase constitutes vegetable oils with 5% (w/w) tetraglycerin monolaurate condensed ricinoleic acid esters as an emulsifier. The optimized conditions include homogenization at 7000 rpm for 5 min using soybean oil as a continuous phase medium. The average droplet diameter of the W/O emulsions ranged between 4 and 5 µm with a coefficient of variation between 20 and 23%. The W/O emulsions were found to be stable over a period of 30 days at 4°C with slight phase separation at 25°C after 30 days of storage. The W/O emulsions retain about 10.5 mg/mL (encapsulation efficiency 79.8%) of amino acids after 30 days of storage at 4 and 25°C. The methionine and lysine have encapsulation efficiency of over 80% in comparison to threonine (79%) and tryptophan (60%) after 30 days of storage at 4 and 25°C.

Keywords: Amino Acid, Emulsifier Concentration, Encapsulation, Storage Stability, W/O Emulsions.

7: Hashmi, M. U., Khan, F., **Khalid, N**., Shahid, A. A., Javed, A., Alam, T., ... Janjua, H. A. (2017). Hydrogels incorporated with silver nanocolloids prepared from antioxidant rich Aerva javanica as disruptive agents against burn wound infections. *Colloids and Surfaces A*: *Physicochemical and Engineering Aspects, 529*, 475-486. **(JCR)**

Abstract: Methicillin resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa(PA) infections in thermally injured patients have led to intrusive disease causing mortality. Silver nanoparticles (AgNPs) employed in treatment have limitations owing to their oxidative damage and toxicity in tissues. Present study focuses on the synthesis of biocompatible AgNPs from antioxidant-rich aqueous extract of Aerva javanica. Capping of phenols on AgNPs surface was confirmed through FTIR analysis and hence spherically assembled particles of low polydispersity index exhibited Surface Plasmon Resonance at 430 nm. These assembled antibacterial AgNPs were assessed for their radical scavenging properties and cytotoxic potential on both primary (HCEC) and cancerous cell lines (Huh-7, HeLa). Potential agglomeration of intraperitoneally administered AgNPs (3–24 mg kg−1) in liver, spleen and kidney of balb/c mice was assessed through histological analysis and corresponding mortality and weight loss studies were evaluated. These AgNPs after incorporation in chitosan hydrogels were topically applied on partial thickness burn wound infections (2 × 108CFUs of MRSA and PA) created in Balb/c mice. A significant reduction in the infection was observed with application of AgNPs incorporated hydrogels that improved the healing time.

Keywords: Green Synthesis, Silver Nanoparticles, Chitosan Hydrogels, Burn-Wound Infections, Radical Scavenging Assay.

8: **Khalid, N**., Kobayashi, I., & Nakajima, M. (2017). Recent lab-on-chip developments for novel drug discovery. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine, 9*(4), e1381. **(JCR)**

Abstract: Microelectromechanical systems (MEMS) and micro total analysis systems (µTAS) revolutionized the biochemical and electronic industries, and this miniaturization process became a key driver for many markets. Now, it is a driving force for innovations in life sciences, diagnostics, analytical sciences, and chemistry, which are called 'lab-on-a-chip, (LOC)' devices. The use of these devices allows the development of fast, portable, and easy-to-use systems with a high level of functional integration for applications such as point-of-care diagnostics,

forensics, the analysis of biomolecules, environmental or food analysis, and drug development. In this review, we report on the latest developments in fabrication methods and production methodologies to tailor LOC devices. A brief overview of scale-up strategies is also presented together with their potential applications in drug delivery and discovery. The impact of LOC devices on drug development and discovery has been extensively reviewed in the past. The current research focuses on fast and accurate detection of genomics, cell mutations and analysis, drug delivery, and discovery. The current research also differentiates the LOC devices into new terminology of microengineering, like organ-on-a-chip, stem cells-on-a-chip, human-on-a-chip, and body-on-a-chip. Key challenges will be the transfer of fabricated LOC devices from lab-scale to industrial large-scale production. Moreover, extensive toxicological studies are needed to justify the use of microfabricated drug delivery vehicles in biological systems. It will also be challenging to transfer the in vitro findings to suitable and promising in vivo models.

9: **Khalid, N.**, Kobayashi, I., Neves, M. A., Uemura, K., Nakajima, M., & Nabetani, H. (2017). Encapsulation of β-sitosterol plus γ-oryzanol in O/W emulsions: Formulation characteristics and stability evaluation with microchannel emulsification. *Food and Bioproducts Processing, 102*, 222-232. **(JCR)**

Abstract: β-Sitosterol and γ-oryzanol have reduced solubility in aqueous based formulations. In this study β-sitosterol (β-st) and γ-oryzanol (γ-oz) were encapsulated at relatively high concentrations in different food-grade oil-in-water (O/W) emulsions using straight-through microchannel emulsification. The innovative aspect of this study was the production of monodisperse droplets with high encapsulation efficiency and stability of β-sitosterol and γ-oryzanol. Milli-Q water containing 1% (w/w) Tween 20 or decaglycerol monolaurate (ML-750) was used as the continuous phase and the dispersed phase contained 0.5–4% (w/w) each of β-st and γ-oz in medium chain triglycerides. Successful droplet generation was conducted with different concentrations of β-st and γ-oz. The Sauter mean diameter of 1% (w/w) β-st and γ-oz loaded O/W emulsions ranged between 26 and 28 μm with relative span factor width below 0.21. These emulsions were stable at 4 and 25 °C during evaluated storage period. The emulsions stabilized with Tween 20 have encapsulation efficiencies of β-st and γ-oz (EEβ-st and EEγ-oz) above 80% at 4 and 25 °C; those stabilized with ML-750 have EEβ-st over 80% and EEγ-oz above 50% at 4 and 25 °C.

Keywords: Microchannel Emulsification, β-Sitosterol, γ-Oryzanol, Encapsulation, Stability, Oil-In-Water Emulsions.

10: Souilem, S., Fki, I., Kobayashi, I., **Khalid, N.**, Neves, M. A., Isoda, H., ... Nakajima, M. (2017). Emerging technologies for recovery of value-added components from olive leaves and their applications in food/feed industries. *Food and Bioprocess Technology, 10*(2), 229-248. **(JCR)**

Abstract: Olive leaves are the most abundant agricultural waste source rich in polyphenolics. Due to the numerous health benefits associated with these compounds, the interest in recovering polyphenols from olive leaves has increased in the scientific community over the last decade. Recent studies have focused on improved extraction techniques and processing methods that are most suited for agro-biological industries involved in the development of nutraceutical and functional products. The major problems in olive leaves processing include bitter taste and the low stability of various phenolic compounds. Oleuropein and

hydroxytyrosol are the most important phenolic compounds extracted from olive leaves. The present review highlights the importance of olive leaves, their composition, preparation methods, major phenolic compounds, and commercial applications. This review article focuses on integrating studies on olive leaf extract (OLE) pertinent to nutrition, health, and beauty. The different board categories of delivery systems available for the encapsulation of OLE are given. These novel delivery systems could improve fortification, supplementation, and dietary diversification in food and pharmaceutical products.

Keywords: Olive Leaves, Extraction Techniques, Functional Properties, Encapsulation, Oleuropein.

11: **Khalid, N.**, Kobayashi, I., Neves, M. A., Uemura, K., Nakajima, M., & Nabetani, H. (2017). Encapsulation of cholecalciferol and ergocalciferol in oil-in-water emulsions by different homogenization techniques. *European Journal of Lipid Science and Technology, 119*(6), 1600247. **(JCR)**

Abstract: Ergocalciferol (VD2) and cholecalciferol (VD3) are bioactive compounds with reduced bioavailability. Soybean oil, olive oil, or medium chain triglyceride containing 0.5% w/w VD2 and VD3, was used as a dispersed phase, while phosphate buffer containing 1% w/w Tween 20 served as a continuous phase. The two phases were emulsified with a rotor-stator homogenizer (RSH) at 5000–20 000 rpm for 5 min or with high pressure homogenization (HPH) at 100 MPa after RSH at 7000 rpm for 5 min. The volume mean diameter (d4,3) of the formulated oil-in-water (O/W) emulsions gradually decreased with increasing the rotation speed of RSH. The O/W emulsions formulated under appropriate homogenization conditions remained stable over 30 days of storage period. There was no prominent difference in d4,3 of the O/W emulsions formulated with the HPH, differing from d4,3 of the O/W emulsions formulated with the RSH during 30 days of storage period. There was little effect of homogenization types on release profile of the VD2 and VD3 loaded emulsions. The encapsulation efficiencies of VD2 and VD3 were less than 70% after 10 days of storage, followed by sharp decline to 10% after 30 days at 4°C.

12: **Khalid, N.**, Shu, G., Kobayashi, I., Nakajima, M., & Barrow, C. J. (2017). Formulation and characterization of monodisperse O/W emulsions encapsulating astaxanthin extracts using microchannel emulsification: Insights of formulation and stability evaluation. *Colloids and Surfaces B: Biointerfaces, 157*, 355-365. **(JCR)**

Abstract: The study used straight-through microchannel emulsification (MCE) to encapsulate different extracts of astaxanthin (AXT) in oil-in-water (O/W) emulsion droplets. We used silicon microchannel plates (WMS 11-1) containing 13,752 discrete 10 × 104 μm microslots, connected to a circular microhole with a diameter of 10 μm. Two different AXT extracts (AstaReal (AR) and Zenthin® (ZR)) based upon concentration and without purification was used as encapsulants in the dispersed phase, while different emulsifiers (1% (w/w) SDS, ML-750, MO-7S, Na-Cs and ML) with different stabilizing mechanisms were used as the continuous phase. The MCE was conducted at a dispersed phase flow rate of 1 mL h−1. Successful emulsification was conducted with a Sauter mean diameter of 35–37 μm and relative span factor <0.25. The emulsification was highly depended on the type of emulsifiers and the extract type used during emulsification. Better droplet productivity was achieved with AR extract with 1% (w/w) ML-750 as the optimized emulsifier in Milli-Q Water. The O/W emulsion droplets remained stable at 25 °C

with encapsulation efficiency of over 98% during 15 days of storage period.
Keywords: Astaxanthin, Microchannel Emulsification, Oil-In-Water Emulsions, Emulsifier Types Stability, Encapsulation Efficiency.

13: Zhao, Y., **Khalid, N**., Shu, G., Neves, M. A., Kobayashi, I., & Nakajima, M. (2017). Formulation and characterization of O/W emulsions stabilized using octenyl succinic anhydride modified kudzu starch. *Carbohydrate Polymers, 176*, 91-98. **(JCR)**

Abstract: Kudzu starch esterified with octenyl succinic anhydride (OSA) was used as a food-grade emulsifier to formulate O/W emulsions. In addition, the difference between the physicochemical properties and emulsifying ability of native kudzu starch and those of OSA-modified kudzu starch was investigated. Granules of the OSA-modified kudzu starches increased in size after gelatinization. The interfacial tension between soybean oil and gelatinized OSA-modified kudzu starch was lower than that of kudzu starch. The droplet size of O/W emulsions decreased to 186 nm at 100 MPa after three passes. The emulsions stabilized using gelatinized OSA-modified kudzu starch were less stable when exposed to different ionic strengths (100 mM to 500 mM NaCl), than when exposed to different pH levels (2–8). The results of oil droplet size and confocal laser scanning microscopy analysis indicated that emulsions containing 2–5% OSA-modified kudzu starch remained stable at room temperature for 30 days.
Keywords: Emulsions, Kudzu Starch, Octenyl Succinic Anhydride, Physicochemical Property, Stability.

14: Javed, R., Ahmed, I., **Khalid, N**., & Iqbal, M. (2017). Isolation, molecular identification and characterization of boron-tolerant bacterial strains from sewage treatment pond of Islamabad, Pakistan. *Applied Ecology and Environmental Research, 15*(4), 1211-1226. **(JCR)**

Abstract: Boron-tolerant bacteria fall in the category of extremophilic organisms as they have the ability to survive in high boron environments. Such bacterial species needs to be characterized to identify new extremophilic organisms from the ecology for biotechnological benefits. In this study, five boron-tolerant bacterial strains, designated as NCCP-132, NCCP-133, NCCP-134, NCCP-135 and NCCP-136 were isolated from sewage sludge treatment pond of Islamabad, Pakistan. These strains grew on media containing 200 to more than 450 mM of boron concentration. However, the microbial growth is found high at low boron concentration. The isolated boron-tolerant bacterial strains were either extremely boron-tolerant or moderately boron-tolerant. The 16S rRNA gene sequences and phylogenetic analyses delineated that all strains were found to be closely related to species belonging to different genera: Bacillus, Oceanobacillus and Lentibacillus. Strains NCCP-132, NCCP-134 and NCCP-135 are found to be novel species, while NCCP-133 and NCCP-136 are revealed to be previously identified bacterial species. Morphological, physiological and biochemical characteristics of these strains were studied at their optimal growth conditions. Our study inferred that the sewage treatment pond of Islamabad, Pakistan is rich in boron-tolerant extremophilic bacterial population with diverse bacterial communities having a potential to be utilized in various biotechnological applications in future.
Keywords: Boron, 16S rRNA, phylogeny, Bacillus, Lentibacillus, Oceanobacillus.

15: Shu, G., **Khalid, N**., Tan, T. B., Zhao, Y., Neves, M. A., Kobayashi, I., & Nakajima, M. (2017).

Comparison of ergocalciferol nanodispersions prepared using modified lecithin and sodium caseinate: Insights of formulation, stability and bioaccessibility. *Journal of Functional Foods, 38*, 28-35. **(JCR)**

Abstract: In this work, we compared the formulation, stability and bioaccessibility of ergocalciferol nanodispersions using modified lecithin (ML) and sodium caseinate (SC) as natural emulsifiers. The mean particle size of nanodispersions stabilized by ML (56 nm) was much smaller than those stabilized by SC (112 nm). The ML-stabilized nanodispersions were stable over a wide range of pH, NaCl concentrations and heating, but became unstable with slight increase in particle size when exposed to CaCl2 solution. In comparison, SC-stabilized nanodispersions were relatively unstable to particles aggregation at pH 4 and 5, CaCl2 addition and heating. Long-term stability for ergocalciferol were observed in both ML- and SC-stabilized nanodispersions. In the absence of milk, the ergocalciferol bioaccessibility was strongly dependent on the emulsifier type, with ML providing much higher bioaccessibility than SC. During in vitro gastrointestinal digestion, the incorporation of milk into nanodispersions could increase the bioaccessibility and stability for ergocalciferol.

Keywords: Ergocalciferol Nanodispersions, Environmental Stresses, Storage Stability, Bioaccessibility, Milk, Lemon Juice.

16: Khalid, M., **Khalid, N**., Ahmed, I., Hanif, R., Ismail, M., & Janjua, H. A. (2017). Comparative studies of three novel freshwater microalgae strains for synthesis of silver nanoparticles: Insights of characterization, antibacterial, cytotoxicity and antiviral activities. *Journal of Applied Phycology, 29*(4), 1851-1863. **(JCR)**

Abstract: The therapeutic efficacy of universal drug-delivery systems depends on their capability to escape the immune system by overcoming the biological barriers of the body and concentrate at target tissues to eradicate only diseased cells. Biologically synthesized nanoparticle systems possess almost all of these qualities and utilize their targeting ability through cellular membrane interactions and making the targeting system biocompatible. In the present study, microalgae-mediated silver nanoparticles (AgNPs) targeted bacterial, fungal, cancerous and viral infected cells without harming normal cells. These AgNPs provide a comparative study on broader range of size and shape, synthesized by ethanolic extract of three different freshwater microalgae species, Dictyosphaerium sp. strain HM1 (DHM1), Dictyosphaerium sp. strain HM2 (DHM2) and Pectinodesmus sp. strain HM3 (PHM3). Characterization of AgNPs was done by XRD, SEM, TEM, EDS, FTIR and UV-Vis spectrophotometry. Significant activity against 14 bacterial strains, the fungal strain Candida albicans, hepatocellular carcinoma (HepG2) and breast cancer (MCF7) cell lines, and Newcastle Disease Virus (NDV) on Huh7-infected cells suggest the potential use of microalgae extract prepared nanoparticles in biomedicine, pharmaceutics and drug delivery.

Keywords: Silver Nanoparticles, Microalgae Extract, Biocompatible, Hepatocellular Carcinoma, Breast Cancer, Newcastle Disease Virus.

17: **Khalid, N**., Kobayashi, I., Uemura, K., & Nakajima, M. (2017). Asymmetrical microchannel emulsification plates for production of small-sized monodispersed emulsion droplets. *Chemical Engineering & Technology, 40*(12), 2351-2355. **(JCR)**

Abstract: Monodispersed emulsion droplets have promising advantages in food, pharmaceutical, and chemical industries. Previous microchannel emulsification (MCE) plates

having the capacity of generating small-sized droplets exhibited very low droplet productivity since these plates operate at a low dispersed-phase flow rate and with a relatively small number of microchannels. An innovative MCE plate with 176 176 circular asymmetric through-holes was manufactured, which is comprised of a series of discrete outlets on each microchannel line with an effective cross-sectional area of 1 cm2. The newly fabricated MCE plate is capable to produce monodispersed emulsion droplets with small Sauter mean diameters.

18: **Khalid, N.**, Shu, G., Holland, B. J., Kobayashi, I., Nakajima, M., & Barrow, C. J. (2017). Formulation and characterization of O/W nanoemulsions encapsulating high concentration of astaxanthin. *Food Research International, 102*, 364-371. **(JCR)**

Abstract: This study evaluates the effect of modified lecithin (ML) and sodium caseinate (SC) on the formulation, stability and bioaccessibility of astaxanthin (AXT) loaded oil-in-water (O/W) nanoemulsions. These nanoemulsions were formulated using high-pressure homogenization in four passes at 100 MPa. The volume mean diameter (d4,3) of nanoemulsions produced by ML and SC were 163 ± 5 and 144 ± 12 nm, respectively. The physiochemical stability of nanoemulsions was recorded at 25 °C. The nanoemulsions prepared by ML were stable for 30 minutes against a wide range of pH and heating temperatures (60–120 °C). However, ML-stabilized nanoemulsions showed droplet growth when treated at high NaCl concentrations. In comparison, droplet growth was observed in SC-stabilized nanoemulsions at pH 4 and at high temperature treatment. However, SC-stabilized nanoemulsions were stable at high NaCl concentration (500 mM). The SC-stabilized nanoemulsions showed good physical and chemical stability (> 70%) after 30 days of storage. The bioaccessibility of AXT in nanoemulsions was significantly higher in ML (33%) than in SC-stabilized nanoemulsions (6%), indicating a strong influence of emulsifier on bioaccessibility. These findings provide valuable information in designing nutritional products such as aqueous based AXT fortified beverages.

Keywords: Astaxanthin, Nanoemulsions, Freeze-Thaw Treatment, Bioaccessibility, Temperature, Storage Stability, Encapsulation Efficiency.

19: Zhao, Y., **Khalid, N.**, Shu, G., Neves, M. A., Kobayashi, I., & Nakajima, M. (2017). Formulation and characterization of oil-in-water emulsions stabilized by gelatinized kudzu starch. *International Journal of Food Properties, 20*(sup2), 1329-1341. **(JCR)**

Abstract: The effect of gelatinized kudzu starch on the formulation and stability of oil-in-water (O/W) emulsions was investigated. The effects of gelatinization conditions (75-95 degrees C, 5-30 min) on the interfacial tension of O/W emulsions were observed. The selected conditions included gelatinization time of 20 min and temperature of 90 degrees C. The second part of this study investigated the effect of homogenization methods on the stability of O/W emulsions. The effects of oil types (soybean oil, medium-chain triglycerides (MCTs), and limonene), oil weight fractions (5-30% (w/w)), and kudzu starch concentrations (0-5% (w/w)) were also investigated. The results indicated that rotor-stator homogenization in combination with high-pressure homogenization was suitable for the formulation of O/W emulsions. O/W emulsions containing 10% (w/w) soybean oil could be stabilized by 3% (w/w) gelatinized kudzu starch and may be used in future emulsified products.

Keywords: Kudzu Starch, Gelatinization, Viscosity, Emulsion, Physical Stability, Homogenization.

School of Governance and Society

SGS

Journal Articles

1: **Naveed, M. A**. (2017). Information seeking anxiety: Background, research, and implications. *International Information & Library Review, 49*(4), 266-273. **(SJR)**

Abstract: This research aims to provide an analytic and critical review of research on information seeking anxiety (ISA) with a view to inform the information professionals, especially those engaged in information literacy instructions about the existing situation. This study established the background of the proposed phenomenon, provided integrated analysis of the available research, and discussed the theoretical and practical implications of ISA on information services, especially information literacy instruction. Although the results from previous studies were not comparable, directly due to varied geographical contexts and research methods, it was nevertheless possible to draw some common conclusions regarding the users' anxiety related to information seeking tasks. This review overwhelmingly indicated the manifestation and prevalence of ISA among students in the digital environment. Some personal and academics variables of students appear to be correlated with ISA. The results of reviewed studies indicated the necessity for a need-based information literacy curriculum for alleviation of anxiety related to students' information-seeking tasks.

Keywords: Antecedents, Correlatives, InformationAnxiety, Information-Seeking Anxiety, Library Anxiety.

2: **Naveed, M. A**., & Ameen, K. (2017). A cross-cultural evaluation of the psychometric properties of information seeking anxiety scale in Pakistani environment. *Malaysian Journal of Library & Information Science, 22*(3), 35-51. **(JCR)**

Abstract: This study investigated the psychometric properties of Information Seeking Anxiety Scale (ISAS) of postgraduate students in a Pakistani university. A 47-item ISAS was administered to 297 students, selected through stratified convenient sampling procedure, by visiting each department at the university. An eighty-five percent response rate was achieved through usable returned questionnaires. The principal component analysis (PCA) using varimax rotation yielded six-factor solution to the Information Seeking Anxiety Scale (ISAS), namely, (1) Resource Anxiety; (2) ICT Anxiety; (3) Library Anxiety; (4) Search Anxiety; (5) Mechanical Anxiety; and, (6) Thematic Anxiety. This six factors corresponded to those of Erfanmanesh, Abrizah, and Karim (2012) but differed somewhat with regard to the statements loaded on each factor. Moreover, these six-factors combined together accounted for 52.7 percent of the total variance explained. Seven item were dropped as a result of reliability analysis resulting 40-item instrument. Also, the values of Cronbach's internal reliability coefficient alpha for overall ISAS and its sub-scales were found satisfactory as recommended by Nunnally and Bernstein (1994). These results demonstrated the psychometric soundness and stability of ISAS when tested with Pakistani postgraduate students recruited from a research-intensive university. More psychometric

studies are required before drawing any sound conclusions regarding adequacy of ISAS in assessing information seeking anxiety in Pakistani information users.

Keywords: Information Seeking Anxiety, Postgraduate Students, Research Students, Pakistan.

Books/ Book Chapters/ Book Reviews

1. **Bastos, M. I**. (2017). *Human rights: National and global agenda.* Jaipur, India: Prateeksha Publications.

Abstract: Not available.

School of Health Sciences

SHS

Journal Articles

1: Barber, R. M., Fullman, N., Sorensen, R. J., Bollyky, T., McKee, M., Nolte, E., ... Abbas, K. M. , **Bacha, U.** (2017). Healthcare access and quality index based on mortality from causes amenable to personal health care in 195 countries and territories, 1990–2015: A novel analysis from the global burden of disease study 2015. *The Lancet, 390*(10091), 231-266. **(JCR)**

Abstract: Background: National levels of personal health-care access and quality can be approximated by measuring mortality rates from causes that should not be fatal in the presence of effective medical care (ie, amenable mortality). Previous analyses of mortality amenable to health care only focused on high-income countries and faced several methodological challenges. In the present analysis, we use the highly standardised cause of death and risk factor estimates generated through the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) to improve and expand the quantification of personal health-care access and quality for 195 countries and territories from 1990 to 2015.

2: Charara, R., Forouzanfar, M., Naghavi, M., Moradi-Lakeh, M., Afshin, A., Vos, T., ... Khalil, I., **Bacha, U**. (2017). The burden of mental disorders in the eastern Mediterranean region, 1990-2013. *PLoS ONE, 12*(1), e0169575. **(JCR)**

Abstract: The Eastern Mediterranean Region (EMR) is witnessing an increase in chronic disorders, including mental illness. With ongoing unrest, this is expected to rise. This is the first study to quantify the burden of mental disorders in the EMR. We used data from the Global Burden of Disease study (GBD) 2013. DALYs (disability-adjusted life years) allow assessment of both premature mortality (years of life lost–YLLs) and nonfatal outcomes (years lived with disability–YLDs). DALYs are computed by adding YLLs and YLDs for each age-sex-country group. In 2013, mental disorders contributed to 5.6% of the total disease burden in the EMR (1894 DALYS/100,000 population): 2519 DALYS/100,000 (2590/100,000 males, 2426/100,000 females) in high-income countries, 1884 DALYS/100,000 (1618/100,000 males, 2157/100,000 females) in middle-income countries, 1607 DALYS/100,000 (1500/100,000 males, 1717/100,000 females) in low-income countries. Females had a greater proportion of burden due to mental disorders than did males of equivalent ages, except for those under 15 years of age. The highest proportion of DALYs occurred in the 25–49 age group, with a peak in the 35–39 years age group (5344 DALYs/100,000). The burden of mental disorders in EMR increased from 1726 DALYs/100,000 in 1990 to 1912 DALYs/100,000 in 2013 (10.8% increase). Within the mental disorders group in EMR, depressive disorders accounted for most DALYs, followed by anxiety disorders. Among EMR countries, Palestine had the largest burden of mental disorders. Nearly all EMR countries had a higher mental disorder burden compared to the global level. Our findings call for EMR ministries of health to increase provision of mental health services and to address the stigma of mental illness. Moreover, our results showing the accelerating burden of

mental health are alarming as the region is seeing an increased level of instability. Indeed, mental health problems, if not properly addressed, will lead to an increased burden of diseases in the region.

3: Fullman, N., Barber, R. M., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., ... Abera, S. F., **Bacha, U.** (2017). Measuring progress and projecting attainment on the basis of past trends of the health-related sustainable development goals in 188 countries: An analysis from the global burden of disease study 2016. *The Lancet, 390*(10100), 1423-1459. **(JCR)**

Abstract: The UN's Sustainable Development Goals (SDGs) are grounded in the global ambition of "leaving no one behind". Understanding today's gains and gaps for the health-related SDGs is essential for decision makers as they aim to improve the health of populations. As part of the Global Burden of Diseases, Injuries, and Risk Factors Study 2016 (GBD 2016), we measured 37 of the 50 health-related SDG indicators over the period 1990–2016 for 188 countries, and then on the basis of these past trends, we projected indicators to 2030.

4: Hay, S. I., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., Abd-Allah, F., ... Abera, S. F., **Bacha, U.** (2017). Global, regional and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: A systematic analysis for the global burden of disease study 2016. *The Lancet, 390*(10100), 1260-1344. **(JCR)**

Abstract: Measurement of changes in health across locations is useful to compare and contrast changing epidemiological patterns against health system performance and identify specific needs for resource allocation in research, policy development, and programme decision making. Using the Global Burden of Diseases, Injuries, and Risk Factors Study 2016, we drew from two widely used summary measures to monitor such changes in population health: disability-adjusted life-years (DALYs) and healthy life expectancy (HALE). We used these measures to track trends and benchmark progress compared with expected trends on the basis of the Socio-demographic Index (SDI).

5: Kassebaum, N., Kyu, H. H., Zoeckler, L., Olsen, H. E., Thomas, K., Pinho, C., ... Ghiwot, T. T., **Bacha, U.** (2017). Child and adolescent health from 1990 to 2015: Findings from the global burden of diseases, injuries, and risk factors 2015 study. *JAMA Pediatrics, 171*(6), 573-592. **(JCR)**

Abstract: Importance: Comprehensive and timely monitoring of disease burden in all age groups, including children and adolescents, is essential for improving population health.

Objective: To quantify and describe levels and trends of mortality and nonfatal health outcomes among children and adolescents from 1990 to 2015 to provide a framework for policy discussion.

Evidence Review: Cause-specific mortality and nonfatal health outcomes were analyzed for 195 countries and territories by age group, sex, and year from 1990 to 2015 using standardized approaches for data processing and statistical modeling, with subsequent analysis of the findings to describe levels and trends across geography and time among children and adolescents 19 years or younger. A composite indicator of income, education, and fertility was developed (Socio-demographic Index [SDI]) for each geographic unit and year, which evaluates the historical association between SDI and health loss.

6: Naghavi, M., Abajobir, A. A., Abbafati, C., Abbas, K. M., Abd-Allah, F., Abera, S. F., ... Agrawal, A., **Bacha, U.** (2017). Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: A systematic analysis for the global burden of disease study 2016. *The Lancet, 390*(10100), 1151-1210. **(JCR)**

Abstract: Monitoring levels and trends in premature mortality is crucial to understanding how societies can address prominent sources of early death. The Global Burden of Disease 2016 Study (GBD 2016) provides a comprehensive assessment of cause-specific mortality for 264 causes in 195 locations from 1980 to 2016. This assessment includes evaluation of the expected epidemiological transition with changes in development and where local patterns deviate from these trends.

7: Vos, T., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., Abd-Allah, F., ... Abera, S. F., **Bacha, U.** (2017). Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: A systematic analysis for the global burden of disease study 2016. *The Lancet, 390*(10100), 1211-1259. **(JCR)**

Abstract: As mortality rates decline, life expectancy increases, and populations' age, non-fatal outcomes of diseases and injuries are becoming a larger component of the global burden of disease. The Global Burden of Diseases, Injuries, and Risk Factors Study 2016 (GBD 2016) provides a comprehensive assessment of prevalence, incidence, and years lived with disability (YLDs) for 328 causes in 195 countries and territories from 1990 to 2016.

8: Wang, H., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., Abd-Allah, F., ... Abu-Rmeileh, N. M., **Bacha, U.** (2017). Global, regional, and national under-5 mortality, adult mortality, age-specific mortality, and life expectancy, 1970–2016: A systematic analysis for the global burden of disease study 2016. *The Lancet, 390*(10100), 1084-1150. **(JCR)**

Abstract: Detailed assessments of mortality patterns, particularly age-specific mortality, represent a crucial input that enables health systems to target interventions to specific populations. Understanding how all-cause mortality has changed with respect to development status can identify exemplars for best practice. To accomplish this, the Global Burden of Diseases, Injuries, and Risk Factors Study 2016 (GBD 2016) estimated age-specific and sex-specific all-cause mortality between 1970 and 2016 for 195 countries and territories and at the subnational level for the five countries with a population greater than 200 million in 2016.

9: Xie, M., Duan, Y., Li, F., Wang, X., Cui, X., **Bacha, U.**, ... Zhao, Z. (2017). Preparation and characterization of modified and functional starch (hexadecyl corboxymethyl starch) ether using reactive extrusion. *Starch-Stärke, 69*(5-6), 1600061. **(JCR)**

Abstract: Water-soluble carboxymethyl starch (CMS) derivatives with both hydrophobic and hydrophilic characteristics were synthesized by reacting CMS with cetyl bromide (CB) using an extrusion process in an alkaline etherification reaction. A series of hexadecyl carboxymethyl starch ethers (HCSE-ex) with degrees of substitution ranging from 0.0257 to 0.0701 were characterized under different reaction conditions based on their physical (morphology and viscosity) and thermal properties. FTIR, SEM, TGA, and X-ray results confirmed that etherification produced high reaction efficiencies, and the derivatives exhibited excellent emulsification efficiency. The application of extrusion as an energy source resulted in a much reduced etherification time compared with traditional methods, down from several hours to

several seconds, indicating the high potential of extrusion to improve and increase the efficiency of technological polysaccharide etherification.

Keywords: Carboxymethyl Starch, Emulsification, Etherifying, Extrusion, Hexadecyl.

10: Cuvelier, M. L., Guo, J., Ortiz, A. C., Van Baren, M. J., **Tariq, M. A**., Partensky, F., & Worden, A. Z. (2017). Responses of the picoprasinophyte Micromonas commoda to light and ultraviolet stress. *PLoS ONE, 12*(3), e0172135. **(JCR)**

Abstract: *Micromonas* is a unicellular marine green alga that thrives from tropical to polar ecosystems. We investigated the growth and cellular characteristics of acclimated mid-exponential phase *Micromonas commoda* RCC299 over multiple light levels and over the diel cycle (14:10 hour light:dark). We also exposed the light:dark acclimated *M*. *commoda* to experimental shifts from moderate to high light (HL), and to HL plus ultraviolet radiation (HL+UV), 4.5 hours into the light period. Cellular responses of this prasinophyte were quantified by flow cytometry and changes in gene expression by qPCR and RNA-seq. While proxies for chlorophyll *a* content and cell size exhibited similar diel variations in HL and controls, with progressive increases during day and decreases at night, both parameters sharply decreased after the HL+UV shift. Two distinct transcriptional responses were observed among chloroplast genes in the light shift experiments: i) expression of transcription and translation-related genes decreased over the time course, and this transition occurred earlier in treatments than controls; ii) expression of several photosystem I and II genes increased in HL relative to controls, as did the growth rate within the same diel period. However, expression of these genes decreased in HL+UV, likely as a photoprotective mechanism. RNA-seq also revealed two genes in the chloroplast genome, *ycf2-like* and *ycf1-like*, that had not previously been reported. The latter encodes the second largest chloroplast protein in *Micromonas* and has weak homology to plant Ycf1, an essential component of the plant protein translocon. Analysis of several nuclear genes showed that the expression of *LHCSR2*, which is involved in non-photochemical quenching, and five light-harvesting-like genes, increased 30 to >50-fold in HL+UV, but was largely unchanged in HL and controls. Under HL alone, a gene encoding a novel nitrite reductase fusion protein (NIRFU) increased, possibly reflecting enhanced N-assimilation under the 625 µmol photons m^{-2} s^{-1}supplied in the HL treatment. NIRFU's domain structure suggests it may have more efficient electron transfer than plant NIR proteins. Our analyses indicate that *Micromonas* can readily respond to abrupt environmental changes, such that strong photoinhibition was provoked by combined exposure to HL and UV, but a ca. 6-fold increase in light was stimulatory.

11: Shabbir, M., Umar, B., Ehsan, S., **Munir, S**., Bunin, U., & Sarfraz, K. (2017). Comparison of functional training and strength training in improving knee extension lag after first four weeks of total knee replacement. *Biomedical Research-India, 28*(12), 5623-5627. **(JCR)**

Abstract: The weakness of quadriceps and reduced activation has been identified as a major cause of activity limitations post Total knee replacement (TKR). There is a need to evaluate various available techniques in their effectiveness in improving quadriceps strength and minimizing functional limitations after total knee replacement. Objective of this study was to determine the effectiveness of strength training as compared to functional training in improving knee extension lag after first four weeks of Total Knee Replacement. This Randomized control trial was conducted at Ghurki trust teaching hospital, from June to

December 2015. Patients with total knee replacement were selected consecutively and then randomly assigned to control group (n=33) and treatment group (n=31). Primary and secondary outcome measures were goniometry and Visual Analogue Scale (VAS) respectively. There was no significant difference found in knee extension Lag between the two groups (p-value>0.05). The mean Value for pain on visual analogue scale was 1.78 (SD=3.03) for control group and 1.33 (SD=3.32) for treatment group. The difference in mean scores for pain was significantly different for both groups (p-value<0.05). Both strength training and functional training were found equally effective in improving quadriceps lag, however, functional training exercises resulted in significant reduction in post-operative knee pain compare to resistance training. It is recommended to make functional exercises an essential part of physical rehabilitation post total knee replacement.

Keywords: Arthroplasty, Exercise Therapy, Knee Joint, Pain, Outcome Assessment, Resistance Training, Visual Analogue Scale.

12: Gakidou, E., Afshin, A., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., ... Aboyans, V. **Bacha, U.** (2017). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2016: A systematic analysis for the global burden of disease study 2016. *The Lancet, 390*(10100), 1345-1422. **(JCR)**

Abstract: Not available.

13: **Nizami, R**., Latif, M. Z., & Wajid, G. (2017). Preferred learning styles of medical and physiotherapy students. *Annals of King Edward Medical University, 23*(01), 73-76. **(JCR)**

Abstract: Background: Learning styles are the ways students learn, intake and process new information. The contribution of learning styles for educational quality is evident and have important implications to develop effective curricula. Teachers can effectively plan instructional activities if they know the learning styles of students. This study was conducted to find out the preferred learning styles of medical and physiotherapy students.

Methods: This cross sectional descriptive study was conducted at Azra Naheed Medical College Lahore from January to March 2014. Honey and Muffard Learning Style Questionnaire (LSQ) was used to assess the preferred learning styles. The medical students of 3rd year and 6th semester physiotherapy class were invited for the study. The collected data was organized and analyzed by the use of statistical tools.

Results: 120 students participated in this study, out of which 60 (50 %) were students of MBBS class whereas 60 (50 %) were of physiotherapy class. 48 (40%) were male students and 72 (60%) were female students. Both the groups have reflector as dominating learning style with a minor difference of (40%) and (42.5%) for medical and physiotherapy respectively.

Conclusion: Students have different learning styles and require versatile instructional and assessment strategies. Preferred learning style of medical and physiotherapy students found in this study is reflector, however all the learning styles are present in both groups.

Keywords: Learning Styles, Learning Style, Questionnaire, Reflector Pragmatist, Theorist Activist.

Conference Papers

1. **Tanveer, A**., Imran, S., & Kaleem, R., (2017), *Association of food hygiene practices with frequency, duration and severity of acute diarrhea among children of Lahore, Pakistan.* Paper presented at third International Conference Safe Food for All, Institute of Food Science and Nutrition, Multan, Pakistan.
Abstract: Not available.

2. **Sadaf, S**. (2017). *Emotional control and self care regulation patterns among adult diabetic patients visiting public health care unit in Lahore*. Paper presented at the International Conference on Home Economics, Expanding New Horizons, Murree, Pakistan.
Abstract: Not available.

3. **Sadaf, S**. (2017). *Exposure to food commercials as predictor of food preference and choice among Obese teenage school students*. Paper presented at the International Conference on Home Economics, Expanding New Horizons, Murree, Pakistan.
Abstract: Not available.

4. **Aslam, R**. (2017). *Impact of SOCS3 polymorphisms on insulin resstance and therapeutic response in HCV infected patients*. Paper presented at the second UMT International Conference on Pure and Applied Sciences, Lahore.
Abstract: Not available.

5. **Sadaf, S**. (2017). *Nutrition knowledge and perceived importance of food label information among university students*. Paper presented at the International Conference on Home Economics, Expanding New Horizons, Murree, Pakistan.
Abstract: Not available.

6. **Aslam, R**. (2017). *Predictive of non-response or relapse in HCV genotype 3a patients*. Paper presented at the Asian Pacific Association for the Study of Liver Annual Meeting 2017.
Abstract: Not available.

School of Professional Advancement

SPA

Journal Articles

1: **Arbi, K. A.**, **Kausar, A. R.**, & **Saleem, I**. (2017). Minimizing asymmetric information in online markets through knowledge management. *International Journal of Management Excellence, 8*(2), 924-931. **(NR)**

Abstract: This article is about the role of knowledge management in minimizing the asymmetric information in online business. The asymmetry of information is the prime concern in online markets where consumer and seller are located in distant locations and they cannot see each other. The success of ecommerce business depends heavily on the minimization of asymmetric information between the seller and buyers. As the online business is done through codified knowledge and it is easy to manage the codified knowledge so by efficient use of KM principles and processes it has now become easy to minimize the asymmetric information among the seller and buyers. The article discusses the types of asymmetric information which can ne be minimized through use of codified online knowledge.

Keywords: Asymmetric Information, E-business, Ecommerce, Knowledge Management, Information System.

2: **Yazdani, N.**, **Murad, H. S.**, & **Shuja, A**. (2017). Wholistic management education (WME): Theorizing the contextualized applicability of transformative learning in management education discourse. *Sukkur IBA Journal of Management and Business, 4*(1), 42-63. **(HEC Y-Cat.)**

Abstract: Traditional management education discourse is in crisis. It does not prepare students to face real world complexities and challenges because it is devoid of context and historicity and localness. It focuses narrowly on the means and not ends of managing and organizing. To address these glaring and gaping fissures between concepts and reality. This paper utilizes Mezirow's theory of transformative learning approach in management education so that the future managers are on course for individual transformation. Later developments in the transformative learning theory connecting it with extra-rational thinking, multiple ways of knowing and critically evaluating social dynamics are also incorporated so that the individual transformation leads to more broader collective transformation. The discursive interplay between texts, actions and discourses are captured in the proposed Wholistic Management Education (WME) model. The model's validity and its relation with Discourse Analysis and Critical Discourse Analysis are briefly discussed along with future research directions.

3: **Shujja, A. H.**, **Saleem, I.**, & **Afghan, S**. (2017). Computation offloading: Is it practical and feasible? *Bahria University Journal of Information & Communication Technologies (BUJICT),* 10(Special Issue). **(HEC Y-Cat.)**

Abstract: Mobile phones are usually poor in terms of battery, computation power and network bandwidth, which result in applications with limited functionality in terms of complex

computations. A solution to this problem is "Computation Offloading". By sending resource intensive computations to a server, precious resources like battery and processing power can be saved on a mobile device. In the past few years, many techniques have been proposed to approach this matter ranging from utilizing virtual machines with cloud servers and mobile network infrastructure to using nearby mobile devices to perform computation intensive tasks. This paper is a survey on existing techniques and systems for computation offloading and in light of those analyzes whether computation offloading is feasible to be deployed commercially with the current infrastructure and technology available. It also analyzes the major problems and identifies possible future research areas for computation offloading which may help in overcoming the current issues.

4: **Arbi, K. A.**, **Bukhari, S. A. H.**, & **Saadat, Z.** (2017). Theoretical framework for taxonomizing sources of competitive advantage. *Management Research and Practice, 9*(4), 48-60. **(JCR)**

Abstract: While talking about competitive advantage and use of this term in literature of business strategy much confusion prevails. There are series of questions pertaining to its origin, types, sources, factors and period of elongation which need to be further investigated through better ontological and epistemological perspectives of competitive advantage. This increased confusion in the definition and clarity of the ideas pertaining to its sources of competitive has enhanced the difficulty level of strategy managers to define their competitive advantage. In this article we have tried to make it easier for the strategy managers to define, refine and retain competitive advantage of their firms. In this article we have made an attempt to make a taxonomy of sources of competitive advantage. The proposed taxonomy divides sources of competitive advantage into location, product, socio-economic environment, raw material access, process and efficiency and organizational structure based. The articles provide useful hints for strategy managers to delineate their competitive advantage and devise strategies for its sustainability.

Keywords: Competitive Advantage, RBV, IO, Strategy Manager, Taxonomy, Sustainability.

Conference Papers

1. **Mahmood, M. T.**, **Khalid, Z**. (2017, March 21-22). *Sustainability index of microfinance institutions (MFIs) and contributory factors.* Paper presented at forth International Conference on Contemporary Issues in Business Management, Lahore, Pakistan.

Abstract: Not available.

2. **Anwar, A.**, & **Saeed, S**. (2017, August 23-25). *Key performance indicator: A key to enhancing competitiveness*. Paper presented at the ninth South Asian International Conference-2017, Bhurban, Pakistan.

Abstract: This paper attempted to understand the importance of Key performance indicator (KPI) for companies of Lahore. An effective key performance indicator (KPI) selection and development process is becoming increasingly critical for organizations in today's competitive and integrated business environment. Since companies exist in an environment where stakeholders are demanding more from every organization. Consequently, they should focus on reliable and critical performance indicators, it is important for the success of companies to adopt a comprehensive KPI based performance measurement framework that meets the

requirements of the dynamic environment. This article will help the reader to understand the importance of KPIs and learn its utilization in companies of Lahore. For this purpose, interviews have been conducted with different HR managers of both national and multinational companies of Lahore.

Keywords: Key Performance Indicator, Business Development, Competitiveness, Pakistan.

3. **Khan, T. Z. A**. (2017, November 9-10). *Organizational Resilience: A dynamic capability of complex systems*. Paper presented at the second International Conference on Dynamic Innovation University of Science and Technology, Malayisa.

Abstract: Not available.

School of Social Sciences and Humanities

Department of Education

Journal Articles

1: **Waqar, Y.**, & Bokhari, T. B., (2017). Vocabulary instruction using cognitive psychology principles. *International Journal of English and Education, 6*(1), 178-184. **(NR)**

Abstract: This paper explores how theories of short term memory, long term memory and depth of processing of information can be used to build the vocabulary of third grade ESL students. The curriculum of vocabulary instruction is designed in such a way that every week students are given a new list of ten words but the previous word lists are also added with the new list given to the students for that particular week. Every week students are tested on the meaning and spelling of all the words. This helps in the reinforcement of the old word lists along with the new words. The results of these students showed that they performed well on the vocabulary and spelling of the words that they had learned throughout the year.

Keywords: English Vocabulary Instruction, Long Term Memory, Short Term Memory, Depth Of Processing.

2: Aziz, R., **Waqar, Y.**, & Bokhari, T. B. (2017). Effect of reflective teaching practices on student learning. *International Journal of English and Education, 6*(2), 158-167. **(NR)**

Abstract: This study explores the teachers' perception about reflective practices of ten primary school teachers teaching grades 4 and 5 and the effect of these practices on student learning. Analysis of the data clearly indicated that teachers defined reflection as a critical thinking of the actions taken by the teachers in the class. The teachers' response showed that reflecting on classroom teaching helped them to enhance their teaching skills, pedagogies and subsequently students learning. It is also revealed through teachers' journals that the teachers have the ability to identify the dilemmas and issues and to some extent change their strategies as well and try to solve the issues. But in most of the cases teachers wrote reflections at technical and factual level and horizon limited to catering few areas of teaching learning process. The results of the students' assessment show that student scores improved after teachers started reflective practices. Training in this aspect can develop this skill in the teachers.

Keywords: Primary School Teachers, Reflective Practices, Student Assessment Scores, Private Junior School In Pakistan.

3: Malik, N. F., **Waqar, Y.**, & Bokhari, T. B. (2017). Impact of reading strategies on reading of kindergarten and nursery students: A case study. *International Journal of English and Education, 6*(2), 168-175. **(NR)**

Abstract: Developing reading and literacy skills is a serious concern for Pakistan. Researchers have identified many reasons for students' problems in reading and literacy. The purpose of this research to find the impact of the following reading strategies on Kindergarten and Nursery students reading and fluency: a) phonemic awareness, b) Phonics, c) sight reading, d) guided

reading and e) shared reading. The study also sought to find the perception of teachers regarding the impact of reading strategies on student reading and fluency. Two sections of kindergarten and nursery and four teachers of DHA school system comprised the sample population for this case study. Reading assessment of students was done using reading assessment and interviews of teachers were done to explore their perceptions. The results of this study indicated that the use of different reading strategies improves the phonics, phoneme awareness, sight reading of more than 90% of students. The students had problems with decoding pictures and comprehension. Teachers had positive perception about the use of different strategies to improve student reading and comprehension. Teachers need to be trained to improve comprehension skills and to develop vocabulary of students in English.

Keywords: Reading Strategies, Kindergarten and Nursery, Private School System, Reading Skills, Perception Of Teachers.

4: **Arif, S**., & Ejaz, A. (2017). Career aspirations and opportunity for fwas: Perceptions of Pakistani women. *Journal of Management and Research, 4*(1), 59-76. **(UMT)**

Abstract: Want for a career in knowledge age is natural for any gender, so is for women of Pakistan. The long working hours and inflexible hard routines make it difficult for women to pursue both family and career at the same time. The paper validates an urgent need to revise work-time and work-space for the 21st century women with evolving meanings of career and life satisfaction for them. A qualitative inquiry was aimed to explore the career aspirations of Pakistani women and the opportunities they get for flexible work arrangements at their workplaces. Data was collected from 40 women working in a variety of professions through 3 focus groups, and 16 semistructured interviews. Interpretive analysis was used to derive detailed description through data. The perceptions of Pakistani women are highly gendered about their roles at home and work. They suffer from time bind, unable to manage their professional needs and their desire to have a successful married and family life. Whether married or unmarried, they found professional work hours highly stressful which are not only draining their physical and emotional energy, but affecting their social life and relationships, as well. With a poor sense of quality of life, it is hard to say whether women experience career satisfaction or satisfice.

Keywords: Flexible Work Arrangements, Gender, Human Resource Management, Work Life Balance, Career Satisfaction.

5: **Arif, S**., **Shahzad, A**., & **Hayat, M**. (2017). Comparative analysis of the vision of quality education of different political parties in Pakistan. *FWU Journal of Social Sciences, 1*(1), 202-218. **(HEC X-Cat.)**

Abstract: The role of government is critical in providing key services to education, so is that of decision makers. People sitting in the parliament make the most important decisions about the education system in the country and it is very important to know their opinions about creating system for quality education in Pakistan. Education is much politicized phenomenon as there is greater discord among public and the government about spending upon education. Although all political parties emphasize upon their own agenda about education quality and improvement, yet practical actions have been missing. A qualitative study has been carried out to understand the political mindset and conception of quality education of the key players of politics in Pakistan. The party manifestos and the statements of the leadership of eight political parties

have been used to obtain deep understanding about the phenomenon. 'The Great Debate on Education', a special talk show hosted by Hamid Mir on GEO TV has been used as the key resource for data. Data analysis has been done in two stages. At stage one, the content analysis was performed and themes were allowed to emerge from the repeated discussions on the interviews and other secondary data selected for the purpose. At stage 2 comprehensive interpretive analyses has been done by comparing and contrasting various views emerging across themes. The discussion led to the implications that quality education might suffer in Pakistan due to a particular mindset. The results will be shared in power point presentation and a written research article.

Keywords: Quality Education, Politics in Education, Education Governance, Policy Making, Qualitative Research.

6: **Perveen, M**., & Awan, A. S. (2017). Analysis of curriculum about political literacy as a dimension of citizenship education. *Bulletin of Education and Research, 39*(1). **(SJR)**

Abstract: Concept of citizenship is a key to comprehend about democracy and its working. The citizenship curriculum is straightforward based upon the social and political debates of the community. Therefore, this research article aims to analyze the political literacy as a dimension of citizenship education in the secondary school curriculum of Pakistan. For this purpose, the researchers identified ten elements of political literacy in the context of citizenship education with the help of literature review. To find the presence of these ten elements of political literacy in curriculum, the researchers selected four sources viz. curriculum documents 2006, education policy 2009, textbooks of four subjects i.e. English, Urdu, Islamiyat, Pakistan Studies and also the views of teachers teaching these subjects through questionnaire. It was concluded from the data that very poor situation exists about the inclusion of political literacy as a dimension of citizenship education in the curriculum of secondary school level.

Keywords: Curriculum, Political Literacy, Citizenship Education.

7: **Naz, F**., & **Murad, H. S**. (2017). Innovative teaching has a positive impact on the performance of diverse students. *SAGE Open, 7*(4). **(JCR)**

Abstract: Pakistan is one of the progressing countries in the world. Its education system is yet in the stage of development. Students from towns and far flung areas come to advanced cities for higher education. This has made the university classrooms a mix of students having a diversity of age, gender, exposure, language, and family backgrounds. To facilitate all these students with personal differences under the same roof, a teacher has to adapt curriculum and lesson plans while bringing innovations in his teaching methods. This study aims to find out the use of innovative strategies by the teachers to respond to students' diversity at higher education level in public and private sector of Pakistan. The research is based on the assumption that innovative teaching has a positive impact on the performance of students' diversity. A survey of higher education teachers was conducted for the research. Statistics were applied for the analysis. The results are found to be significant in favor of innovative teaching. The analysis shows that the use of innovative teaching is more in private sector and also has different impact on different disciplines.

Keywords: Innovative Teaching, Students', Diversity, Students', Performance.

8: **Masood, S.**, **Hameed, A.**, & Tatlah, I. A. (2017). Effect of examination on curriculum at elementary level in Punjab: A mixed methods study. *Journal of Elementary Education 27*(2), 147-162. **(HEC Y-Cat.)**

Abstract: The Examination conducted by the Punjab Examination Commission (PEC) at grade VIII is considered high-stakes as both intended and unintended consequences are associated with result of the examination. A mixed methods study using explanatory sequential design was conducted to investigate effects of the examination conducted by the PEC on curriculum at grade VIII. Survey data were collected from 521 elementary school teachers teaching in seven districts of the Punjab selected through simple random sampling. To ensure a maximum variation for purposive sampling, the qualitative participants were selected from among those who participated in the survey. Quantitative results revealed no significant differences in the perceptions of teachers regarding the effect of the examination on curriculum. Teachers irrespective of gender, school location and type, perceived that the examination has changed the curriculum in grade VIII. Qualitative analysis of data collected through interviews yielded theme "Examination controls the Curriculum." It was further emerged that curriculum in grade VIII was dictated by the helping books which were used extensively by the teachers. Additional findings indicated that old examination papers were extensively used by the teachers to prepare students for subsequent examinations and thus became the curriculum, the examination fostered selective study in classes to specifically prepare for the examination and the curriculum was reduced to objective type items only. Furthermore subjects not tested in the examination were ignored more as compared to tested subjects. One of the objectives of the PEC was to improve curriculum and in the light of this study it remains rhetoric. The findings of the study have posed several challenges for curriculum, examination and educational authorities in the Punjab.

Keywords: Examination Reforms, High-Stakes, Curriculum Narrowing, Disequilibrium in Content.

Conference Papers

1. **Arif, S**. (2017, March 20-21). *Learning for peace and coexistaence: Action research to improve student attitudes*. Paper presented at International Conference on Innovation & Internationalization in Pakistani Higher Education, Lahore.

Abstract: Not available.

2. **Arif, S**., Liaqat, Z., & Shahzad, A. (2017). *Quality assurance and accreditation of teacher education in Pakistan: Scope for internationalization.* Paper presented at second International Higher Education Studies Conference, Malaysia.

Abstract: Today students are no more property of any nation but they are candidates to enter in the global market. It means that in order to retain and sustain their students, the local universities will have to follow a global curriculum. Internationalization and quality assurance are the final way out to confront this challenge. Multiple efforts are continued for quality assurance, accreditation and internationalization of higher education in Pakistan. Several recommendations for policies and procedures have been proposed to meet the national targets set by The Higher Education Commission (HEC), Pakistan but the desired destination is yet far apart. This particular study was carried out to determine the preparedness of the Education

Departments of Pakistani universities for national and international accreditation. The study is conducted in qualitative paradigm. The study aimed to explore the perceptions of the faculty of education departments about their level of understanding of the quality assurance and accreditation process and potential benefits and threats attached with it. An open ended survey cum structured interviews were held with the faculty members of sixteen universities with the education department purposively selected from the province of Punjab and federally administered area of Islamabad. The questionnaires were personally given to all faculty members of the selected universities, whereas, the interview was done with only one senior faculty member, who was either the part of NACTE accreditation process or he/she is presently addressing the same. Triangulation was achieved through content analysis of survey, document analysis of NACTE Manuals & HEC directives, and in-depth analysis of the interviews. The study concludes that the faculty of the education department lacks awareness about quality assurance and accreditation process. National Accreditation Council for Teacher Education will have to set new targets to meet the goals of internationalization of teacher education in Pakistan. Recommendations of research inform of the specific actions that NACTE & HEC will have to take to compete and sustain in the international higher education market.

Keywords: Quality of Higher Education, Globalization, National Accreditation, Internationalization, Quality Enhancement of Higher Education, Teacher Education.

3. **Shahzad, A**., & Rafique, S. (2017, October 24-25). *An investigation into emotional intelligence and social adjustment of visually impaired students at higher education*. Paper presented at second International Conference on Inclusive Education (ICIE 2017), Lahore, Pakistan.

Abstract: Not available.

4. **Masood, S**., & **Hameed, A**. (2017, October 13-16). *Examination reforms: Curriculum enrichment or decay*. Paper presented at the Third Global Teacher Education Summit, Beijing, China.

Abstract: Not available.

5. **Arif, S**. (2017, October 13-16). *Teacher leadership in curriculum implementation at secondary schools in Pakistan*. Paper presented at the third Global Teacher Education Summit, The Beijing, China.

Abstract: Not available.

6. **Arif, S**. (2017, November 9-10). *Technology integration in teaching of English to enhance epistemological access to higher education*. Paper presented at the second International Conference on Dynamic Innovation (ICDI2017), Malaysia.

Abstract: Living in 21st century means living in a total new world full of challenges both for the educators and the learners. The aim of a postmodern university is to enable human beings to live more meaningful and satisfying lives by promoting social justice, peace and harmony in the world. It can only be achieved by teaching students critical thinking or developing among students the capacity to look at problems from various perspectives and thus reduce the chances of conflict. Therefore, the aim of this study was to improve students higher order thinking skills and attitude towards life and learning. For this purpose specific activities were designed for undergraduate students enroled in the course „Introduction to Psychology", so that they may become more U.S.-Pakistan University Partnerships Program: George Mason

University-University of Management and Technology Collaboration for Faculty Excellence in Teaching and Research (CFETR) The U.S.-Pakistan University Partnerships is an Academic Linkages program of the Public Affairs Section of the U. S. Department of State, Islamabad, and implemented by George Mason University. 2 aware of their cogntive processes, increase their perspective-taking, revisit their rational skills, and be able to establish new links with their society and culture. Innovations through visual media and psychological testing were introduced in four steps backed with formative assessment. Qualitative feedback was collected by the end of the course from the students about the course material, teaching methodology, and the innovations used describing how they personally relate to this experience. The results show that students like innovative technology used in the classroom and some even related to it as the most relevant and meaningful experience of their lives

Keywords: Participatory Action Research, Emancipation, Teaching with Technology, Innovation, Peace & Coexistence.

Department of English Language and Literature

Journal Articles

1: **Tanvir, M. F**. (2017). Known to us in this great absence: The absent self's identities in Edwin Muir's poetry. *Journal of Research (Humanities), 53*(17), 77-100. **(NR)**

Abstract: This paper aims at exploring issues pertaining to the theme of an apparently absent self in Edwin Muir's poetry, in the light of Derrida's theory of metaphysics of presence. It offers a thorough deconstructionalist reading of some poems to highlight the suspension or negation of the privileging of presence over absence in the evaluation of being, the consequent redefinition of the self's relationship with the other, and the ontological impossibility of envisaging unmediated nothingness. In other words, it demonstrates how Muir centralizes a liminal space between existence and nothingness in his treatment of the poetics of reality involved in the representation(s) of an absent self. As this process leads to the discovery of the loss of the transcendental signified, language fully reveals its reliance on provisional meanings.

Keywords: Edwin Muir, Derrida, Presence/Absence, Self/Other, Deconstruction, Existence, Nothingness, Liminality.

2: **Rafi, M. S**. (2017). Bilingualism and identity construction in the digital discourse. *Journal of Multicultural Discourses, 12*(3), 254-271. **(JCR)**

Abstract: This study explores: (a) how Urdu/English bilinguals flag-up social identities and power relations in the digital discourse, and (b) whether or not bilingualism favours mixing and/or diffusing local identity in the global discourse. The data were sampled from 200 Bachelor of Science students (who had Urdu as their primary language of communication and English as one of the academic languages or the most prestigious second language) of 5 universities situated in Lahore, Pakistan. The data were delimited to their Facebook conversations 'on the wall'. The analysis procedure was based on the *Sociocultural Communication Approach* to unpack selective discursive practices responsible for linguistic choices by Urdu/English bilinguals in the digital discourse. In addition to English–Urdu code-switching as an identity marker, they use a range of linguistic features covering linguistic

reduction, neologism and paralinguistic features to reflect solidarity, power and gender within their speech community. The study further anticipates that prevalence of certain linguistic forms among the participants depends on their position in the social systems. It is hoped that the patterns found in this study regarding how Urdu/English bilinguals identify themselves in the digital discourse will continue to be relevant in the future.

Keywords: Urdu/English Bilinguals, Social Identities, Power Relations, Digital Discourse.

3: **Amjad, I.**, & **Rafi, M. S**. (2017). A phenomenological analysis of death row inmates' last words. *Pakistan Journal of Criminology, 9*(3), 107-120. **(HEC Y-Cat.)**

Abstract: The study examines the lived experiences of the death row inmates to trace their traumas, fears and pain of the inflicted punishment of execution. Husserl's (1970) notion of intentionality and Heidegger's (1975) concept of existentialism under the umbrella of phenomenological constructivism were used to explore the post-penalty feelings of the death row inmates. A sample of 20 letters written by the death row inmates was selected to address the research questions. It was found that the last words do not simply reflect expressions and feelings of remorse, guilt, fear and repentance but also document that crime mainly belonged to the marginalized section of society. This study suggests preservation of the last words in the form of an official document for prisoner's education system that would eventually help reduce ideation of crimes.

Keywords: Last Words, Death Row Experiences, Phenomenological Constructivism and Criminology.

4: **Iqbal, H. M. Z**. & **Rafi, M. S.** (2017). Codeswitching in Urdu short story: A comparative study of Ismat Chughtai's Lihaaf, Bano Qudsia's Toaba-shikan and Sumaira Naqvi's Dopeher ka khawab. *ELF Annual Research Journal, 19,* 227-246. **(HEC Z-Cat.)**

Abstract: There is little research that examines codeswitching with historical lenses, particularly, with reference to Urdu short stories; therefore, the objective of the study is to unravel the social functions of codeswitching, based on the analysis of Chughtai's Lihaaf, Qudsia's Toaba-Shikan and Naqvi's Dopeher ka Khawb from historical perspective. The research is qualitative, the theoretical framework is codeswitching and the three short stories served as the primary source of data collection and analysis. In case of Chughtai, the use of codeswitching stems out of 'linguistic necessity', the primary social function of codeswitching. Contrastively, Qudsia and Naqvi's stories have a number of examples of codeswitching, even where the substitutes in Urdu are available and are also used by the Urdu language speakers. It is found that through a gradual process, codeswitching has become a frequently-used phenomenon in Urdu short stories, not only out of linguistic necessity, but also as a communicative strategy, another social function of codeswitching (Bhatia & Ritchie, 2016). Hence, the study will be instrumental in bringing forth the idea that how languages are in a constant process of formation and change, since the Urdu language has experienced a transformation, under the influence of English language.

Keywords: Codeswitching, Short Story, Identity, Language Change.

5: **Rafi, M. S**. (2017). Linguistic simplicity and complexity in computer-mediated communication. *Linguistics and Literature Review*, 3(2), 47-60. **(UMT)**

Abstract: This study examines how linguistic practices of Urdu/English bilinguals influence

linguistic typology particularly in terms of linguistic simplicity and complexity. The data was sampled from the Bachelor of Science students (who had Urdu as their primary language of communication and English as one of the academic languages or the most prestigious second language) of five universities located in Lahore, Pakistan. The data was primarily from their Facebook communication on the wall. The procedure for analysis was conceived within the current theoretical work on text analysis. At any given moment in time, interpersonal communication of Urdu/English bilinguals shows linguistic simplicity and complexity. The linguistic features which involve complexity are generally avoided and linguistic simplicity is emerging as the norm. The diachronic analysis of the data supports non-complexity axiom and further shows that the linguistic variations which used to occur over a period of decades are presumably spreading in a matter of years.

Keywords: Urdu/English Bilinguals, CMC, Linguistic Simplicity, Linguistic Complexity.

6. **Rafi, M. S**. (2017). Screen image of Muslim women in the popular post-9/11 films on war on terror. *Pakistan Journal of Gender Studies, 15* (1), 61-80. **(HEC Y-Cat.)**

Abstract: Not Available.

Conference Papers

1. **Tanvir, M. F**. (2017). *Truth, knowledge and representation in postmodern fiction: An interpretation of William Diehl's primal fear.* Paper presented at forth International Conference on Language, Literature and Society, Pakistan Academy of Letters, Islamabad, Pakistan.

Abstract: This paper would explore the problematization of reality, truth and representation in postmodern fiction through a poststructuralist textual analysis of William Diehl's legal-psychological thriller *Primal Fear*. Jean-Francois Lyotard's famous assertion that postmodernism redefines knowledge by making it focus on the unpredictable and the unknown, thereby dimming its differentiable function, would provide the theoretical foundation of this analysis. It will be argued that the text's narrative, through an intricate integration of scholarly discourse currents of psychoanalysis and formal legal procedures, presents, until towards the resolution of the plot, self-sustained dichotomies of appearance / reality, suspicion / truth, and deception / innocence, which suggest the objective correlatives of the good / bad binary division in the text's world as solidly as in classic detective fiction. However, it will be shown how towards the very end all these strains are dramatically deconstructed through a confusion of values that raise deep questions about the value of truth, multifaceted 'reality' of law and lawlessness, and the validity of scholarly knowledge embodied in an expert witness. Even more importantly, the novel ends with a thorough and logically convincing requestioning of the whole concept of victim and culprit that demolishes the existing semantic order without positively substituting it with its reverse, thus subscribing to the deconstructionist polity of endless deferral of meaning.

2. **Tanvir, M. F**. (2017). *The fractured self's delineation within postmodernist theories: Biopsychosocial-spiritual model and crises of representation.* Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues, Challenges and Solutions, Institute of Clinical Psychology, Lahore, Pakistan.

Abstract: This paper aims at locating the biopsychosocial-spiritual model in clinical psychiatry against the background of a general epistemological crisis of representation in postmodern

theories, thereby highlighting the paradox of an expanding frame of reference for diagnosis and a correspondingly unrepresentable sphere of practical solutions. It will be argued that the impetus for ever-increasing lucidity in biological explorations of personality ideologically does not seem to harmonize with post-Marxist critiques of psychosocial and spiritual phenomena that emphasize the intrinsically fragmented nature of postmodernist constructs of the self. From the Frankfurt School's accentuation of the loss of individual will by regimes of control to Foucault's problematics regarding the birth of the clinic, from R. D. Laing's famously controversial effacement of boundaries between the psychiatrist and his/her subject to Marshall Berman's reinvestigation of modernity as a condition that liquidates solid social reality, from the anxiety about the psychotherapist's "historical reluctance to self-disclosure" to that of the discipline's transformation of "normal sorrow into depressive disorder," the basic problem confronting a scientific assimilation of the subject's biopsychosocial-spiritual description is the unfixing of ideologies and representation mechanisms that reduce potential meaning to self-referential, paradoxical and adjourning language games.

3. **Rafi, M. S**. (2017, November 6-8). *Pedagogy of multilingual writing practices and identities*. Paper presented at University of Sindh International Conference on Language and Literature, Jamshoro, Pakistan.

Abstract: Not available.

4. **Tanvir, M. F**. (2017, October 13-15). *Paradoxes of the historicized human subject: A view on identity crises in the contemporary humanities.* Paper presented at Locating the Transnational Humanities in Pakistan/South Asia, Lahore, Pakistan.

Abstract: This paper aims at reassessing the extent to which epistemological conundrums at the core of contemporary humanities can be located in the fact that they essentially involve methodizing the irrationality of paradoxes in the theorization of the historicized human subject. Postmodernist historiographers have highlighted the dependence of the past on historiography, or the apprehension of past events/identities as textual traces (Jenkins 16—17), with far-reaching consequences for paradoxes of human identities (Coste 8—9). It will be shown how Foucault's widely discussed notion of archeology in a framework that problematizes human identity is of vital importance in this regard. Secondly, many critiques of clinical psychiatry point to a strain of thought that can offer other valid perspectives on the same debate. In particular, while the truth of logical conclusions can only follow from the truth of the premises from which they are derived, logic cannot actually determine the truth of those premises, thereby rendering scientific thinking unable to study relations of truth and its context (Toomela 5). It would be argued that the origins of such dilemmas can be traced back to Kant's formulation of the human subject as noumenal, which is preoccupied with materiality without precluding the fact that "matter cannot appear in all its irreducibility *within* the Kantian system" (Eagleton 77).

Keywords: Paradox, Historiography, Human Subject, Identity, Foucault, Psychoanalysis.

5. **Tanvir, M. F**. (2017, November 9-12). *Constructs of history in Daud Kamal poetry's poetry*. Paper presented at the first International Conference on Pakistani Narratives in English, Mandi Bahuddin, Pakistan.

Abstract: This paper aims at studying constructs of history in selected poems of Daud Kamal. For example, the poem titled "The Day Brightens Slowly" powerfully states the theme of history as

a transformational phenomenon. It is personified as having a "dumb throat," a comment on the inaccessibility of the past to the historian. In so far as its subject matter is contained in events, its voices do not reach us. In Kamal's poem titled "Outsideness," this fact comes as a simple and scathingly categorical revelation in the middle of an apparently imagist assortment of phenomenal images: "Those who have gone / never return" (5). (C.F. Tony Bennet's *Outside Literature*). When, on the other hand, we try to construct narratives by reconstructing bits of available data, we assign it the epistemology of guesswork and interpretation. The poet's opening question about "How much" shows awareness of the inherent incompletion of the process of reassembling data. The result is the historian's "wandering mind" in the second stanza that he tries in vain to "fix." In the poem, the past is shown in the process of being excavated and the collected relics are shown to have been transformed by time: "The Charcoal Flesh of Chinese queens, / Aztec skulls of rock crystal, / bronze trinkets and rusted spears . . ." The Wordsworthian "diurnal course" of elements has here the same melancholy and awe-inspiring sense of longing as in Heaney's famous reflections on the Danish Bog Bodies, one confronts bodies that have been on one level preserved through time and on another transformed into non-human museum pieces.

6. **Anwar, N**. (2017, January 7). *Revisiting private/public dichotomy in Adrienne Rrich's poetry*. Paper presented at the ICCLS (International Conference on Language, Literature and Society), Pakistan Academy of Letters, Islamabad, Pakistan.

Abstract: The postmodern world aims to dissolve the boundaries between binaries to pave way for less insulated and more flexible perceptions about female space. The idea as to what is 'proper place' for woman has been challenged and subsequently revised. In this paper, I examine, in some detail, the relationship between two dominant spheres of social existence; the private/personal and the public/political with reference to the poetry of Adrienne Rich (1929-2012), considered to be among the most influential literary voices of the Feminist movement in the second half of the twentieth century. Countering most of the assertions that regard these domains as opposites and following 'Private is Political' paradigm via Carole Pateman's thesis, I provide evidences from Rich's poetry that place her feminist constructs on a continuum that exists between private and political spheres. Mapping the private and public differentiation generate several questions about the usefulness of both categories for any one of the gender in question. Rich's poetry, I argue, neatly avoids controversies that private and public dichotomy produces in terms of perpetuating divisions between genders and establishing hierarchies. The life between private and public is interspersed with various transformative phases in which the trajectory linking the binaries themselves break into numerous micro classes; where each one is potent and free of associations. In this paper, I attempt to prove that the very idea that private and public distinction derives its meaning through individual perspectives slackens the tight distinctions and rather than subordinating the personal domain to public empower the both through various independent tropes inhabiting the continuum.

Keywords: Adrienne Rich, Postmodern feminism, Private/Political Dichotomy.

7. **Anwar, N**. (2017, July 6). *Identity reclamation through violence: Stella Oyedepo's dramaturgical reformulations*. Paper presented at the AFTA (International Conference of African Theatre Association), Barbados, West Indies.

Abstract: Violence in different forms has been projected, objectified, and critiqued by various African writers in general and dramatists in particular. This study explores various meanings of and objectives for which violence is recycled in Nigerian drama and the way it becomes an act of reclaiming or taking back what has been confiscated through centuries of historical suppression and political repression. Through the analysis of dramatic reformulations of third generation post independence Nigerian playwright – Stella 'DiaOyedepo – this paper interrogates whether Oyedepo's use of violence as a formal literary tool in the representation of female voice is a reconstructive practice or another masked substitute to tilt the power balance on the gender scale?As a member of third generation Nigerian playwrights Stella Oyedepo has raised her voice in order to balance the scale of gender hierarchy and power in the society. Violence is exemplified in Oyedepo's dramaturgy through various shocking situations: unsuspected incest in *A Play That Was Never To Be* (1998) and *Blindfolded by Fate* (prod. 1987, pub. 2004); Salli and Fola's suicide in *On His Demise* (pub. 2002); and Osomo's physical act of depriving Kelani (the old bridegroom) of his manhood in *Brain Has No Gender* (pub. 2001). These 'alien "unheard of" actions [are] designed to transform old practices' (Okolocha&Akhuemokhan 195) and social mind-sets that imprint certain gender-biased and hegemonic impressions on the communal psyche. Given that the state of gender inequity raises questions about the legitimacy of controlling subjects, Oyedepo deals with various cultural, social and political issues by employing various unusual theatrical techniques to project the conflicting power relation in her plays. The interjection of shocking and violence-ridden conclusions to otherwise tellable narratives in her drama, apart from their emotive quality, helps her audiences revise defined discourses shaping their thoughts.
Keywords: Stella Oyedepo, Violence, Theatrical techniques.

8. **Anwar, N.**, & Rao, Z. (2017, October 14). *Transforming audiences' mental culture through euphemistic devices*. Paper presented at the A ICLAP (International Conference of the Linguistic Association of Pakistan, Karachi, Pakistan.

Abstract: The viewers of Pakistani dramas face various challenges in terms of how and to what extent they are subjected to the whims of the writers/scriptwriters. By overlooking the socio-culturally acceptable euphemistic dimensions of communication, certain Pakistani dramas threat both positive and negative face of the viewers. These Face-Threatening Acts (FTAs) can either be serious or mild depending on who in what context employs them. Euphemisms can be regarded as a linguistic check against the use of malicious, indecent and religio-culturally non-compatible/ nonconforming language. They expose the public to a standard norm that facilitates reception of a material in a positive way rather than jarring their finer sensibilities. This paper investigates the way certain linguistic/euphemistic formations deliberately manipulate the dramatic script to get higher TRP (Television Rating Point)/or fame. This will be done by checking and assessing the compatibility of politeness strategies used in the selected drama with the local norms, values and prevalent culture. In order to provide an appropriate theoretical underpinning to the research, Brown and Levinson's (1987) politeness theory will be blended with the appropriated model posited by Chen Hongwie (1999) that deals with the construction of mental culture. Researches' observation will be validated by semi-structured interviews conducted with two groups of female viewers of the selected drama. Language, which belongs to the institutional culture, is dictated by rules which are acknowledged and observed by all members of society. It helps in mirroring the intricacies and nuances of culture

that ultimately create the value system of any society. Euphemisms, in this respect, are a true reflection of such a system. However, under the influence of global trends and market needs writers manipulate euphemistic strategies in order to transform the established mental culture of the recipients of their works.For the purpose of analysis of this phenomenon two dramas *Meri Behan Maya* (2011, Geo TV) and *DhoopKinarey* (1987, PTV) by HaseenaMoin are selected in order to see how and why, over the time, language of Pakistani dramas has changed in order to cater to the needs of transforming mental culture of the audience. Particular focus will be on the degree to which drama writers are able to threat or save the audience face.

Keywords: Euphemism, Pakistani Drama, Mental Culture, Face Threatening Acts, Politeness Strategies.

9. Akram, A., & **Anwar, N**. (2017, October 13). *Critical discourse analysis of postcolonial colour fixation in skin whitening adverts of Pakistan*. Paper presented at the ICLAP (International Conference of the Linguistic Association of Pakistan), Karachi, Pakistan.

Abstract: Decades after the termination of the British rule in the subcontinent, the inhabitants of the region still struggle to conform to the standards of beauty left by their white colonial masters. These standards, turned into inferiority complexes, complicates the formation of independent identity. Hating white people and still idealizing their skin colour is the biggest paradoxes Pakistanis are born and then grow with. The prime victims as well as the promoters of colour obsessions are the women with dark complexion since they are the most affected subjects in a society obsessed with fair skin tone.The ideology of *whiteness*, once internalized, create gender and racial hierarchies further promoted and perpetuated by the advertisement industry in Pakistan. The paper aims at investigating how through certain modes of media discourse, in this case the skin whitening adverts in Pakistan, these ideologies are further augmented, leading to the establishment of colour hegemony. Under the theoretical canopy of Postcolonial concepts of Mimicry and Ambivalence (1994), a critical discourse analysis (CDA) of fairness adverts is employed to explore the case in detail. The analysis of the visual narratives of local Pakistani fairness products is done to chalk out the similarities in their intrinsic messages and themes. The tag lines/mottos as well as the central narratives of the selected advertisements are analyzed using the analytical tools informed by Norman Fairclough's three dimensional model (1992) of CDA. Since the current research is primarily focused at the production, dissemination and reception of discourses in a particular society and also on how it serves as a medium of constructing social norms and ideologies, Fairclough's model is an apt choice for the purpose of analysis. Ten local fairness local product adverts are chosen in order to identify the deep-rooted ideological mindsets of local skin-whitening industry of Pakistan and how they target the lower to middle class strata of society. There is no particular timeline from which the sample has been selected. These ads have been repeatedly aired on multiple cable channels, posters and social media websites since 2010. The study reveals how fairness compulsions, once established in the society, result in devastating and unfortunate social tribulations. Colour ideologies are used to manipulate the masses on a grand scale through the language and visuals of advertisements, which aid the fairness cream industry in particular and craft power disparities in the social structure in general.

Keywords: Colour Obsessions, Media Discourse, Skin Whitening Adverts, Colour Hegemony, Critical Discourse Analysis.

10. **Rafi, M. S**. (2017, March 20-21,). *Cultural competence in higher education*. Paper presented at the International Conference on Innovation & Internationalization in Higher Education in Pakistan, Lahore, Pakistan.
Abstract: Not available.

11. **Rafi, M. S**. (2017, March 20-21). *Lived experiences of postgraduate learners through research pedagogy*. Paper presented at the International Conference on Innovation & Internationalization in Higher Education in Pakistan, Lahore, Pakistan.
Abstract: Not available.

12. **Rafi, M. S**. (2017, March 20-21). *Deconstruction of screen image of Muslims in the Hollywood films*. Paper presented at the International Conference on Innovation & Internationalization in Higher Education in Pakistan, Lahore, Pakistan.
Abstract: Not available.

13. **Ahmed, R. J**. (2017, December 27-28). *A critical examination of medium of instruction strategy – with special focus on cognitive development of second language learners*. Paper presented at the Conference on National Agenda for Education, Educational Dialogue Forum, Islamabad, Pakistan.
Abstract: The present study reviews and examines the role of English language (ESL) used as medium of instruction, with special focus on its cognitive effects on second language (L2) learners. The motivation for such a study owes to the realization among the educationists that the learners' psycho-emotive needs may be given due - if not exclusive - attention. From this perspective some studies have been conducted with a view to examining the impact of foreign language instruction viza-viz mother tongue instruction on the cognitive development of second language learners. These studies show that the poor state of education in developing countries is due to over-emphasis on English-medium Instruction. The researches in this area focus different aspects of cognition, which include propositions such as Psychological Gap, Language Interdependence, Comprehensible Input, Linguistic Determinism, and Motivation. The present researcher has put together these researches to explore broader relationship between L2 medium and the learners' cognitive development. The study may be useful for re-thinking medium of instruction strategy in the educational context of Pakistan. The present study is a comparative review, which will be presented in analytical, descriptive mode.
Keywords: L2 Medium, Culture, Cognitive Processes, Motivation, Language Planning.

14. Zeeshan, T. Z., & **Ahmed, R. J**. (2017, December 14). *Impact on report writing conventions using communicative orientation to language teaching*. Paper presented at the first National Conference on English Language and Literature (NCELL 2017), Lahore, Pakistan.
Abstract: The study explores the impact of Genre-based teaching on learner's outcome in writing forms through Design Report Writing. Various genres have been assessed and reviewed by English Language Teaching practitioners for teaching pedagogy and for assessing learning outcome; however, no one has ventured to assess the impact of Genre-based teaching of writing on Tertiary students' design detailing in report writing formats who are learning English for a purpose, i.e., to cater the professional needs of describing a product design aesthetically as well as functionality. Therefore, this research paper attempts to identify key factors that

affect on students' academic output while learning in an EAP environment. Using Experimental method, the data was elicited through Pre-tests and post-tests, classroom observations, semi structured interviews and self-assessment checklists. Semi structured interviews were conducted from Seven Language Teachers who were teaching Report writing in collaboration with Design Studio Teachers. Self-Assessment Checklist was developed to analyse the level of assimilation of Genre based Teaching in students. Students filled it after post-test was conducted. Classroom observations were recorded and interpreted using COLT A Scheme to ascertain the data. COLT A describes classroom events at the level of activity. COLT A defines the concept of classroom activity as intuitive and pedagogically meaningful. Results obtained through COLT A Scheme suggest that medium of instruction, information clarity, class environment, student behavior, class instructor, class task activity levels and student activity response level of the Experimental group was more interactive in attaining better outcome in term of written responses than the Control group. The chief finding of the study is that Genre-based teaching through The Teaching-Learning Cycle by Feez was more effective than the traditional 10 hours teaching of PIFD students in design report writings for Design Undergraduates. COLT –A Scheme findings verified that the impact was strong and strongly advocated Genre-based teaching in classroom settings Overall, the study holds significance as it attempts to design a critical, conceptual framework for teaching Report Writing to Design Undergraduates.

15. **Ahmed, R. J**. (2017, May 20-21). *A critical examination of medium of instruction strategy - with special focus on cognitive development of second language learners*. Paper presented at the International Conference on Innovation and Emerging Trends in Education & Social Sciences, Karachi, Pakistan.

Abstract: The research paper attempts to examine students' academic output in an EAP environment. Research design is a mix of quantitative and qualitative methods. Pre-post tests and COLT's observation checklist was the main instrument. Students' academic performance was assessed in experimental mode. The key finding of the study is that Genre-based teaching through The Teaching-Learning Cycle by Feez was more effective than the traditional 10 hours teaching of PIFD students in design report writings for Design Undergraduates. Along with this Academic skills of University Students were measured using MASUS for Use of source material-information retrieval and processing, Structure and development of answer, Control of academic writing, grammatical correctness and Qualities of presentation. Results obtained from MASUS Checklist Interpretations using One-Way ANOVA support the hypothetical stance that the post-test performance of experimental Group in Report Writing tasks was significantly better than that of the control Group. Overall, the study holds significance as it attempts to design a critical, conceptual framework for teaching Report Writing to Design Undergraduates. This research paper plans to address the report writing conventions of design undergraduates studying in countries where English is considered to be a second language.

Keywords: Genre-based Pedagogy, tertiary students, design detailing, EAP, MASUS, COLT.

Department of Gender Studies

Journal Articles

1: Usman, A., & **Salahuddin, A**. (2017). Beyond the threshold: Emancipation or entrapment? The feminine archetypes in Pakistani women fiction writers. *Journal of Research (Humanities), LIII*, 15-29.

Abstract: This paper discusses the concept of feminine archetypes with reference to the fiction produced by Pakistani women writers. The reality of spaces of women, as seen by patriarchy, is summed up in famous adages that state "it is a man's world; woman's place is in the home." On the basis of "man's world" and "woman's place", the paper focuses on home and the role of a woman therein. There are indeed several roles, but the focus in this paper will be on the role of a wife or 'lady of the house'. What is expected of a wife usually sums up what is expected of a woman by the others. The expected role is that of the feminine archetype that has been focused on more and is portrayed mostly throughout literary texts. For this research, complete works of Pakistani women fiction writers, writing in six languages, have been studied. The number of writers is twenty-six.

Keywords: Threshold, Feminine Archetypes, Women Fiction, Women Spaces, Pakistan.

2: **Shaukat, R**. (2017). Regulatory challenges of Islamic banking in Pakistan. *Journal of Islamic Thought and Civilization, 7*(2), 78-98. **(UMT)**

Abstract: This research investigated the regulatory challenges faced by Islamic banking from the perspective of Islamic bankers in Pakistan. The data were collected through crosssectional survey using a questionnaire from 152 bankers, selected through stratified convenient sampling, working at different Islamic banks of Lahore. The mean scores for overall 68 statements as well as for its sub-dimensions, namely, 'Scope of Regulatory Authorities,' 'Development Issues with Regulatory System,' 'Licensing and Authorization,' 'Shari'ah Supervision,' 'Supervisory Framework,' 'Institutional Harmonization,' 'Information Disclosure,' 'Market Development' and 'Capacity Building' indicated the agreement of Islamic bankers with pre-formulated list of regulatory challenges for Islamic banking. There was no statistically significant difference in bankers' perceptions with regard to regulatory challenges for Islamic banking based on gender and nature of bank. However, the participants' qualification, professional experience, and career levels appeared to be correlative of Islamic bankers' perceptions regarding regulatory challenges for Islamic banking. The findings are helpful for policy makers to make strategic decisions for the development and growth of IB in Pakistan. This study comprises pragmatic insights of Islamic bankers and benefits both Islamic as well as other conventional banks adopting Islamic banking in order to increase their business opportunities. In addition, the results of this study may assist the policy makers and regulators in policy formulation regarding Islamic banking in Pakistan.

Keywords: Islamic Banking, Islamic Finance, Challenges, Regulations, Pakistan.

Conference Papers

1. **Rubab, I.**, **Haq, I. U.**, Usman, A. & Bakht, Z. (2017, March 21-22). *Success and challenges in development of sociology discipline: A case study of University of the Punjab, Lahore*. Paper presented at first National Conference on Teaching Sociology in the Muslim World: Challenges and Remedies, Gujrat, Pakistan.
Abstract: Not available.

2. **Rubab, I**. (2017, April 5-6). *Women's right of inheritance in Islam: Grassroots level practices in Punjab.* Paper presented at first International Conference on Contemporary Issues in Muslim Societies and Cultures, Lahore, Pakistan.
Abstract: Not available.

3. **Rubab, I**. (2017, April 22-23). *Women's right of Inheritance: Manufactured consent of women in South Punjab.* Paper presented at International Conference on Gender, Work, and Society: Challenges, Opportunities, and Prospects for Women's Economic Empowerment, Lahore, Pakistan.
Abstract: Not available.

4. **Salahuddin, A**. (2017, April 5-6). *Usage of religious symbols by Bano Qudsia and Jamila Hashmi*. Paper presented at first International Conference on Contemporary Issues in Muslim Societies and Cultures, Lahore, Pakistan.
Abstract: Not available.

5. **Salahuddin, A**. (2017, August 9-10). *Usage of religious symbols in fiction by Pakistani women writers.* Paper presented at First National Gender Studies Conference, Islamabad, Pakistan.
Abstract: Not available.

6. **Rubab, I**. (2017, August 9-10). *Misinformed citizenship: Social denial of women's inheritance rights in Pakistan*. Paper presented at the First National Gender Studies Conference, Islamabad, Pakistan.
Abstract: Not available.

7. **Salahuddin, A**. (2017, December 19-23). *Punjabi and Saraiki women fiction writers: Contribution, representation and perceptions*. Paper presented at the first International Conference 2017, Punjabi Zaban, Adab, Fun ty Saqafat, Lahore, Pakistan.
Abstract: Not available.

Department of Islamic Thought and Civilization

Journal Articles

1: **Ahmad, S**., Amjad, M., & **Aslam, I**. (2017). Types of interest in Islamic law analysis and application. *Pakistan Journal of Islamic Research, 18*(2), 1-14. **(UMT)**

Abstract: This article aims to define *riba* as a preliminary matter for the types of it and then defines each type of *riba* separately and explains the differences between these types of *riba* with their examples. The article elaborates different situation for the excess in contract of exchange of property by property and distinguishes between excess named with *riba* and excess named with profit and excess named with *Ghaban Fahish* and explains the Shariah standard of *riba* and parameter of *Ghaban Fahish* and mentions the rule of each excess in Islamic law. The article analyzes many questions related to *riba* and other simultaneous to it such as the definition of *riba* is not obstructive due to covering to *Qard Hassan* while *Qard Hassan* is valid with recommendation in Islamic law and *riba* is prohibited. The article elaborates the verdicts of classical jurist regarding to the arrangement of {*Zaa wa Tajjal*} decrease the amount of debt and receive promptly remaining amount. The article analyzes the problem of inflation and provides the solution for this problem in the light of Islamic classical jurisprudence. The article also discusses the doubts created by some contemporary Muslim scholars regarding to the prohibition of *riba* and answers the objection in the light of sources of Islamic law.

Keywords: Islamic Economics, Interest, *Riba* al Fazl, *Riba* Al-Nasia.

Department of Political Science

Journal Articles

1: **Sajjad, F**., Christie, D. J., & Taylor, L. K. (2017). De-radicalizing Pakistani society: The receptivity of youth to a liberal religious worldview. *Journal of Peace Education, 14*(2), 195-214. **(JCR)**

Abstract: The reported rise in radicalism among youth in Pakistan since 9/11/2001 has been attributed to religious education in *madrasas* and schools. However, education in Pakistan is only part of the historical and contemporary forces that contribute to the prevailing exclusivist religio-political discourse. Although most policy papers have recommended a secularization of public education, such efforts by the Pakistani Government have been counterproductive. These efforts by the Pakistani Government to reshape education, with massive funding from international donors, have faced strong opposition and there are signs of psychological reactance as evidenced by even greater levels of religious radicalism among Pakistani youth. The current study suggests a viable alternative for reshaping education in Pakistan. A nationwide survey of educated urban youth (N = 386) conducted by the first author, revealed that when considering radical religious, Western secular and liberal religious ideas, Pakistani youth were overwhelmingly supportive of a liberal religious approach to education that

highlights an inclusive Islam emphasizing freedom and compassion. Findings have implications for Government reforms, peace education initiatives and long-term conflict transformation in Pakistan.

Keywords: Religion, Radicalism, Education, Youth, Peace, Peace Building, Pakistan.

2: Tariq, S., Ul-Haq, Z., Imran, A., **Mehmood, U**., Aslam, M., & Mahmood, K. (2017). CO2 emissions from Pakistan and India and their relationship with economic variables. *Applied Ecology and Environmental Research, 15*(4), 1301-1312. **(JCR)**

Abstract: The rapid increase in CO2 emissions has been a hot topic for whole world because of their major contribution to greenhouse gases (GHG) which is an ultimate cause of global warming. This study analyses spatially gridded data from EDGAR (Emissions Database for Global Atmospheric Research) and linear relationship using multiple linear regression model between CO2 emissions and four economic variables (energy use, urban population, gross capital formation and GDP at market prices) for Pakistan and India. Additionally, four major tools (f-test, t-test, time series analysis, and prediction errors) are used for the purpose of investigating linear relationship and efficiency of the model. EDGAR data shows that about 200 teragram CO2 has been emitted from Indo-Gangatic plain. Analysis revealed that the most effective predictor for both the Pakistan and India is energy use. The value of f-stat and t-stat showed that the economic variables have joint and individual significance for the regression model at $p<0.05$. Time series revealed that CO2 emissions increased gradually from 1971 to 2011. Error analysis indicated that regression model for Pakistan is more efficient than that of India. New policies can be devised and decisions can be taken on the basis of information given by this paper.

Keywords: GHG, Energy Use, EDGAR, Prediction Errors**.**

3: **Ahmad, S**. & **Sajjad, F.,** (2017). Strategizing the role of Islam for Pakistan: An analysis of the shifting perspectives of Pakistan. *Journal of Politics and International Studies 3*(1): 69-83. **(NR)**

Abstract: The ideological debate between conservatives and modernists remains a central issue in Pakistan since its inception. This study arguing that the military rulers tend to keep strategic interest of the country in mind while taking position in the ideological debate between conservatives and modernists. This study traces the history of military regimes in Pakistan and their role in shaping ideology of Pakistan. This current longitudinal study aims to analyze the role and position of military rulers of Pakistan on the debate of Islam and modernity. This study is descriptive, historical and follows the longitudinal analysis to examine the data.

Keywords: Conservatives, Enlightenment, Islam, Modernity, Military Rulers.

Conference Papers

1. **Sajjad, F**. (2017, April 5-6). *Rethinking the role of religion in civic education: A peace building imperative for Pakistan.* Paper presented at First International Conference on Contemporary Issues in Muslim Societies and Cultures, Lahore, Pakistan.

Abstract: Not available.

2. **Ali, S**. (2017, April 5-6). *Beyond the intra-civilizational impasse: Prospects of pacifying Sunni-Shi-ite relations in contemporary Pakistan.* Paper presented at First International Conference on Contemporary Issues in Muslim Societies and Cultures, Lahore, Pakistan.

Abstract: Using Foucauldian analytics, this study attempts to understand how hegemonic others and victim selves have been constructed and reproduced in the volatile sectarian milieu of Pakistan. During the initial years of state-building, the conduct of sectarian relations was largely governed by a solidaristic rationality that eventually succumbed to supremacist trends. Intra-group variation in perspectives among Sunnis and Shīʻites reveals that violent extremists are lax in their adherence to Qurʻānic and Hadīth-derived injunctions on human sanctity and considerate conduct, while the non-violent mainstream take a decidedly cautious stance. This fundamental fissure delivers the analytical binaries through which sectarian discourses are deciphered in terms of dehumanizing and humanizing processes. Discourses of Sunni and Shīʻite elites are hence viewed through two interpretive repertoires: one defines difference in humanizing terms whereas for the other difference entails dehumanization. While a rhetoric of dehumanization accompanying verdicts of excommunication can be located in attribution of infidelity to others; calls for tolerance in sectarian relations mostly arise from a moral management of self, and lack a humanizing rhetoric capable of granting others sincerity of purpose in adhering to their sect. Therefore, premised on the approach of hybrid peace governance that adopts illiberal means of peacebuilding indigenous to conflicting communities – a considered depreciation of the need to deny positive traits to others is viewed as potentially humanizing; and owing to a lack of sectarian amity eliciting engagement with the outgroup, an indirect approach to trust-building relying on imagined contact is recommended that can be pursued through education-based interventions.

3. **Sajjad, F**. (2017). *Education to counter extremism in Pakistan: The case of Cambridge O level Pakistan studies*. Paper presented at the International Conference on Peace, Conflict and Violence, Lahore, Pakistan.

Abstract: Not available.

4. **Sajjad, F**. (2017). *Reshaping education to counter radicalism in Pakistan: Recommendation for education policy*. Paper presented at the International Conference on Peace, Conflict and Violence, Lahore, Pakistan.

Abstract: Not available.

5. **Owais, M.** (2017, December 9-11). *Role of electronics media in developing political perceptions*. Paper presented at the International Journalism Conference 2017, Foundation for Promotion of Academic Collaboration (FPAC), Lahore, Pakistan.

Abstract: Not available.

6. **Sajjad, F**. (2017). *Social studies in the age of social media, policy review and recommendation*. Paper presented at the International Conference on Inclusive Education 2017, Lahore, Pakistan.

Abstract: Not available.

7. **Qamar, A. H**. (2017, May 31). *Childlessness, a disease of social relation: perceptions of childless Punjabi women*. Paper presented at the International Conference on Health and Wellbeing,

Lahore, Pakistan.
Abstract: Not available.

8. **Gulzar, S**. (2017, October 20-22). *Art and techniques of first class common clay brick and possibility to reuse old clay bricks in contemporary buildings*. Paper presented at the International Conference on Archaeological Heritage of Pakistan Challenges, Potential and Way forward, Lahore, Pakistan.
Abstract: Not available.

9. **Gulzar, S**. (2017). *Characterization of stones used in Dado Ornamentation from Asif Khan Tomb, Lahore-Pakistan*. Paper presented at the Third International Conference on Engineering Sciences (ICES 2017), Lahore, Pakistan.
Abstract: Not available.

10. **Rashid, A**. (2017). *Legal Lacunae status of refugees, case of Rohingya Refugees in Pakistan*. Paper presented at the First International Conference on Migration, Integration and Social Cohesion, Quetta, Pakistan.
Abstract: Not available.

11. **Pervez, M. S**. (2017, November 29-30). *Jihad in the teaching of Mawdudi and Sayyid Qutb, a recipe of peace or conflict?* Paper presented at the First International Conference on Peace, Conflict, and Violence, Lahore, Pakistan.
Abstract: Not available.

Department of Psychology

Journal Articles

1: Ahmad, A., Kazi, M. S. A., & **Ahmad, I**. (2017). Evaluation of dental anxiety among children visiting Paediatric Dental Department at Children Hospital. *Journal of the Pakistan Medical Association, 67*(10), 1532-1535. **(JCR)**
Abstract: Objective: To determine efficacy of the Urdu version of Dental Subscale of Children's Fear Survey Schedule on children for identifying children with dental anxiety.
Methods: This cross-sectional study was conducted at the Children's Hospital, Lahore, Pakistan, in November 2015, and comprised child patients who were selected using convenient sampling. Dental Subscale of Children's Fear Survey Schedule was translated into Urdu using forward-backward translation method and administered to subjects aged 4-14 years to evaluate its psychometric properties and set a cut-off score for identifying fearful children. Factor analysis technique evaluated the translated items and analysis of variance explored age-anxiety linkage.
Results: Of the 204 participants, 89(43.6%) were girls and 115(56.4%) were boys. The survey yielded a normal distribution on anxiety scale, with a mean score of 32.13±12.06 and high reliability (a=0.934). Factor analysis indicated 3 factor pattern similar to Western findings. Items about ' choking, drilling sound and open-your-mouth' were mostly feared. Anxiety score

declined with age. Setting cut-off score at 70th percentile patients having anxiety score of > 43 were labelled as fearful, and those below as not fearful.
Conclusion: The scale was deemed valid and reliable tool.
Keywords: Behavioural Management Techniques, Dental Fear, Reliability.

Conference Papers

1. **Shoukat, K., Arfan, G**., & **Farooqi, R**., (2017, March 9-10). *Gypsies in Pakistan, impact of social exclusion on their mental health*. Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues and Solutions, Lahore, Pakistan.
Abstract: Not available.

2. **Shahbaz, F**., **Zaffar, W**., **Hafeez, M**., & **Farooqi, R**. (2017, March 9-10). *Cognitive distortion and aggression*. Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues and Solutions, Lahore, Pakistan.
Abstract: Not available.

3. **Atiq, A**. & **Farooqi, R**., (2017, March 9-10). *Attention-deficit/hyperactive disorder specify co-morbid with oppositional defiant disorder.* Paper presented at first International Conference on Clinical Psychology and the Developing World: Issues and Solutions, Lahore, Pakistan.
Abstract: Not available.

4. **Shoukat, K**., **Arfan, G**., & **Farooqi, R** (2017, April 22-23). *The impact of social exclusion on the mental health of Gypsies*. Paper presented at International Conference on Gender, Work and Society: Challanges, Opportunities and Prospects for Women's Economic Empowerment, Lahore, Pakistan.
Abstract: Not available.

5. **Atiq, A**., & **Farooqi, R**., (2017, April 26-28). *Dream lucidity negatively predicts psychosis proneness: Influence of nightmare*. Paper presented at three day International Conference on Health Psychology: Issues and Challenges. Lahore, Pakistan.
Abstract: Not available.

6. **Anwar. A**., **Tariq. R**., & **Farooqi, R**., (2017, April 26-28). *Morningness and eveningness: Gender differences in social problem solving*. Paper presented at three day International Conference on Health Psychology: Issues and Challenges, Lahore, Pakistan.
Abstract: Not available.

Books/ Book Chapters/ Book Reviews

1: **Pervez, M. S**. (2017). Pakistan at the crossroads: Domestic dynamics and external pressures. Christophe Jaffrelot, editor. *Pacific Affairs, 90*(2), 390-392.
Abstract: Pakistan is facing many challenges, and as the title of this book aptly sums up, that country sits at a critical crossroads. At one end of the political spectrum, the country is facing an existential threat amid incessant tides of terrorism ready to override the country, while on the

other end, the prospect of a nuclear state falling apart due to its rivalry with the regional hegemon India has caused many migraines with the international community.

Department of Sociology

Journal Articles

1: Ahmad, S., Maqsood, F., & **Waseer, W. A**. (2017). The role of apathy, personal insecurity, and socio-economic status in formation of risk-taking behavior among university students. *Journal of Human Behavior in the Social Environment, 28*(2), 221-239. **(SJR)**

Abstract: The primary purpose of the current study was to explore the role of apathy and personal insecurity in risk-taking behavior among university students. Furthermore, it examined the influence of socio-economic factors (such as age, gender, and education) on risk-taking behavior. For this purpose, 882 university students elicited their responses through self-structured questionnaire. Factor analysis and reliability analysis were applied to test the reliability, validity, and robustness of scales. Bivariate analysis was used to test hypothesis, independent *T*-test was used to examine the differences in categories of risk-taking behavior, and multiple linear regression was used to scrutinize model fit. There was association between apathy, personal insecurity, socio-economic characteristics (such as gender, education, and father education) and risk-taking behavior of the university students. The current study would add to empirical foundation to build a theoretical framework of risk-taking behavior based on education, age, income, and residential background. This study contributes to the academic scholarship by explaining individual differences based on socio-economic status in prediction of risk-taking behavior. Furthermore, it provides a different theoretical insight and logical explanation of risk-taking propensity for constructs of apathy and personal insecurity. To the best knowledge of the researchers, it is first study to explain the association apathy, personal insecurity and risk-taking behavior through quantification of data among resourceful group of youth.

Keywords: Apathy, Personal Insecurity, Socio-Economic Status, Risk-Taking Behavior, University Students, Youth Development, Pakistan**.**

2: **Rashid, U**. (2017). Muslim women in America: Challenges and politics of diversity within American Muslim community. *Journal of Muslim Minority Affairs, 37*(4), 481-495. **(JCR)**

Abstract: This paper will examine the complexities of the struggles faced by young Muslim women within the American Muslim community. Data are part of a study aimed at understanding the ways in which the gendered religious identities of Muslim women are constructed in the United States. This work seeks to address the dearth of research on the lives of Muslim women, and to identify and enhance an understanding of the issues and challenges they face during the process. Participants include 15 women, 18–22 years old, who graduated from an Islamic school in the mid-Atlantic region of America (ISA). Two phenomenological interviews were conducted with each participant. Data were analyzed using critical discourse and content analysis techniques. Findings point towards conflicts within, including those related

to the rich racial and ethnic diversity in the community, and to the patriarchal norms that still prevail. Some of these norms along with the perceptions and experiences of American Muslim women guiding their lives will be shared, and will be located within a larger discussion on how the obstacles towards their contribution to this diverse social setting can be dealt with.

Conference Papers

1. **Ali, W**. (2017, November 22). *Community participator and sustainality of rural water supply in punjkab, PK*. Paper presented at the third Karachi International Water Conference - Future of Water, Karachi, Pakistan.
Abstract: Not available.

2. **Rubab, I**., **Haq, I. U**., Usman, A. & Bakht, Z. (2017, March 21-22). Success and challenges in development of sociology discipline: A case study of University of the Punjab, Lahore. Paper presented at 1st National Conference on Teaching Sociology in the Muslim World: Challenges and Remedies, Gujrat, Pakistan.
Abstract: Not available.

3. Azeem, S., **Sohail, T**. & **Haq, I. U**. (2017, November 29-30). *Parental accepted transgender of Lahore: Support mechanism and challenges.* Paper presented at International Conference on Peace, Conflict and Violence, Lahore, Pakistan.
Abstract: Not available.

4. **Haq, I. U**., Farooq, A. & Noor, M. (2017, November 29-30). Portrayal of gender role and stereotypes in women magazine advertisements. Paper presented at International Conference on Peace, Conflict and Violence, Lahore, Pakistan.
Abstract: Not available.

5. Farooq, B & **Rashid, U**. (2017, November 29-30). *Identity crisis amongst transgender community in Pakistan*. Paper presented at International Conference on Peace, Conflict and Violence, Lahore, Pakistan.
Abstract: Not available.

6. **Rashid, U** & Farooq, A. (2017, November 29-30). *Perception of married Christian women about women protection against violence act, 2016*. Paper presented at International Conference on Peace, Conflict and Violence, Lahore, Pakistan.
Abstract: Not available.

Department of Special Needs Education

Journal Articles

1: Ashraf, F., Malik, S., & **Arif, A**. (2017). An epidemiological study of prevalence and comorbidity

of obsessive compulsive disorder symptoms (SOCD) and stress in Pakistani Adults. *Pakistan Journal of Medical Sciences, 33*(4), 835. **(JCR)**

Abstract: Objective: To investigate the prevalence and comorbidity of subclinical obsessive compulsive disorder (SOCD) symptoms and stress across gender, marital and employment statuses.

Methods: A cross-sectional research was conducted from December, 2016 to March 2017 at two universities of cosmopolitan city Lahore. Two self-report scales measuring SOCD symptoms and stress were used to collect data from 377 adults selected through simple random sampling technique, proportionately distributed across gender, marital and employment status.

Results: From the total sample, 52% reported low level of stress and 48% faced high level of stress. Significant differences in prevalence were observed across marital and employment statuses whereas for men and women, it was observed same (24%). Comorbidity of high level of SOCD symptoms and high level of stress was seen 34%.

Conclusion: Significant prevalence and comorbidity exists between SOCD symptoms and stress and more studies addressing diverse population are needed.

Keywords: Comorbidity, Employment Status, Marital Status, Prevalence, SOCD, Stress.

2: Ur-Rehman, A., **Arif, S**., Hayat, H. M., Kamran, A., & Shakeel, S. (2017). Prevalence and risk factors for occupational voice problems in teachers. *Asian Journal of Allied Health Sciences, 02*(02), 33-36. **(NR)**

Abstract: A number of teachers are teaching all over Pakistan among private and public institutes. Voice problem is specified to be one of the major occupational risks of teachers actually the teachers frequently use their voice with high-intensity in noisy environment for a long time and without voice rest.

Objective: To determine the prevalence and risk factors for occupational voice problems in teachers.

Methods: A cross sectional survey was conducted on 120 teachers, through pre-tested questionnaire at 10 different schools and colleges of Gujranwala district Pakistan.

Results: Results showed that prevalence of voice problems was greater in female teachers as compared to male teachers. Among the risk factors long duration of job was more dominant.

Conclusion: Teachers develop voice problems during professional life due to risk factors that included personal issues, noisy environment and psychosocial factors.

Keywords: Voice Problems, Prevalence, Symptoms, Risk Factors, Voice Disorder.

3: Ashraf, S., **Haider, G**., & Ashraf, M. (2017). Violence against women with disabilities: A qualitative investigation. *Annals of King Edward Medical University, 23*(4), 540-545. **(JCR)**

Abstract: Many of the research studies have shown that usually people with disabilities and specifically women with disabilities are at increased risk of physical, sexual, and emotional abuse as well as to other practices of violence, such as institutional violence, drug use, undesirable sterilisation, medical abuse, mortification, and nuisance. This study is intended to explore the lived experiences of women with disabilities who have been subjected to any type of violence, generate a theoretical model for the ways in which women with disabilities survived and coped with their violence and finally to make suggestions and recommendations in order to reduce the elements causing violence against women with disabilities. In this study, a qualitative interpretive phenomenological research methodology has been used to explore,

interpret, and evaluate the personal narratives of women with disabilities about their experiences with violence and abuse. The phenomenology approach was used to study the phenomena. A number of 05 women with disabilities who had physical disability or sensory impairment (visual and hearing) were purposively selected as the participants of the study. The age of participants was between 25 to 40 years and they had past experience of any type of abuse of violence, and were cognitively normal to respond interview. At first we identified the participants with the help of survey. A series of detailed and in-depth interview of 60 to 90 minutes were conducted from the participants. On the basis of collected data the researchers have given textural description and a structural description of the experiences, and ultimately provide understanding of the common experience of the participants. Finally from the structural and textural description, the researchers wrote a composite description that to present the essence of the phenomena.

Keywords: Violence, Women, Domestic Violence, Disability.

Conference Papers

1. **Arif, A**. (2017). *Factors influencing motivation of students with and without hearing impairment at university level: A comparative study*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

2. **Arif, A**. (2017). *Parents perceived satiisfaction with their life participation while rasing children with intellectual disabilities*. Paper presented at the Fifth International Conference on Research in Education, Lahore, Pakistan.
Abstract: Not available.

3. **Arif, A**. (2017). *Problem faced by students with special needs in inclusive classrooms*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

4. **Arif, A**. (2017). *School's reading for inclusive education in abbottabad district*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

5. **Anis, F**. (2017, October 24-25). *Association between TV veiwing and academic activities of students with hearing impairment*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

6. **Anis, F**. (2017, October 24-25). *Comparative analysis of special education services in Pakistan and India*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

7. **Anis, F**. (2017, October 24-25). *Entitled to work, not to big: A study on persons with disabilities*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

8. **Anis, F**. (2017, October 24-25). *Exploring the causes of dropout among students with disabilities at primary level*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

9. **Anis, F**. (2017, October 24-25). *Framework for successful inclusion in labor market for persons with disabilities*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

10. **Anis, F**. (2017, October 24-25). *Peer relations and positive development in students with visual impairment*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

11. **Anis, F**. (2017, October 24-25). *Use of social media by students with special needs*. Paper presented at the International Conference on Inclusive Education, Lahore, Pakistan.
Abstract: Not available.

School of Systems and Technologies

Department of Computer Science

Journal Articles

1: **Akmal, M. A.**, **Rasool, N.**, & **Khan, Y. D**. (2017). Prediction of N-linked glycosylation sites using position relative features and statistical moments. *PLoS ONE*, *12*(8), e0181966. **(JCR)**

Abstract: Glycosylation is one of the most complex post translation modification in eukaryotic cells. Almost 50% of the human proteome is glycosylated as glycosylation plays a vital role in various biological functions such as antigen's recognition, cell-cell communication, expression of genes and protein folding. It is a significant challenge to identify glycosylation sites in protein sequences as experimental methods are time taking and expensive. A reliable computational method is desirable for the identification of glycosylation sites. In this study, a comprehensive technique for the identification of N-linked glycosylation sites has been proposed using machine learning. The proposed predictor was trained using an up-to-date dataset through back propagation algorithm for multilayer neural network. The results of ten-fold cross-validation and other performance measures such as accuracy, sensitivity, specificity and Mathew's correlation coefficient inferred that the accuracy of proposed tool is far better than the existing systems such as Glyomine, GlycoEP, Ensemble SVM and GPP.

2: **Butt, A. H.**, **Rasool, N.**, & **Khan, Y. D**. (2017). A treatise to computational approaches towards prediction of membrane protein and its subtypes. *The Journal of Membrane Biology, 250*(1), 55-76. **(JCR)**

Abstract: Membrane proteins are vital mediating molecules responsible for the interaction of a cell with its surroundings. These proteins are involved in different functionalities such as ferrying of molecules and nutrients across membrane, recognizing foreign bodies, receiving outside signals and translating them into the cell. Membrane proteins play significant role in drug interaction as nearly 50% of the drug targets are membrane proteins. Due to the momentous role of membrane protein in cell activity, computational models able to predict membrane protein with accurate measures bears indispensable importance. The conventional experimental methods used for annotating membrane proteins are time-consuming and costly and in some cases impossible. Computationally intelligent techniques have emerged to be as a useful resource in the automation of prediction and hence the annotation process. In this study, various techniques have been reviewed that are based on different computational intelligence models used for prediction process. These techniques were formulated by different researchers and were further evaluated to provide a comparative analysis. Analysis shows that the usage of support vector machine-based prediction techniques bears more assiduous results.

Keywords: Amino Acids, Membrane Proteins, Support Vector Machine, Probabilistic Neural Networks, Pseudo Amino Acids Compositions, Position-Specific Scoring Matrix.

3: **Ali, Z.**, Rasool, R. U., Bloodsworth, P., & Mansoor, S. B. (2018). Facebook-based cloud resource

sharing. *Computers & Electrical Engineering, 66*, 162-173. **(JCR)**

Abstract: Sharing cloud resources between groups of users is a challenge. Cloud providers do not commonly support users in sharing their spare dedicated resources with others. In developing countries, it is often too expensive for people to acquire a virtual machine of their own. Users may, therefore, wish to manage costs and increase computational resource usage by sharing their instances with others. This paper presents a container based cloud resource bartering (CRB) model for sharing user's computational resources through a social network. In our approach, we have integrated a Facebook account with the computational cloud to enable tenants to share their unused cloud resources with other users. The performance of the proposed prototype is evaluated under different workloads. Based on our experimental results we conclude that the proposed model is well suited for the creation of a low-cost social cloud in developing countries.

Keywords: Cloud Resource Bartering, Social Cloud, Resource Sharing In Cloud, Enterprise Virtual Organization, Green Social Cloud.

4: Yasir, S., **Mushtaq, M. T.**, Khan, M., Salam, W., Ehsan, M., & Nawaz, H. (2017). The attenuation of free space optical communication under dusty conditions in Lahore. *Sindh University Research Journal-SURJ (Science Series), 49*(4), 875-880. **(HEC Y-Cat.)**

Abstract: FSO (free space optical) communication is one of the most advanced modes of wireless communication. FSO is a line of sight communication which is used to convey data from an optical transmitter to an optical receiver through atmosphere. FSO offers higher data rates but fading level due to atmospheric effects (like sand, dust, fog, rain, snow etc.) are higher than RF (radio frequency) technology. The atmosphere affects the laser beam passing through it. The atmospheric turbulence and scattering results in the degradation of the signal. In this research paper is focused and analyzes the variations in the visibility and attenuation with respect to the concentration of aerosol particles (suspended elemental particles) is done. This research work is conducted and dust model is designed in the atmosphere of urban area of Lahore city. The model deals the effect of the size of the dust particles on the visibility of FSO link and suggests a formula for the calculation of attenuation generated in the link.

Keywords: Free Space Optical (FSO) Communication System, Concentration, Visibility, Attenuation.

5: Qureshi, M. I., Hashmi, M., & **Iqbal, S**. (2017). A study of obstacle problems using homotopy perturbation method. *Journal of the National Science Foundation of Sri Lanka, 45*(4). **(JCR)**

Abstract: Numerical methods for solving differential equations has become an important topic of this era. The importance of boundary value problems in applied sciences shows the way in which existence of exact solution is not always possible. This study adopts the homotopy perturbation method (HPM) to solve multiple-point boundary value problems arising in obstacle, unilateral and contact problems. Convergent approximate solutions are constructed such that the exact boundary conditions are satisfied. Some examples have been presented to elucidate the efficiency and implementation of the method. We have compared the results using different number of terms of HPM and found that increasing the number of terms of approximate solution will increase the efficiency.

Keywords: Homotopy Perturbation Method, Numerical Solution, Obstacle Problem, System of Boundary Value Problem.

6: Zafar, F., Khan, A., Suhail, S., Ahmed, I., **Hameed, K.**, Khan, H. M., Anjum, A. (2017). Trustworthy data: A survey, taxonomy and future trends of secure provenance schemes. *Journal of Network and Computer Applications, 94*, 50-68. **(JCR)**

Abstract: Data is a valuable asset for the success of business and organizations these days, as it is effectively utilized for decision making, risk assessment, prioritizing the goals and performance evaluation. Extreme reliance on data demands quality assurance and trust on processes. Data Provenance is information that can be used to reason about the current state of a data object. Provenance can be broadly described as the information that explains where a piece of data object came from, how it was derived or created, who was involved in said creation, manipulations involved, processes applied, etc. It consists of information that had an effect on the data, evolving to its present state. Provenance has been used widely for the authenticity of data and processes. Despite having such a wide range of uses and applications, provenance poses vexing privacy and integrity challenges. Provenance data itself is, therefore, critical and it must be secured. Over the years, a number of secure provenance schemes have been proposed. This paper aims to enhance the understanding of secure provenance schemes and its associated security issues. In this paper, we have discussed why secure provenance is needed, what are its essential characteristics, and what objectives it serves? We describe the lifecycle of secure provenance and highlighted how trust is achieved in different domains by its application. Firstly, a detailed taxonomy of existing secure provenance schemes is presented. Then, a comparative analysis of existing secure provenance schemes, which highlights their strengths and weaknesses is also provided. Furthermore; we highlight future trends, which should be focused upon by the research community.

Keywords: Secure Provenance, Trustworthy Data, Forensics, Security And Privacy, Cloud Computing, Wireless Sensor Networks.

7: **Waqas, M.**, & **Bhatti, A. A**. (2017). Optimization of N+1 queens problem using discrete neural network. *Neural Network World, 27*, 295-308. **(JCR)**

Abstract: Combinatorial optimization problems are extensively solved by using neural networks. Hopfield-Tank model is used to solve Traveling Salesman Problem and many NP-Hard Problems. This paper describes a neural network optimizer/scheduler that optimizes a solution for a highly complicated version of N Queens Problem (NQP), i.e. N + 1 non-threatening Queens on a N x N chessboard with an intermediate pawn on it. Both synchronous and asynchronous methods of updating of the neurons have been applied for optimization of N + 1 Queens Problem. Computer simulations are used to confirm the results. The proposed neural network is attracted to optimized solution or finds the global minima in 90% of the trials. A new rule of initialization, i.e. the proximity rule of initialization has been proposed. Using the proximity rule of initialization the performance of the system is enhanced and the system converges to an optimal solution in much less time. Many novel applications like multiprocessor job scheduling, resource optimization, of the above mentioned algorithm have been proposed. N Queens Problem has been solved by many techniques but no other algorithm exists to solve N + 1 QP in the literature. Consequently, the performance of the network is compared with full space search algorithm.

Keywords: Neural Networks Optimization Problem, Hopfielf-Tank Model, Np-Hard Problem, N+1 Queens Problem, The Proximity Rule of Initialization, Multiprocessor Job Scheduling.

8: Shafique, M. A., Malik, B. H., Mahmood, Y., Cheema, S. N., **Hameed, K.**, & Tabassum, S. (2017). Determinants impacting the adoption of e-government information systems and suggesting cloud computing migration framework. *International Journal of Advanced Computer Science and Applications, 8*(9), 173-182. **(JCR)** **(SKT Campus)**

Abstract: This research intends to investigate underlying elements that effect the adoption of E-Government Information Systems in Board of Intermediate and Secondary Education (BISE), Pakistan. The study is grounded on the theory of technology, organization and environment (TOE) model. Cloud computing is becoming a viable alternative for System Analysts or IT managers to consider in today's latest information technology environment and dynamic changes in the technology landscape. The second purpose of this study is to help Government decision makers appropriately decide on the reasonableness of uses for migration to cloud computing. Considering that the provided Services in e-government (BISE) are available by means of the Internet, in this way cloud computing can be used in the implementation of e-government architecture and provide better service utilizing its benefits.

Keywords: E-Government Information Systems, Adoption, Toe, Cloud Computing Migration, Board of Intermediate and Secondary Education (BISE), Pakistan.

9: **Haseeb, J.**, **Hameed, K.**, **Junaid, M.**, **Tayyab, M.**, Rehman, S., & **Khan, A. M. M.** (2017). ODSA: A novel ordering divisional scheduling algorithm for modern operating systems. *International Journal of Advanced Computer Science and Applications, 8*(7), 291-296. **(JCR)** **(SKT Campus)**

Abstract: CPU scheduling is defined as scheduling multiple processes that are required to be executed in a specific time period. A large number of scheduling algorithms have been proposed to achieve maximum CPU utilization/throughput and minimizing turn around, waiting and response time. Existing studies claim that Round Robin (RR) is providing best results in terms of above-mentioned factors. In RR, a process is assigned to CPU for a fixed time quantum then the process starts its execution, in case that assigned time quantum greater than CPU's capacity then remaining section of that process waits for its next turn. Although RR schedules processes in an efficient manner, however, it has certain limitations such as if time quantum is too small or large, it causes frequent context switching and response time can increase. To address these identified problems, various improved versions of RR also exist. The purpose of this paper is twofold: 1) a comparison between different improved versions of RR; and 2) a new algorithm named Ordering Divisional Scheduling Algorithm (ODSA) is also proposed that combines various features of different algorithms and is actually an improvement to RR. Our results show that ODSA can schedule processes with less turn around and average waiting time as compared to existing solutions.

Keywords: CPU Scheduling, Round Robin Scheduling Algorithm, Turnaround Time, Waiting Time, Context Switching.

10: Maryam, R., Naseem, A., **Haseeb, J.**, **Hameed, K.**, **Tayyab, M.**, & **Shahzaad, B.** (2017). Introducing time based competitive advantage in it sector with simulation. *International Journal of Advanced Computer Science and Applications, 8*(7), 401-406. **(JCR)** **(SKT Campus)**

Abstract: Incompletion of projects in time leads to project failure which is the major dilemma of the software industry. Different strategies are used to gain a competitive advantage over competitors in business. In software perspective, time is an incredibly critical factor, software

products should be delivered in time to gain competitive advantage. However, at a halt, there is no such strategy that covers time perspective. In this paper, a time-based strategy for software products is introduced. More specifically, the importance of time-based strategy by analyzing its associated factors is highlighted using simulations.

Keywords: Business Strategy, Competitive Advantage, Time-Base, A Competitor, Simulation, Software Industry.

Department of Informatics and Systems

Journal Articles

1: Mufti, M. R., Qureshi, M. I., Alkhalaf, S., & **Iqbal, S**. (2017). An algorithm: Optimal homotopy asymptotic method for solutions of systems of second-order boundary value problems. *Mathematical Problems in Engineering*, 2017, 1-11. **(JCR)**

Abstract: Optimal homotopy asymptotic method (OHAM) is proposed to solve linear and nonlinear systems of second-order boundary value problems. OHAM yields exact solutions in just single iteration depending upon the choice of selecting some part of or complete forcing function. Otherwise, it delivers numerical solutions in excellent agreement with exact solutions. Moreover, this procedure does not entail any discretization, linearization, or small perturbations and therefore reduces the computations a lot. Some examples are presented to establish the strength and applicability of this method. The results reveal that the method is very effective, straightforward, and simple to handle systems of boundary value problems.

2: **Mehmood, A**., **Mushtaq, M. T**., Nawaz, H., Ehsan, M., & Ahmed, H. (2017). Simfree communication using rasberry pi+ based base-station for disaster mitigation. *Sindh University Research Journal-SURJ (Science Series), 49*(1), 195-200. **(HEC Y-Cat.)**

Abstract: The telecommunication facilities are normally not available in flood and earthquake effected areas. Under such circumstances, telecommunication company free (telecofree) and simfree communication is required which can work in all situations (independent of telecommunication companies). In this research work, Subscriber Identity Module (simfree) communication was done by using raspberry pi B+ as base station. The device was operated at 2.4 GHz frequencies using Wi-Fi enabled android mobile phones. The android devices were connected with centralized mini base station. The base-station did the user authentication to communicate in between two devices and for conference call services. The base station provided the facility for communicating the text, voice and video data in between the android cell phones without using any SIM. This research helped in designing and implementing the future adhoc networks for the military communication and disaster mitigation.

Keywords: Base Station, Raspberry Pi, Software Defined Radio, Audio Conference, Disaster Mitigation.

3: **Usman, H. F.,** & **Zia, M. F**. (2017). Undervoltage and power factor improvement of substation using static var compensators. *Journal of Electrical and Electronics Engineering, 10*(1), 79. **(SJR)**

Abstract: Electrical energy demand is increasing exponentially due to the industrial and economic growth. Electricity has a fundamental role in the economic growth of any society as

all the residential, commercial and industrial sectors are dependent on it. Pakistan is currently facing an energy crisis due to low power generation, high line losses and growing energy demand. An efficient electric power system, from generation to utilization, is needed to overcome such problems. Hence, the power system should be stable and fault tolerant. In this paper, static var compensators (SVCs) are used to improve undervoltage and low power factor problems in power system. A 132/11.5kV substation is used to analyze the improvements in these factors, which affects the power system performance. The substation is simulated on Electrical Transient Analyzer Program (ETAP) software to analyze the real time scenario of the power system with the complete load flow analysis. All the values and data are collected from the 132/11.5kV substation for the analysis and simulation for real time. The results clearly demonstrate the effectiveness of using SVCs in improving undervoltage and low power factor problems in power system.

Keywords: ETAP, Load Flow, Static Var Compensator, Under Voltage.

4: Sarwar, S., & **Iqbal, S**. (2018). Stability analysis, dynamical behavior and analytical solutions of nonlinear fractional differential system arising in chemical reaction. *Chinese Journal of Physics, 56*(1), 374-384. **(JCR)**

Abstract: In chemical reaction process, mathematical modeling of certain experiments lead to Brusselator system of equations. In this article, the dynamical behaviors of reaction Brusselator system with fractional Caputo derivative is studied. Also, Its stability and chaotic attractors of the commensurate fractional dynamical Brussleator system are discussed. The fractional derivative operators are nonlocal and having weak singularity as compare to the classical derivative operators. To find the analytical solutions of fractional dynamical systems is a big challenge, therefore, new techniques are worth demanding to solve such problems. To overcome this difficulty, the optimal homotopy asymptotic method is extended in this study to the system of fractional partial differential equations. A numerical example is presented as well to investigate the convergence, performance, and effectiveness of this method.

Keywords: Fractional Calculus, Chaos, Lyapunov Exponents, Stability, Brusselator System, System of Partial Differential Equations, Optimal Homotopy Asymptotic Method.

5: Sarwar, S., & **Iqbal, S**. (2017). Exact solutions of the non-linear fractional Klein-Gordon equation using the optimal homotopy asymptotic method. *Nonlinear Science Letters A, 8*(4), 340-348. **(NR)**

Abstract: In this paper, we study non-linear fractional order Klein-Gordon equations (FKGEs) which arises in science and engineering. The fractional derivative is defined in Caputo sense. The optimal homotopy asymptotic method (OHAM) for ordinary differential equations is extended and successfully implemented to solve the FKGEs. Third order highly approximate solutions are obtained in series form and compared with the exact solutions. OHAM is productively executed to novel the distinguished solutions of fractional order partial differential equations. It is observed that OHAM is highly convergent method for the solution of FKGEs. The analytical results are interpreting and applied method is obvious, operative and easy to use, for handling more general fractional order problems which arises in scientific fields.

Keywords: Fractional Calculus; Fractional Partial Differential Equations; Caputo Derivative; Klein-Gordon Equation; Optimal Homotopy Asymptotic Method.

6: **Abbasi, M. A.**, & **Zia, M. F**. (2017). Novel TPPO based maximum power point method for photovoltaic system. *Advances in Electrical and Computer Engineering, 17*(3), 95-100. **(JCR)**

Abstract: Photovoltaic (PV) system has a great potential and it is installed more when compared with other renewable energy sources nowadays. However, the PV system cannot perform optimally due to its solid reliance on climate conditions. Due to this dependency, PV system does not operate at its maximum power point (MPP). Many MPP tracking methods have been proposed for this purpose. One of these is the Perturb and Observe Method (P&O) which is the most famous due to its simplicity, less cost and fast track. But it deviates from MPP in continuously changing weather conditions, especially in rapidly changing irradiance conditions. A new Maximum Power Point Tracking (MPPT) method, Tetra Point Perturb and Observe (TPPO), has been proposed to improve PV system performance in changing irradiance conditions and the effects on characteristic curves of PV array module due to varying irradiance are delineated. The Proposed MPPT method has shown better results in increasing the efficiency of a PV system.

School of Textile & Design

STD

Journal Articles

1: **Rehman, B**. (2017, April 25). How does fashion influence the lives of students? Retrieved August 2, 2017, from http://ezinearticles.com/?How--Does--Fashion--Influence--the--Lives--of--Students?&id=9694752. **(NR)**

Abstract: This is an era of fashion and fashion is very influential to our lives. In fact, it adds diversity to our lives by offering an aspect of enthusiasm to strive for something new and different, otherwise it would be a monotonous life if we were supposed to dress up and act in the same manner.

Fashion is an expression of a distinctive style particularly in clothing, footwear, accessories or makeup. It belongs to the style of doing something, looking different and dealing with others. It encircles a wide range of categorization like behavior, speech, actions, manners and lifestyle. There is much intellectual discussion over fashion and clothing and their importance within present day society. Fashion and clothing can be defined as many things that hold our society together. Fashion can be defined as an existing norm or style of dress, manners and way of socializing, whereas clothing is defined as garments collectively. If fashion and clothing were eliminated from our lives there would be no room for individuality and the world's population would be the same. There also would be a loss of the distinctions between social classes, which was much defined in the 18th century but is still present today. The eradication of fashion and clothing would also change the dynamics of the social world and social relationships.

2: Mangat, A. E., Hes, L., Bajzikh, V., Buyuk, F., **Abbas, M**. (2017). Model of thermal absorptivity of knitted rib in dry state and its experimental authentication. *Industria Textila, 68*(4), 263-268. **(JCR)**

Abstract: Thermal absorptivity is an important factor in comfort of human body, for this samples were produced using 100% polyester yarn with particular planar weight and significate variation in the surface profile of rib knit fabrics. Thermal absorptivity of all samples was measured using Alambeta. Thermal absorptivity is an indicator of warm-cool feeling during the interaction between the fabric and the human hand. It was found that there is a significant correlation between thermal absorptivity and surface profile of the knitted rib. Using regression analysis, we have developed an equation for the prediction of thermal absorptivity of the fabric. This equation is quite helpful for clothing designers to help them manufacture a fabric, which does not give cool feeling while wearing in a cold environment.

Keywords: Surface Profile, Thermal Absorptivity, Cool Feeling, Rib Knit Fabrics, Regression Analysis, Clothing.

3: Raza, Z. A. and **Anwar, F**. (2017). Fabrication of chitosan nanoparticles and multi-response optimization in their application on cotton fabric by using a Taguchi approach. *Nano-Structures & Nano-Objects, 10*, 80-90. **(SJR)**

Abstract: The present work is related with the fabrication of chitosan nanoparticles (CsNPs) by using ionic gelation method. The nanoparticles fabrication under gone the interaction of chitosan and sodium tripolyphosphate in acidic medium. Hence prepared CsNPs were characterized for their size, potential and morphologies by using advanced analytical techniques. The CsNPs were then applied on cotton fabric utilizing pad-dry-cure strategy. The nanofinish recipe was optimized under a Taguchi approach whereas the responses included fabric tensile strength, crease recovery angle, bending length, absorbency time and antibacterial activity against spectrum bacterial strains. The minimum average particle size was observed as 115 nm and maximum zeta potential as +31.3 mV at 0.2% (w/v) chitosan. Scanning electron microscopy equipped with EDX confirmed the presence of CsNPs on the treated fabric. The treated fabrics exhibited good and durable antibacterial activities with acceptable textile properties.
Keywords: Chitosan, Cotton Fabric, Nanoparticles, Optimization, Taguchi Approach.

4: Ahmad, F., Tausif, M., Hassan, M. Z., Ahmad, S., & **Malik, M. H**. (2017). Mechanical and comfort properties of hydroentangled nonwovens from comber noil. *Journal of Industrial Textiles,* 1-15. **(JCR)**

Abstract: Cotton is one of the most important commodity fibres and is widely employed in apparels. At present, the share of natural fibres in production of nonwoven fabrics is low and are used in opt applications. The cotton fibre is conventionally converted into woven and knitted fabrics by short staple spinning methods. The comber noil is short fibre waste produced when cotton yarns are combed. The aims of the current study were to employ comber noil for the preparation of hydroentangled cotton nonwovens at varying water jet pressures and conveyor speeds. The effect of these parameters was studied with respect to mechanical and comfort properties of the prepared fabrics. The results showed that these variables can help to manufacture fibrous assemblies with engineered properties, according to required application area.
Keywords: Cotton, Comber Noil, Hydroentanglement, Nonwovens, Mechanical, Comfort.

Conference Papers

1. **Abbas, M**. (2017, December 14-16). *Synthesis of advanced textile functional materials using silver/titanium nanoparticles and composites*. Paper presented at the sixth International Symposium on Biomedical Materials, Lahore, Pakistan.

Abstract: Not available.

2. **Abbas, M**. (2017, July 9 - 12). *Cross metathesis of electron deficient olefins with natural rubber*. Paper presented at the 22nd International Symposium on Olefin Metathesis and Related Chemistry (ISOM XXII) Zürich, Switzerland.

Abstract: Not available.

3. **Khan, A**. (2017, October 28-30). *Office stationery design*. Paper presented at the International Business Conference and Exhibition (IBCE), Lahore, Pakistan.

Abstract: Not available.

Quality Ehnancement Cell

Conference Papers

1. **Jamil, M. Y**. (2017, May 12-14). *Deploying knowledge management in DMAIC mathodology of projects.* Paper presented at International Conference on Technology, Innovation and Entrepreneurship, Istanbul, Turky.
Abstract: Not available.

2. **Jamil, M. Y**. (2017, May 12-14). *Role of knowledge management in achieving organizational performance: Proposed framework through literature survey.* Paper presented at International Conference on Technology, Innovation and Entrepreneurship, Istanbul, Turky.
Abstract: Not available.

3. **Jamil, M. Y**. (2017, January 25-26). *Impact of customer satisfaction (CS) and client loyalty (CL) on Islamic banking: Proposed framework through literature survey.* Paper presented at Global Forum 2017 Islamic Economics, Finance and Banking, Lahore, Pakistan.
Abstract: Not available.

Office of Participants Affairs

Books/ Book Chapters/ Book Reviews

1. **Firdous, S**. (2017). *Tu Shaheen Hai*. Lahore: Shirkat Priniting Press.
Abstract: Not available.

Author Index

A

Abbas, M
Mudassar Abbas 49, 51, 181
Mujahid Abbas 39, 41, 54, 55, 56, 59, 60, 182
Abbas, R. Z.
Rana Zamin Abbas 101
Abbas, S. Y
Syed Yasir Abbas 72, 73
Abbasi, M. A
Muhammad Awais Abbasi 180
Abdullah, A
Ali Abdullah 33
Abid, F
Faiza Abid 83, 84
Afghan, S
Sher Afghan 145
Afzal, M. S
Muhammad Sohail Afzal 11, 15, 16, 17, 35, 36, 37
Ahmad, A
Ashfaq Ahmad 22
Ahmad, I
Iftikhar Ahmad 167
Imtiaz Ahmad 26
Ahmad, J
Jameel Ahmad 71
Ahmad, S
Salman Ahmad 164
Sara Ahmad 165
Ahmad, S. S
Sumera Shan Ahmad 82
Ahmad, W
Waqar Ahmad 7, 8
Ahmad, Z
Zeshan Ahmad 80
Ahmed, R. J
Rao Jaleel Ahmed 160, 161
Ahmed, S
Shahzad Ahmed 45, 110
Ahmed, S. S
Syed Shaheryar Ahmed 72, 73
Ajmal, M. M
Muhammad Mobeen Ajmal 110, 111
Ajwad, A
Ali Ajwad 62, 63, 64, 66, 67
Akmal, M. A
Muhammad Aizaz Akmal 174
Alamgir, S
Shahjahan Alamgir 102
Aleem, M
Maryam Aleem 49, 57
Ali, A
Akbar Ali 50, 51
Ali, J.
Javaid. Ali 40, 41
Ali, M
Muhammad Ali 37
Ali, S
Sajed Ali 9, 10, 39
Sohaib Ali 166
Ali, U
Umer Ali 45
Ali, W
Wasif Ali 170
Ali, Z
Zahra Ali 174
Ameen, Z
Zobia Ameen 88
Amjad, I
Iram Amjad 154
Amjad, M
Muhammad Amjad 14
Anis, F
Faisal Anis 172, 173
Anwar, A
Aizza Anwar 146
Anwar, F
Faiza Anwar 181
Anwar, N
Nadia Anwar 157, 158, 159
Anwar. A
Asma Anwar 168
Arbi, K. A
Khalil Ahmed Arbi 145, 146
Arfan, G
Ghalia Arfan 168
Arif, A
Amna Arif 170, 172
Arif, M
Muhammad Arif 11
Arif, S
Seema Arif 149, 151, 152, 171
Arshed, N
Noman Arshed 101, 102, 103, 108, 109, 127
Ashfaq, N
Naheed Ashfaq 83
Ashraf, F
Fakhra Ashraf 24
Farhan Ashraf 81
Ashraf, S
Sidra Ashraf 25
Ashraf, S. R
Syed Rehan Ashraf 78, 79
Asim, M
Muhammad Asim 77
Asjad, M. I
Muhammad Imran Asjad 48, 49, 52, 57, 58
Aslam, H
Haris Aslam 115, 122
Aslam, H. M. U
Hafiz Muhammad Umar Aslam 11

Aslam, I
Ijaz Aslam 164
Aslam, M
Manan Aslam 107
Aslam, R
Rabia Aslam 144
Atiq, A
Anum Atiq 168
Awan, A
Asma Awan 106
Awan, M. Y
Muhammad Yusuf Awan 94, 96, 97, 98
Ayaz, M
Mohammad Ayaz 91, 92
Ayub, U
Umer Ayub 118, 119, 120
Azad, U
Uzma Azad 19
Azam, M. K
M. K. Azam 55
Azeem, B
Babar Azeem 72
Azeem, M. U
Muhammad Umer Azeem 93, 117
Azhar, S
Sehar Azhar 117
Azhar, T. M
Tashfeen M. Azhar 118, 122
Aziz, O
Osama Aziz 102
Azmi, S. A. M
Syed Ali Mardan Azmi 47, 48

B

Bacha, U
Umar Bacha 139, 140, 141, 143
Bajwa, S. U
Sami Ullah Bajwa 115, 116, 119, 121
Bashir, S
Shahid Bashir 107
Basit, A. A
Ameer A. Basit 117
Bastos, M. I
Maria Ines Bastos 138
Belal, K.
Kulsoom Belal 124
Bhatti, A. A
Abdul Aziz Bhatti 176
Bilal, M
Muhammad bilal 45
Bukhari, S. A. H
Syed Ali H. Bukhari 146
Butt, A. H
Ahmad Hassan Butt 174
Butt, M. A
Muhammad Asim Butt 71
Butt, M. G
Mirrat Gul Butt 88

C

Chattha, M. A
Muhammad Asif Chattha 22
Chaudary, N. Y
Nasir Yahya Chaudary 96, 98
Chaudhary, I. A
Ijaz Ahmad Chaudhary 79
Chauhan, M. A. H
Mohammad A. H. Chauhan 117
Chowdhury, M. S. R.
Mohammad Shaukat Rahim Chowdhury 45

D

Daud, S
Sana Daud 87, 88
Durrani, S. M
Sara Mehmood Durrani 85

E

Ehtesham, U
Uzma Ehtesham 113
Erum, N
Nazia Erum 28, 29, 30, 31, 32

F

F. Tariq
Fariha Tariq 95
Faizi, S
Shahzad Faizi 41, 42, 47
Farid, S
Saqib Farid 109, 112, 114
Farooq, W
Waqas Farooq 93, 117, 121
Farooqi, R
Rabia Farooqi 168
Farrukh, I
Farrukh Ijaz 90
Fatima, S
Sehar Fatima 22
Fatima, U
Urooj Fatima 9, 22, 23
Firdous, R
Rafia Firdous 64
Firdous, S
Shaheen Firdous 183

G

Ghaffar, A
Abdul Ghaffar 118
Gilani, S.M. S
S. M. Sohail Gilani 27

Gilani, U. J
Usman Javed Gilani 110
Gillani, S. H. B.,
Syeda Hameeda Batool Gillani 91
Gulzar, M
Muhammad Gulzar 127
Gulzar, S
Saima Gulzar 94, 97, 167

H

H.M.U. Aslam
Hafiz Muhammad Umar Aslam 12
Hafeez, M
Maryam Hafeez 168
Haider, A
Aun Haider 69, 70, 71, 72
Haider, G
Ghulam Haider 171
Haider, S. S
Syed Sajjad Haider 65
Hameed, A
Abdul Hameed 151, 152
Hameed, K
Khizar Hameed 176, 177
Hamid, Z
Zeeshan Hamid 120
Haq, I. U
Inam ul Haq 163, 170
Haroon, S. M
Shah Muhammad Haroon 11
Haseeb, J
Junaid Haseeb 177
Hassan, A. U
Abrar ul Hassan 9
Hassan, M. S
Muhammad Shahid Hassan 100, 103, 105
Hayat, M
Mazhar Hayat 149
Hussain, W
Waqar Hussain 14, 37

I

Iftekhar, U
Umbreen Iftikhar 100
Ijaz, F
Faheem Ijaz 7, 91
Ijaz, S
Saima Ijaz 55
Ikram, M
Muhammad Ikram 20
Ilyas, U
Umar Ilyas 66
Usman Ilyas 62, 64
Imran, M
Muhammad Imran 73, 74, 75, 76, 77
Iqbal, A
Ayesha Iqbal 72, 73
Iqbal, H. M. Z
H.M. Zahid Iqbal 154
Iqbal, M. A
Muhammad Azhar Iqbal 27, 28, 29, 30, 31, 32
Iqbal, S
Shaukat Iqbal 175, 178, 179
Iqbal, W
Waseem Iqbal 71
Irshad, M
Mobina Irshad 21
Izhar, M. A
Muhammad Adnan Izhar 110

J

Jaan, A
Ali Jaan 20
Jabeen, A
Ayesha Jabeen 86, 89
Jameel, M
Mehwish Jameel 8
Jamil, F
Farah Jamil 97
Jamil, M. I
M. Imran Jamil 27
Jamil, M. Y
Muhammad Yousaf Jamil 183
Javaid, M.
Muhammad Javaid 54, 61
Javed, A
Asfa Javed 72
Javed, M
Mohsin Javed 12, 13
Javed, R
Rabia Javed 101
Jawad, M
Muhammad Jawad 62
Jbeen, A
Ayesha Jabeen 89
Junaid, M
Muhammad Junaid 177

K

Kabir M
Mahvish Kabir 17
Kaleem, F. M
Muhammad Farhat Kaleem 68
Kalim, R
Rukhsana Kalim 90, 93, 100, 103, 106, 107, 108
Kamran, M
Muhammad Kamran 96
Kausar, A. R
Abdul Rashid Kausar 118, 120, 145
Khalid, A
Abdullah Khalid 72
Amina Khalid 8, 82
Khalid, N
Nauman Khalid 128, 129, 130, 131, 132, 133, 134, 135, 136

Khalid, S
Sidra Khalid 34, 35
Khalid, Z
Zunera Khalid 146
khan, A
Ayesha khan 182
Khan, A
Arshad Khan 82
Khan, A. A
Arshad Ali Khan 82
Khan, A. M. M
Agha Muhammad Musa Khan 177
Khan, H
Humaira Khan 23
Khan, R. S
Rao Sanaullah Khan 128, 129
Khan, S. A
Shakeel Ahmad Khan 7, 8, 10, 17, 18
Khan, T
Tahseen Khan 113
Khan, T. M.
Tahseen Mohsan Khan 102
Khan, T. Z. A
Talha Zubair Ahmad Khan 147
Khan, Y. D
Yaser Daanial Khan 174
Khawar, H
Haleema Khawar 86
Khilat, F
Faiqa Khilat 94, 95, 96
Kitchlew, N
Naveda Kitchlew 116

L

Latif, M
Muhammad Latif 65
Luqman, M
M. Luqman 40, 41

M

M.Haroon, S
S. M.Haroon 24
Mahmood, M. T
Mohyuddin Tahir Mahmood 146
Mahmood, S
Sajid Mahmood 14, 37
Mahmood, S. N
Syeda Namrah Mahmood 86
Mahmood, Z
Zahid Mahmood 85, 86, 87, 88
Malik, A. M
Ayesha Mehmood Malik 96, 97, 98
Malik, I
Ilyas Malik 96, 97
Malik, M. H
Mumtaz H Malik 182
Malik, S
Sana Malik 94, 97
Malik, Z. F
Zohair Farooq Malik 127
Mamoon, D
Dawood Mamoon 100, 101, 104
Manzoor, R
Rubab Manzoor 43, 44, 50
Masood, S
Sajid Masood 151, 152
Masood, Z
Zahid Masood 22
Mehmood, A
A. Mehmood 178
Mehmood, U
Usman Mehmood 165
MIRAJ, F
Fizza Miraj 52
Mohsan, T
Tahseen Mohsan 115
Mohyuddin, A
Ayesha Mohyuddin 9, 14, 24, 25, 27
Mujahid, B
Beenish Mujahid 94
Munawar, K. S
Khurram Shahzad Munawar 8, 11
Munawar, S
Sufian Munawar 55
Munir, M
Mubbasher Munir 123
Munir, N
Nauman Munir 78
Munir, S
Sunaina Muneer 142
Murad, H. S
Hassan Sohaib Murad 145, 150
Mushtaq, A
Afia Mushtaq 103, 108
Mushtaq, M. T
Muhammad Tahir Mushtaq 175, 178
Mushtaq, T
Tayyaba Mushtaq 22

N

Nadeem, S
Sajid Nadeem 125
Sohail Nadeem 9, 14
Naeem, A. A
Adnan Ahmed Naeem 78
Naveed, M. A
Muhammad Asif Naveed 137
Naz, F
Farah Naz 150
Nazneen, M
Maimoona Nazneen 82
Niazi, A
A. Niazi 84
Nizami, R
Rahila Nizami 143
Nizami, S
Summiya Nizami 79

Noman, M
Muhammad Noman 65
Noor, N. A.
Naveed Ahmad Noor 32
Nosheen, S
Safia Nosheen 114
Noureen, I
Ifra Noureen 40, 44, 58

O

Owais, M.
M. Owais 166

P

Pervaiz, S
Sabeeka Pervaiz 87
Perveen, M
Memuna Perveen 150
Pervez, M. S
Muhammad Shoaib Pervez 167, 168

Q

Qaddir, I
Iqra Qaddir 14
Qamar, A. H
Azher Hameed Qamar 166
Qamar, M. A
M. A. QAMAR 15
Qazi, F. D
Farhan Daud Qazi 78, 79
Qureshi, N. A
N. A. Qureshi 84

R

Rabbani, M. T
Muhammad Tayyab Rabbani 78
Rabbi, A
Ahsan Rabbi 101
Rafay, A
Abdul Rafay 109, 110, 111, 112, 114, 115
Rafi, M. S
Muhammad Shaban Rafi 153, 154, 155, 156, 160
Rafiq, M
Muhammad Rafiq 39
Raja, N. A
Nouman Amjad Raja 65
Ramish, A
Asher Ramish 122, 123
Rasheed, H
Haroon Rasheed 122
Rasheed, M. A
Muhammad Athar Rasheed 125
Rashid, A
Amna Rashid 167
Rashid, M
Memoona Rashid 96, 97, 98
Rashid, M. U
Muhammad Usman Rashid 64, 65, 66, 67
Rashid, T
Tabasam Rashid 41, 42, 43, 46, 47, 53
Rashid, U
Umar Rashid 124
Uzma Rashid 169, 170
Rasool, N
Nouman Rasool 14, 35, 37, 38, 174
Rasool, Z. G
Zahid Ghulam Rasool 20
Raza, H
Hamid Raza 16
Raza, S. M. M
Syed Muhammad Muslim Raza 123
Rehman, B
Beenish Rehman 181
Rehman, H. U
Hafeez ur Rehman 104, 105, 106
Rehman, K. U
Khaliq Ur Rehman 116
Rehman, M. A
Muhammad Aziz ur Rehman 55, 56
Riaz, S
Shakeel Riaz 102, 103
Rubab, I
Iram Rubab 163, 170

S

S. Malik
Sana Malik 95
Saadat, Z.
Zakee Saadat 146
Sadaf, S
Saima Sadaf 144
Saddique, M. B
Muhammad Bilal Siddique 33
Sadiq, R
Ramla Sadiq 110, 111, 113, 114, 115
Saeed, M
Muhammad Saeed 39, 40, 41
Saeed, S
Saman Saeed 146
Saghir, S
Shahid Saghir 81
Saifi, I. A
Imran Akbar Saifi 116
Sajjad, F
Fatima Sajjad 164, 165, 166
Sajjad, U
Umer Sajjad 65, 67
Salahuddin, A
Ambreen Salahuddin 162, 163
Saleem, I
Imran Saleem 145
Saleem, M
M. Saleem 59

Maheen Saleem 87
Saleem, M. S
Musharafa Shoaib Saleem 70
Saleem, N
Naeem Saleem 39, 41, 44, 49, 51, 53, 54, 60, 61
Saleem, S
Sadia Saleem 85, 86, 87, 88
Shamim Saleem 92
Sami Ullah
Sami Ullah 7
Sardar, M. S
Muhammad Shoaib Sardar 43, 54
Shafiq, M. M. I
Muhammad Mudassar Ibne Shafiq 66
Shafiq, M.M. I
Muhammad Mudassar Ibne Shafiq 62, 64
Shah, S. S. A
Syed Sikander Ali Shah 119
Shah, Z. H
Zaheer Hussain Shah 16
Shahbaz, F
Farah Shahbaz 168
Shahid, M. H
Muhammad Shahid Hassan 100
Shahid, S
Sammia Shahid 7, 8, 9, 10, 15, 17, 19, 20, 21, 22, 23, 24
Shahzaad, B
Babar Shahzaad 177
Shahzad, A
Ayesha Shahzad 149, 152
Shahzad, K
Khuram Shahzad 115, 116, 125
Shahzadi, M
Mafia Shahzadi 87
Shami, S. H
Sajjad Haider Shami 68
Sharif, I
Iqra Sharif 19
Shaukat, R
Rozeen Shaukat 162
Sher, M. M
Muhammad Mudassar Sher 21
Shirwani, R. K
Rumana Khan Shirwani 94
Shoukat, K
Kanwal Shoukat 168
Shuja, A
Aleena Shuja 145
Shujja, A. H
Abdul Haseeb Shujja 145
Sial, M. H
Maqbool H. Sial 108
Siddiqi, A. F
Ahmed Faisal Siddiqi 123
Siddique, I
Imran Siddique 34, 56, 57
Siddique, M. U
Muhammad Usman Siddique 125
Siddiqui, A. F
Ahmed Faisal Siddiqui 113
Sohail,T
Tayyaba Sohail 170
Sultan, A
Ali Sultan 72, 73
Sultan, T
Tipu Sultan 80
Suneel, I
Ivan Suneel 85

T

Tabassum, M. F
M. F. Tabassum 40, 41
Taj, S
Saima Taj 22
Tanveer, A
Afifa Tanveer 144
Tanvir, M. F
Muhammad Furqan Tanvir 153, 155, 156
Tariq, F
Fariha Tariq 94, 97
Tariq, H
Hassan Tariq 72
Tariq, M. A
Muhammad Akram Tariq 142
Tariq. R
Rabia Tariq 168
Tashfeen, R
Rubeena Tashfeen 113
Tauqeer, M. D
Muhammad Danish Tauqeer 72, 73
Tayyab, M
Muhammad Tayyab 177
Tufail, N
Nazim Tufail 59

U

Uddin, W
Waqar Uddin 69, 70
Ulfat, W
Wajad Ulfat 14
Ullah, I
Irfan Ullah 68
Ullah, S
Saad Ullah 113
Ullah, Z
Z. Ullah 72
Usman, H. F.,
Hafiz Fuad Usman 178
Usman, M
Muhammad Usman 62

W

Waheed, H
Hafsa Waheed 26
Wajid, A
Ayesha Wajid 100, 105

Waqar, Y
Yasira Waqar 148
Waqas, M
Muhammad Waqas 176
Waseer, W. A
Wasif Ali Waseer 169

Y

Yaseen, F.,
Faiqa Yaseen 85
Yazdani, N
Naveed Yazdani 145
Yusuf, I
Ijaz Yusuf 122

Z

Zafar, S
Sohail Zafar 40, 41, 42, 43, 45, 47, 51, 52, 53, 54
Zaffar, W
Waliya Zaffar 168
Zahid, M
Muzdalfa Zahid 23
Zahid, Z
Zohaib Zahid 40, 45, 51, 52, 54
Zeb, K
K. Zeb 69, 70, 72
Zia, M. F
Muhammad Fahad Zia 178, 180
Zulfiqar, Z
Zenobia Zulfiqar 23
Zulqarnain, M
M. Zulqarnain 39

Keyword Index

(

(N-H)-Quasipseudomonotone Type I Operators....45

0

03B52 43
03E72....43
05C12....53
05C90....53

1

14H20 53
14H50 53

2

2000 Mathematics Subject Classification 40

3

32S15....53
3-TEPC Labeling 45

4

47H0 40
47H10 40
4th Generation District Heating 75

6

68T37....43

8

8-Hydroxyquinoline 9

9

91B06 43
91B10 43

A

Ab-Initio Studies 33
Academics....90
Accruals Anomaly 111
Acoustics 73
Across Mass Transfer (AMT)....56
Activity 15
Adaptive Data Analysis....69
Adiabatic Index 40, 45, 59
Adjacency Matrix 54
ADMET 14
Aedes Aegypti 11, 12
Aggregate Shape 63
Air Cooled Condenser....74
Alkaline Phosphatase 9
Allium....8
al-Musallam Alayhi....110
al-Musallam Fihi....110
Alopecia Areata....8
Aluminum Alloy 2024-T351 78
Am¯anah, Mas'¯ul¯ıyah 92
AMS Subject....53
Analytical Selection Techniques 46
Analytical Solution 56
Anisotropic Fluid 40
Annual Energy Demand 78
Antibacterial....8, 15, 18, 19
Antibacterial Photocatalytic Degradation....10
Antibacterials 22
Antibiotic 12
Antibiotics 36
Antidiabetic Activity....11
Antifungal 8, 19
Antimicrobial....7
Antioxidant 7, 8, 10, 18, 19
Approximate Quantity....51
ARCH 110
Architecture 95, 97
ARDL 103
Assessment 85, 95
ATMs....106
Atom-Bond Connectivity Index.... 40, 51
Atomic Absorption Spectrophotometer 9
Automobiles....73
Autonomous Automobiles....73
Axial Sources 44
Axial Symmetry 45

B

Bacteriophage 38
Baghdad 96
Bai Salam....110
Banach Operator Pair 60
Band Energy Gaps....14
Bangladesh....101
Banking 91

Banking Performance 106
Banking Sector Development....103
Benzenoid....52
Best Approximation....60
Best Approximations 55
Best Proximity Point 55
Best Proximity Points 41, 50
Bicyclic Graphs....54
Bidentate Bonding Behaviors.... 9
Bi-Layer Prismatic Panel 68
Binary Trees....51
Binomial Edge Ideal 52
Biodegradable Polymer 15
Biofilm 38
Biopesticde....11, 12
Bonding Agent 67
Borderline Personality Traits 88
Branching Vertex 51
Brans–Dicke Theory....50
Bridge Graph....53
Building Bye Laws 94
Building Control Authorities 94
Buildings....81
Burnt Bone 35
Burr Formation 78
Business Model....93

C

C -Class Function....54
Capacity Factor 77
Capital 96
Capital Investment Anomaly....111
Capra Operation 52
Caputo and Caputo-Fabrizio Fractional Derivative....53
Caputo Fractional Derivative 58
Caputo-Fabrizio Fractional Derivatives 58
Car Sharing 64
Cascade Heat Utilization 75
Case-Control Studies....36
CAT(0) Space....60
Cathedral....95
C-Class Function....44
CDA....83
Celestial Body 40
Ceramic Waste Aggregate....46
CFD 80
CG....92
Channel Flow 56
Chaotic Dynamical Systems 53
Chaotic Maps....53
Characteristic Objects Method (COMET)....47
Characterization 15, 19
Chelex Extraction....35
Chemical....67
Chemical Molecular Structures....53
Chemical Reaction 49, 58
Chemical Trees 51
Church....95
Circumcoronene Series of Benzenoid 43
Cities 94
Clerdodendrum 8
Closed Ball....55
Coarse Aggregate 63
Cocktail 38
Codeswitching....83
Co-Doped SnO2 Nanoparticles 15
Coincidence Point....59
Co-integration 109
Collapse....59
Colonialism....92
Colpocephalum Turbinatum 37
Columbicola Columbae....37
COMET 42
Common Fixed Point 44, 54, 55, 60
Comparative....15
Compatibility....92
Compatible of Type (E) 54
Compressive Strength 46, 47, 63
Concrete....46
Concrete Bonding....67
Concrete Compressive Strength 64
Conflict....104
Congestion 64
Connectivity Index....56
Conservation 47
Constrained Optimization 41
Contractive Type Mapping 44
Control System....76
Convective Heat Transfer 74
Coupled Boundary Conditions 34
Coupled System....34
Covariant Divergence 59
Crime Rate....102
Crimes 104
Crystallization....33
Culture 85
CuO 10
CuO Nanoparticles....7
Customer Satisfaction 91
Cytotoxicity 11

D

Dark Source Constituents 59
DC motors 73
DENV4-NS4B....14
Design 96

Deterioration 97
Deterrence 102
Developing Economies 107
DFT 14
Diamer Basha 66
Dielectric Properties 33
Directional Hausdorff Distance 42
Discourse 83
Dislocated Quasi B-Metric Spaces 55
Distraction Techniques 87
Distribution 17
Distribution Perturbation 48
District Heating 75
DNA Binding 13
DNA Extraction 35
DOLS 101
Domestic Pigeon 37
Doping 22
DSOS 77
D-Tree 37
Dynamic Programming 59

E

E. Coli K. Species 12
e-Business 107
Echinococcosis 16
Economic Activity 110
Economic Development 101
Economic Growth 103, 106, 108
Economic Growth and Money Supply 100
Economy 64
Ectoparacites 37
Edelstein-Suzuki 55
Education 104
Eight-Fold Fresnel Lens 68
Elastic Properties 28, 33
Electrode 13
Electronic 33
Electronic Property 28, 29, 30, 31, 32
Embodied Energy 81
Emigrants Wives 85
Empirical Mode Decomposition 69
Energy Dispersive X-Ray 22
Energy Harvester 27
Engineering Design Problems 41
Entropy Generation 60
Environment 81
Environmental Impact 95
Epidemiological Factors 37
Epidemiology 16
Equivalent Loads 80, 81
Estimating Collisions 66
ETAP 179
Ethanol 77, 78
Ethnicity 36
Evacuated Glass Tube Collectors 70
Evacuated Tube Collectors 78
Event Horizon 59
Exact Solution 58
Exact Solutions 49, 53
Exchange Rate 101
Exergy 75
Exergy Analysis 77, 78
Exotic Matter 40
Exponentially Accelerated 58
External Values 51

F

f(R,T)f(R,T) Gravity 45, 59
F(T) Gravity 59
F13 107
F43 108
Fast Fourier Transform 72
F-Contraction 51, 59
Feed-Forward 76
Figure of Merit 69
Finite Element Method 80, 81
First-Principles Study 28, 29, 30, 32
Fiscal Deficit 101
Fixed Fuzzy Point 51
Fixed Point 55
Fixed Point Index 34
Fixed Points 41, 50, 60
Flat Plate Collectors 78
Flavonoids 8
Flow Boiling 74
Fluence Rate 80
Fluidized Bed Boiler 77, 78
Fluorine Based Perovskites 28, 31, 32
Fluoro-Perovskites 30
FMOLS 101
Food Industry 91
FPGA 72
Fractional Calculus 48
Free Convection 53, 57
Future Perspective 15
Fuzzy Equivalence 42
Fuzzy Expansive Mapping 40
Fuzzy Logic Model 47
Fuzzy Mapping 51
Fuzzy Metric 41, 50
Fuzzy Metric Space 40
Fuzzy Set 41, 50, 51

G

G1 106
G10 108
G21 ..... 106, 108
GARCH 110
Gelatin 10, 15
General Population, Blood Donors 16
Generalized Bi-Quasi-Variational-Like Inequalities 45
Generalized Caputo Type K-Fractional Derivative 55
Generalized Dynamic Process 59
Generalized K-Fractional Derivative 55
Generalized Metric Space 44
Genetic Algorithm 66
Genetic Analysis 36
Geometric-Arithmetic Index 40
Geothermal 75
Global Warming 70
Gothic 95
Government 91
Graft Copolymerization 10
Graft Polymerization 15
Granda-Oliveros Cut-Off 59
Graphene 13
Gravitation 45
Green Synthesis 7
Green Synthesis Leaf Extract 10
Group Decisions And Negotiations 43

H

H10 107
H20 107
Halal 91
HBV 36
HCV 16
Heat Absorption 58
Heat Pump 75
Heat Transfer 76
Hesitant Fuzzy Linguistic Term Sets 42
Hesitant Fuzzy Linguistic Term Sets (HFLTSS) 43
Hesitant Fuzzy Set 43
Hesitant Fuzzy Sets 42, 47
Hesitant Intuitionistic Fuzzy Linguistic Term Sets 42
Hesitant Intuitionistic Fuzzy Linguistic Term Sets (HIFLTSS) 43
Hetero-Junction Photocatalytic Water Oxidation 14
Hierarchical Decomposition 69
High-Risk Population 16
Household Income 100
H-Pantacenic Nanotube 40
Human Capital 104
Hydraulic Optimization 76
Hydrodynamics 50
Hypodermosis 15, 17

I

Identity 83
I-Fuzzy Goals 46
Ijarah 102
IL-28B 36
Implementation 94
Inclined Plane 58
Index 110
India 111
Indirect Field-Oriented Control (IFOC) 70
Indonesia 75
Induction Motor (IM) 70
Insecticidal 8
Insecure Dependence 88
Instability 50
Instability Range 45
Institutional Quality 104
Integral Conditions 34
Integral Equations 59
Intellectual Capital Practices 105
Intelligent Vehicles 73
Interest Rates 100, 109
Interfacial Model 46
Interferon-Free Antivirals 16
International Trade 107
Interval Valued Fuzzy Set (IVFS) 40
Intuitionistic Fuzzy Sets 46
IRF 109, 110
Irregular Assignment 46
Irregular Total K-Labeling 46
Irregularity Strength 46
Irreversibility 77, 78
Irrigation Deficit 66
Irrigation Shortage 66
Islamabad 96
Islamic 96
Islamic Banking 102, 108, 110
Islamic Banks 92
Islamic Deposits 110
Islamic Economics 103
Islamic Financing and Investments 110
Islamic Microfinance 93
ISOS 77
IVFSM 40
IVFSMMDM 40

J

JEL 103
JEL Classification 106
JEL Classifications 107
Johansen Co-Integration 104

K

Kalina Cycle 69
Kamojang 75
KMI-30 110
Knowledge Sharing Practices 105
KSE 110
KSE-30 110

L

Labor Force Survey 102
Labour Force 104
Labour Productivity 104
Lahore 94
Larvicidal 11, 12
Learner Centered Approach 82
Least Eigenvalue 54
Left/Right K–Sequentially Complete 55
Levenberg–Marquardt (LM) 70
Life Cycle Assessment 81
Light Emitting Diodes 73
Light Verb Constructions 83
Line Graph 40, 52
Line Optimization 79
Linguistic Decision-Making 43
Linguistic Scale Function (LSF) 43
Load Flow 179
Locally Convex Hausdorff Topological Vector Spaces 45
Logit Model 102
Long Term Growth 105
Loops 60
Low Human Developed Countries 103
Low Temperature District Heating 75
L-R-Type Generalized Fuzzy Numbers 47
L–R-Type Generalized Fuzzy Numbers 42
LSMI 110

M

M15 106
Machine Learning, Classification 37
Machining Simulation 78
Magnetic Field 57, 60
Magnetic Materials 32
Magnetic Properties 32
Magneto-Electronic Property 30
Malaysia 95
Mappings 60
Marketing 91
Mass Diffusion 49
Materials 81
Maxwell Fluid 57
Mechanical 67
Mechanical Properties 64
Mechanical Property 30
Mellin Transform 55
Membrane Distillation 78
Meson-Meson Interaction 27
Metal-Schiff Base Complexes 11
Metric Space 55
MHD 56, 58
Microstructure 34
Military Expenditure 104
Minerals 9
Misery Index 104
Mix Ratio 67
Mixed Convection 60
Mixed Model Assembly Line 79
Mixed-ligand Complexes 9
Mlp 37
Mn-Doped ZnO 18
Model 60
Modified IFMS 54
Modulus of Rupture 64
Molecular Diagnostics 17
Molecular Docking 13, 14
Molecular Graph 43, 52
Molecular Graphs 56
Monetary Union 109
Money Demand 100, 101
Money Markets 109
Monument 95
Mood Liability 88
Morpheme Order Principle 83
Morphologies 97
Morphology 22
Morphosyntactic Constraints 83
Mosquito 11, 12
Mudaraba 102
Mughal 97
Multi Objective Genetic Algorithm 76
Multi-Criteria Decision Making 42
Multi-Criteria Decision-Making (MCDM) 43
Multi-Criteria Group Decision-Making (MCGDM) 47
Multi-Criteria Linear Programming 46
Multi-Drug Resistance 36
Multi-Objective 66
Multiple Criteria Analysis 43
Multiple Zagreb Index 53
Multivalued Mapping 55
Musharaka 102
Muslim Society 92
Mutual Funds 110

N

Naïve Bayes Classifier 37
Nanocomposite 15
Nanocones....52
Nanofluid....60
Nanoparticles 10, 18, 22
Nanostructures....51
Nanowires 27
Narumi-Katayama Index....53
Natural Convection....48
Natural Convection Flow 58
Natural Gas Consumption....106
Natural River Sand....47
NAV 110
Neglected Tropical Diseases 16
Nelder-Mead Simplex Method....41
Neuropathology....17
Newtonian and Post-Newtonian Regimes....50
Newtonian Heating....48
Ni Doped ZnO Nanocomposites 10
Nicotiana Benthamiana 39
Nonlinear Analysis....80, 81
Nonlinear Response Optimization 80, 81
Non-Spherical Source 44

O

O17....107
Occurrence 15
Ocean Energy....71
Octagonal Spherical Secondary Optical Element....68
OFDM 72
Omeprazole 9
Online Cash Deposits 106
Online Cash Withdrawals....106
Online Communication 107
Online Marketing....107
Online Shopping 107
Ontology....54
Ontology Mapping....54
Optical Fiber Daylighting 68
Optical Properties....28, 32
Optical Properties and Thermoelectric Properties 33
Optical Property 28, 29, 30, 32
Optimal Coincidence Best Proximity Point....40
Optimal Fuzzy Best Proximity Coincidence Points 41, 50
Optimization....66, 75
Opto-Electronic Property....29, 32
Organic Extraction Method....35
Organic Rankine Cycle 69, 74
Organic Rankine Cycle (ORC)....74, 76
Oscillation....57
Osmotic Power 71
OTEC....71
OTEG 71
Outranking Approach 43
Outranking Method....42
Oxide Perovskites.... 29, 30

P

P40 103
Pakistan....16, 36, 90, 91, 95, 106, 111
Pakistan Economy 101
Panel Causality Test....101
PANI 13
Para-line Graph 51
Parallel Sub-Assembly Shop 79
Parametric....48
Pareto Optimal Security Strategies....46
Partition Algorithm 42
Part-load Operation 74
PCM Storage....77
Pedroni Co-integration 101
Per Capita GDP 101
Perceived Financial Risk 107
Perceived Risk 107
Performance Assessment 77, 78
Personal Pronoun....83
Perturbation Compact....48
Perturbation Scheme....40
Phenylenes....40
Photocatalytic 19
Photo-Catalytic Degradation 7
Phytochemicals 14
PI Control Scheme Fuzzy Logic Controller (FLC)....70
Piezoelectric Potential....27
Pilgrim Dark Energy 59
Planning 96
Plant Extracts 11, 12
Plate Heat Exchanger 74, 76
Political Economy 101
Population....60
Porous Medium....57
Positive Solutions....34
Post-Transcriptional Gene Silencing 39
Poverty....102
Powder Diffraction 33
Pozzolanic Material 64
Pressure Drop.... 74, 76
Pressure Variation Study 29, 31, 32
Primary....53
Principle Factor Analysis....102
Products. JelWords....108
Properties....18
Property Crime 102
Proportional Integral....76

Protein Solubility 37
Proximal 50
Proximal Fuzzy Contraction Of Typei 40
Proximal Fuzzy Contraction Of Typeii 40
Proximal Ψ-Contractions of Types I and II 41
Pseudobrookite 14
Pseudomonas Aeruginosa 38
Psychological Disorder 87
Psycho-Social 85
Public Transport 64
Pulse Width Modulation (PWM) 70
Purchase Intention 107

Q

Q32 103
Qiagen Kit Method 35
Quark Potential Model 27

R

R1233zde 74
R245FA 74
Ra's Al-Mal 110
Radial Artificial Bee Colony Algorithm 41
RAKRIC 78
Raman Spectroscopy 33
Randic Index 51
Random Forest 37
Real Effective Exchange Rate 100
Real Interest Rate 101
Receivers 73
Recommendations 17
RED 80
Reduced Reciprocal Randi´C Index 51
Reduced Second Zagreb Index 51
Refinement Inequality 54
Relative Road Safety Measures 66
Relativistic Dissipative Fluids 45
Reliability and Validity 85
Remedy and Positive Basis 41
Repeated Focused Inside Contractions 41
Research 16
Resistance 12, 36
Resonating Group Method 27
RESOOSE Model 66
Resource Scarcity 103
Response Prevention 87
Risk Factor 15
Road Crash Injuries 66
Road Traffic Crashes 66
Roads 73
Robot Sensing Systems 73
Rough Set 41

S

SAARC 109
Safety Improvement 66
Sanskruti Index 43, 52, 56
SB–Metric Space 54
Scheme Polytropic Index 48
Schiff Base 11
Schiff Base-Metal Complexes 13
Schottky Contact 27
SCMV 39
Scotland 95
Second Grade Fluid 48
Secondary Network 75
Sector Analysis 111
Segment 51
Self-Gravitating System 44
Self-Gravitating Systems 44
Self-Interacting Brans–Dicke Theory 44
SEM 102
Semiconductors 28
Sensor Phenomena And Characterization 73
Sequentially Cohen-Macaulay Ring 52
Service Quality 91
Set Point Tracking 76
SGF 92
Shariah 110
Shear-Free Condition 45
Silica 13
Silica Fume 64
Similarity Measure 42, 54
Simulation Functions 55
Sliding Pressure Strategy 76
Slip 57
Slip Condition 56
Social Development 105
Soft Complete Lattice 56
Soft Knaster–Tarski Fixed Point 56
Soft Least (Soft Greatest) Fixed Point 56
Soft Order Preserving 56
Soft Rough Fuzzy Set 41
Soft Set 41, 56
Software Defined Radio 72
Solar Water Heating 70
Sparse Vector 54
Spectroscopy 11, 13
Speech 83
Stability 60
Stagnation 41
State Capacity 107
Static Var Compensator 179
Stehfest's and Tzou's Algorithms 58
Stillbirth 17
Stock Market Development 103

Strong-Convergence 60
Structural Phase Transition 29, 31, 32
Structure Scalar 44
Structure Scalars 44, 45
Subdivision Graph 52
Sub-Zero Temperature Areas 70
Sudden Fetal Death 17
Sudden Infant Death 17
Sudden Intrauterine Death 17
Sudden Perinatal Death 17
Sugarcane Mosaic Virus 39
Sulphate 9
Supercapacitor 13
Susceptibility 36
Suspension 38
Sustainability 64, 81
Switching Rule 50
Synthesis 15, 19
System Morpheme Principle 83

T

T Norm 40
Tarbela 66
Tax and Tariff Reform 107
Taxation and Development 107
Teacher Centered Approach 82
Technical Education 104
Temperament 85
Tensile Strength 63
Terrorism 104
TGA-DSC 15
The Characteristic Object Method 42
The graphs of Convex Polytopes 45
Thermal Optimization 76
Thermal Properties 28
Thermodynamic 75
Thermodynamic Study 29, 31, 32
Thermoelectric Generator 69
Thin Films 10
Thought Stopping 87
Tidal Current 71
Time Series 102
Time-Varying Delays 53
Titania Nanotube 56
Titanium Oxide 14
Topological Index 51, 52
Topological Indices 51, 52
Topology Optimization 80, 81
Topsis 43
Total Demineralisation Method 35
Trade 107
Trade Deficit 100
Trade Liberalization 107
Trade Policy 105
Traffic Collisions 66
Transformation 94
Transistors 73
Transmitters 73
Transport Properties 34
Treatment Guidelines 16
Tree 51
Triangular Benzenoid 53
TRNSYS 75
Trust 107
Turning 78
Two Phase 74

U

Uncertainty Modelling 43
Unconstraint Optimization 41
Under Voltage 179
Unicyclic Graph 51
Uniform Illumination 68
University Students 85
Urban 96
Urban and Rural Population 101
Urban Form 94
Urbanism 94
Urbanization 94
Used Foundry Sand 47
UV Lamps 80
UV Reactor 80

V

Vaccination 17
Variable Permeability 57
Variational Inequality Problems 55
VDC 109, 110
Vertical Plate 53
VIGS 39
Violent Crime 102
Virus Induced Gene Silencing 39
Viscoelastic Fluid 57
Viscous Fluid 53

W

Waste Heat Recovery 69
Water Disinfection 80
Water Insoluble Matter 9
Wave Converter 71
Weakly Subsequentially Continuous 54
Welfare 107
Women's Well-Being 93

Workability 46, 63
Workplace Bullying 90
Writing Skills 82

X

X(3872) 27
X-Ray Analysis 13
X-Ray Analysis Antibacterial Activity 11

Y

Yolk-Shell Hollow Spheres 14

Z

Zagreb Indices 53
Zakat 92
Zakat Institution 92
Zero-Sum Matrix Game 46
ZnO 27

A

A–Dominated Multivalued Mapping 55

Ψ

Ψ (Σ, A)-Lower-Bounding Asymptotically Contractive Mapping 50
Ψ (Σ, A)-Lower-Bounding Mapping 50

Table –I

School/ Center/ Department wise listing of publications:

School/Department wise listing of Publications				
	Articles	**Conference Papers**	**Books**	**Total**
School of Science				
• Department of Chemistry	26	25		51
• Department of Physics	16	7		23
• Department of Life Science	9	4		13
• Department of Biotechnology	1			1
• Department of Mathematics	72	6		78
Total	**124**	**42**		**166**
School of Engineering				
• Department of Civil Engineering	11	8		19
• Department of Electrical Engineering	8	7		15
• Department of Energy Engineering	10			10
• Department of Industrial Engineering	2	2		4
• Department of Mechanical Engineering	4			4
Total	**35**	**17**		**52**
Institute of Communication and Cultural Studies				
• ICCS	2	3		5
Total	**2**	**3**		**5**
Institute of Clinical Psychology				
• ICP	9	6		15
Total	**9**	**6**		**15**
Institute of Islamic Banking				
• IIB	6	4		10
Total	**6**	**4**		**10**
School of Architecture and Planning				
• SAP	5	15		20
Total	**5**	**15**		**20**
School of Business and Economics				
• Department of Economics	22	9		31
• Department of Finance	9	6	1	16
• Department of Management	13	3		16
• Department of Operations and Supply Chain	1	5		6
• Department of Quantitative Methods	2			2
• Department of Skills Development	1	2		3
• Department of Information Systems	1			1
Total	**49**	**25**	**1**	**75**

School of Commerce and Accountancy				
• SCA	1			1
Total	**1**			**1**
School of Food and Agricultural Sciences				
• SFAS	19			19
Total	**19**			**19**
School of Governance and Society				
• SGS	2		1	3
Total	**2**		**1**	**3**
School of Health Sciences				
• SHS	13	6		19
Total	**13**	**6**		**19**
School of Professional Advancement				
• SPA	4	3		7
Total	**4**	**3**		**7**
School of Social Sciences and Humanities				
• Department of Education	8	6		14
• Department of English Language and Literature	6	18		24
• Department of Gender Studies	2	7		9
• Department of Islamic Thought and Civilization	1			1
• Department of Political Sciences	3	11		14
• Department of Psychology	1	6	1	8
• Department of Sociology	3	6		9
• Department of Special Needs Education	3	11		14
Total	**27**	**65**	**1**	**93**
School of Systems and Technologies				
• Department of Computer Science	10			10
• Department of Informatics and Systems	6			6
Total	**16**			**16**
School of Textile Design				
• STD	4	3		7
Total	**4**	**3**		**7**
Quality Enhancement Cell				
• QEC		3		3
Total		**3**		**3**
Office of Participants affairs				
• OPA			1	1
Total			**1**	**1**
Grand Total	**316**	**192**	**4**	**512**

Table –II

School/ Center/ wise graph of publications:

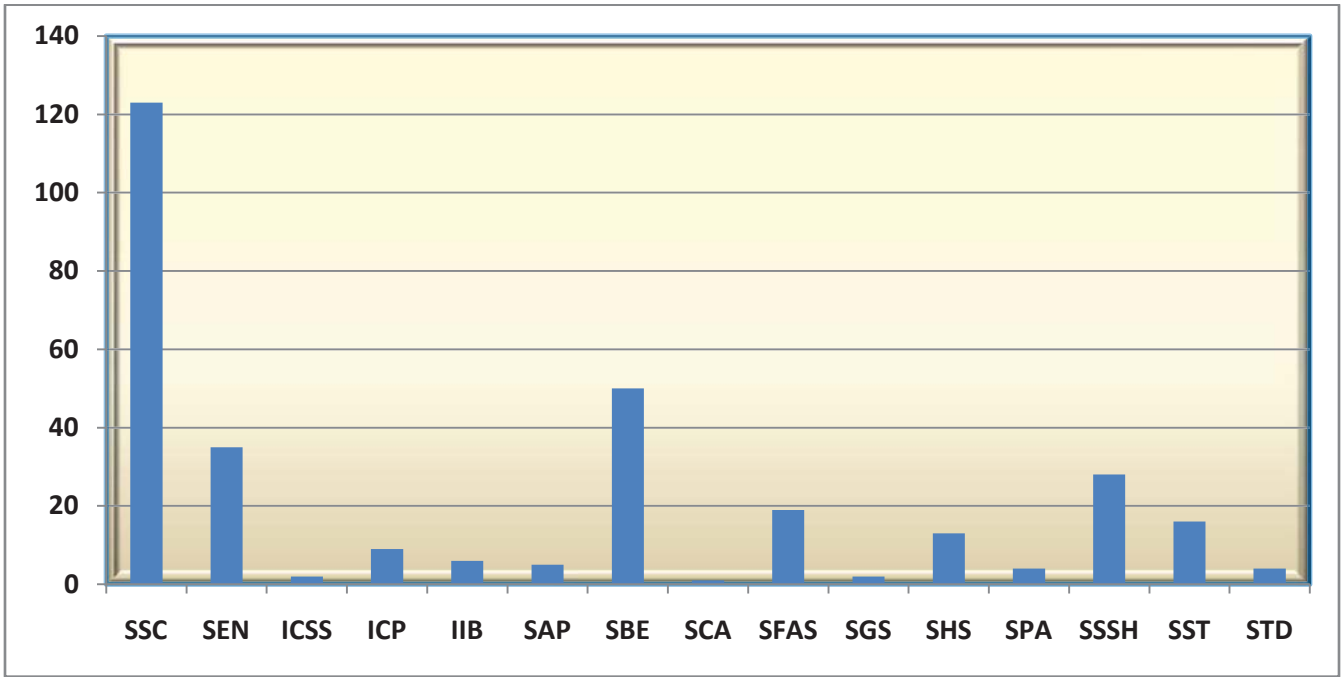


Table-III

Number wise (Descending-order) publications by authors

Author	No.
Nauman Khalid	18
Sohail Zafar	15
Muhammad Sohail Afzal	13
Tabasam Rashid	11
Muhammad Azhar Iqbal	10
Umar Bacha	10
Muhammad Imran	9
Mujahid Abbas	9
Muhammad Shahid Hassan	8
Nazia Erum	8
Rukhsana Kalim	8
Abdul Rafay	7
Muhammad Imran Asjad	7
Naeem Saleem	7
Noman Arshed	7
Sadia Saleem	7
Sammia Shahid	7
Zahid Mahmood	7
Zohaib Zahid	7
Ali Ajwad	6
Shakeel Ahmad Khan	6
Akbar Ali	5
Dawood Mamoon	5
Muhammad Shaban Rafi	5
Nouman Rasool	5
Aun Haider	4
Hafeez ur Rehman	4
Khizar Hameed	4
Khuram Shahzad	4
Muhammad Mudassar Ibne Shafiq	4
Muhammad Usman Rashid	4
Ramla Sadiq	4
Rubab Manzoor	4
Shahzad Faizi	4
Shaukat Iqbal	4
Usman Ilyas	4
Abdul Rashid Kausar	3

Amina Khalid	3
Fariha Tariq	3
Ifra Noureen	3
Imran Siddique	3
Mohsin Javed	3
Mudassar Abbas	3
Muhammad Saeed	3
Rao Sanaullah Khan	3
Sajed Ali	3
Sami Ullah Bajwa	3
Sana Malik	3
Saqib Farid	3
Seema Arif	3
Syed Ali Mardan Azmi	3
Umbreen Iftikhar	3
Umer Ayub	3
Waqar Ahmad	3
Yasira Waqar	3
Ahmed Faisal Siddiqi	2
Ambreen Salahuddin	2
Ayesha Jabeen	2
Ayesha Mohyuddin	2
Ayesha Wajid	2
Faheem Ijaz	2
Faiqa Khilat	2
Farhan Daud Qazi	2
Fatima Sajjad	2
Hassan Sohaib Murad	2
Imran Saleem	2
Javaid. Ali	2
Junaid Haseeb	2
K. Zeb	2
Khalil Ahmed Arbi	2
Khurram Shahzad Munawar	2
M. F. Tabassum	2
M. Luqman	2
Maryam Aleem	2
Mohammad Ayaz	2
Muhammad Asif Naveed	2
Muhammad Aziz ur Rehman	2
Muhammad Fahad Zia	2

Muhammad Mobeen Ajmal	2
Muhammad Shoaib Sardar	2
Muhammad Tahir Mushtaq	2
Muhammad Tayyab	2
Muhammad Yusuf Awan	2
Osama Aziz	2
Sajid Mahmood	2
Shahzad Ahmed	2
Shakeel Riaz	2
Sohail Nadeem	2
Syed Rehan Ashraf	2
Tashfeen M. Azhar	2
Waqar Hussain	2
Waqar Uddin	2
Yaser Daanial Khan	2
Zeshan Ahmad	2
A. Mehmood	1
Abdul Aziz Bhatti	1
Abdul Ghaffar	1
Abdul Hameed	1
Abdul Haseeb Shujja	1
Abrar ul Hassan	1
Adnan Ahmed Naeem	1
Afia Mushtaq	1
Agha Muhammad Musa Khan	1
Ahmad Hassan Butt	1
Ahsan Rabbi	1
Aleena Shuja	1
Ali Abdullah	1
Ameer A. Basit	1
Amna Arif	1
Arshad Ali Khan	1
Arshad Khan	1
Asher Ramish	1
Asma Awan	1
Ayesha Shahzad	1
Babar Shahzaad	1
Beenish Mujahid	1
Beenish Rehman	1
Faiqa Yaseen	1
Faiza Anwar	1

Farah Naz	1
Farhan Ashraf	1
Farrukh Ijaz	1
Fizza Miraj	1
Ghulam Haider	1
H.M. Zahid Iqbal	1
Hafiz Fuad Usman	1
Hafiz Muhammad Umar Aslam	1
Haleema Khawar	1
Hamid Raza	1
Haris Aslam	1
Haroon Rasheed	1
Iftikhar Ahmad	1
Ijaz Ahmad Chaudhary	1
Ijaz Aslam	1
Imran Akbar Saifi	1
Iqra Qaddir	1
Iram Amjad	1
Irfan Ullah	1
Ivan Suneel	1
Khaliq Ur Rehman	1
Kulsoom Belal	1
M. A. QAMAR	1
M. Imran Jamil	1
M. K. Azam	1
M. Saleem	1
M. Sohail Gilani	1
M. Zulqarnain	1
Mafia Shahzadi	1
Maheen Saleem	1
Mahvish Kabir	1
Maimoona Nazneen	1
Manan Aslam	1
Mazhar Hayat	1
Mehwish Jameel	1
Memuna Perveen	1
Mirrat Gul Butt	1
Mohammad A. H. Chauhan	1
Mohammad Shaukat Rahim Chowdhury	1
Mubbasher Munir	1
Muhammad Adnan Izhar	1

Muhammad Aizaz Akmal	1
Muhammad Akram Tariq	1
Muhammad Ali	1
Muhammad Amjad	1
Muhammad Arif	1
Muhammad Asim	1
Muhammad Athar Rasheed	1
Muhammad Awais Abbasi	1
Muhammad bilal	1
Muhammad Bilal Siddique	1
Muhammad Farhat Kaleem	1
Muhammad Furqan Tanvir	2
Muhammad Gulzar	1
Muhammad Javaid	1
Muhammad Jawad	1
Muhammad Junaid	1
Muhammad Latif	1
Muhammad Muslim Raza	1
Muhammad Noman	1
Muhammad Rafiq	1
Muhammad Tayyab Rabbani	1
Muhammad Umer Azeem	1
Muhammad Usman	1
Muhammad Usman Siddique	1
Muhammad Waqas	1
Mumtaz H Malik	1
Musharafa Shoaib Saleem	1
Nauman Munir	1
Naveda Kitchlew	1
Naveed Ahmad Noor	1
Naveed Yazdani	1
Nazim Tufail	1
Nouman Amjad Raja	1
Rafia Firdous	1
Rana Zamin Abbas	1
Rahila Nizami	1
Rozeen Shaukat	1
Rubeena Tashfeen	1
Rumana Khan Shirwani	1
Saad Ullah	1

Sabeeka Pervaiz	1
Saima Gulzar	1
Saima Ijaz	1
Sajid Masood	1
Sajid Nadeem	1
Sajjad Haider Shami	1
Salman Ahmad	1
Sami Ullah	1
Sana Daud	1
Sara Ahmad	1
Sara Mehmood Durrani	1
Sehar Azhar	1
Shah Muhammad Haroon	1
Shahid Bashir	1
Shahid Saghir	1
Shahjahan Alamgir	1
Shamim Saleem	1
Sher Afghan	1
Sufian Munawar	1
Sumera Shan Ahmad	1
Summiya Nizami	1
Sunaina Muneer	1
Syed Ali H. Bukhari	1
Syed Sajjad Haider	1
Syed Sikander Ali Shah	1
Syeda Hameeda Batool Gillani	1
Syeda Namrah Mahmood	1
Tahseen Khan	1
Tahseen Mohsan Khan	1
Tipu Sultan	1
Umar Ilyas	1
Umer Ali	1
Umer Sajjad	1
Urooj Fatima	1
Usman Javed Gilani	1
Usman Mehmood	1
Uzma Ehtesham	1
Uzma Rashid	1
Wajad Ulfat	1
Waqas Farooq	1
Wasif Ali Waseer	1

Zaheer Hussain Shah	**1**
Zahra Ali	**1**
Zakee Saadat	**1**
Zeeshan Hamid	**1**
Zohair Farooq Malik	**1**

Table-IV

Author wise (Alphabetical) publications

Author	No.
A. Mehmood	1
Abdul Aziz Bhatti	1
Abdul Ghaffar	1
Abdul Hameed	1
Abdul Haseeb Shujja	1
Abdul Rafay	7
Abdul Rashid Kausar	3
Abrar ul Hassan	1
Adnan Ahmed Naeem	1
Afia Mushtaq	1
Agha Muhammad Musa Khan	1
Ahmad Hassan Butt	1
Ahmed Faisal Siddiqi	2
Ahsan Rabbi	1
Akbar Ali	5
Aleena Shuja	1
Ali Abdullah	1
Ali Ajwad	6
Ambreen Salahuddin	2
Ameer A. Basit	1
Amina Khalid	3
Amna Arif	1
Arshad Ali Khan	1
Arshad Khan	1
Asher Ramish	1
Asma Awan	1
Aun Haider	4
Ayesha Jabeen	2
Ayesha Mohyuddin	2
Ayesha Shahzad	1
Ayesha Wajid	2
Babar Shahzaad	1
Beenish Mujahid	1
Beenish Rehman	1
Dawood Mamoon	5
Faheem Ijaz	2
Faiqa Khilat	2

Faiqa Yaseen	1
Faiza Anwar	1
Farah Naz	1
Farhan Ashraf	1
Farhan Daud Qazi	2
Fariha Tariq	3
Farrukh Ijaz	1
Fatima Sajjad	2
Fizza Miraj	1
Ghulam Haider	1
H.M. Zahid Iqbal	1
Hafeez ur Rehman	4
Hafiz Fuad Usman	1
Hafiz Muhammad Umar Aslam	1
Haleema Khawar	1
Hamid Raza	1
Haris Aslam	1
Haroon Rasheed	1
Hassan Sohaib Murad	2
Ifra Noureen	3
Iftikhar Ahmad	1
Ijaz Ahmad Chaudhary	1
Ijaz Aslam	1
Imran Akbar Saifi	1
Imran Saleem	2
Imran Siddique	3
Iqra Qaddir	1
Iram Amjad	1
Irfan Ullah	1
Ivan Suneel	1
Javaid. Ali	2
Junaid Haseeb	2
K. Zeb	2
Khalil Ahmed Arbi	2
Khaliq Ur Rehman	1
Khizar Hameed	4
Khuram Shahzad	4
Khurram Shahzad Munawar	2
Kulsoom Belal	1
M. A. QAMAR	1
M. F. Tabassum	2
M. Imran Jamil	1

M. K. Azam	1
M. Luqman	2
M. Saleem	1
M. Sohail Gilani	1
M. Zulqarnain	1
Mafia Shahzadi	1
Maheen Saleem	1
Mahvish Kabir	1
Maimoona Nazneen	1
Manan Aslam	1
Maryam Aleem	2
Mazhar Hayat	1
Mehwish Jameel	1
Memuna Perveen	1
Mirrat Gul Butt	1
Mohammad A. H. Chauhan	1
Mohammad Ayaz	2
Mohammad Shaukat Rahim Chowdhury	1
Mohsin Javed	3
Mubbasher Munir	1
Mudassar Abbas	3
Muhammad Adnan Izhar	1
Muhammad Aizaz Akmal	1
Muhammad Akram Tariq	1
Muhammad Ali	1
Muhammad Amjad	1
Muhammad Arif	1
Muhammad Asif Naveed	2
Muhammad Asim	1
Muhammad Athar Rasheed	1
Muhammad Awais Abbasi	1
Muhammad Azhar Iqbal	10
Muhammad Aziz ur Rehman	2
Muhammad bilal	1
Muhammad Bilal Siddique	1
Muhammad Fahad Zia	2
Muhammad Farhat Kaleem	1
Muhammad Furqan Tanvir	1
Muhammad Gulzar	1
Muhammad Imran	9

Muhammad Imran Asjad	7
Muhammad Javaid	1
Muhammad Jawad	1
Muhammad Junaid	1
Muhammad Latif	1
Muhammad Mobeen Ajmal	2
Muhammad Mudassar Ibne Shafiq	4
Muhammad Muslim Raza	1
Muhammad Noman	1
Muhammad Rafiq	1
Muhammad Saeed	3
Muhammad Shaban Rafi	5
Muhammad Shahid Hassan	8
Muhammad Shoaib Sardar	2
Muhammad Sohail Afzal	13
Muhammad Tahir Mushtaq	2
Muhammad Tayyab	2
Muhammad Tayyab Rabbani	1
Muhammad Umer Azeem	1
Muhammad Usman	1
Muhammad Usman Rashid	4
Muhammad Usman Siddique	1
Muhammad Waqas	1
Muhammad Yusuf Awan	2
Mujahid Abbas	9
Mumtaz H Malik	1
Musharafa Shoaib Saleem	1
Naeem Saleem	7
Nauman Khalid	18
Nauman Munir	1
Naveda Kitchlew	1
Naveed Ahmad Noor	1
Naveed Yazdani	1
Nazia Erum	8
Nazim Tufail	1
Noman Arshed	7
Nouman Amjad Raja	1
Nouman Rasool	5
Osama Aziz	2
Rafia Firdous	1
Rahila Nizami	1

Ramla Sadiq	4
Rana Zamin Abbas	1
Rao Sanaullah Khan	3
Rozeen Shaukat	1
Rubab Manzoor	4
Rubeena Tashfeen	1
Rukhsana Kalim	8
Rumana Khan Shirwani	1
Saad Ullah	1
Sabeeka Pervaiz	1
Sadia Saleem	7
Saima Gulzar	1
Saima Ijaz	1
Sajed Ali	3
Sajid Mahmood	2
Sajid Masood	1
Sajid Nadeem	1
Sajjad Haider Shami	1
Salman Ahmad	1
Sana Daud	1
Sami Ullah	1
Sami Ullah Bajwa	3
Sammia Shahid	7
Sana Malik	3
Saqib Farid	3
Sara Ahmad	1
Sara Mehmood Durrani	1
Seema Arif	3
Sehar Azhar	1
Shah Muhammad Haroon	1
Shahid Bashir	1
Shahid Saghir	1
Shahjahan Alamgir	1
Shahzad Ahmed	2
Shahzad Faizi	4
Shakeel Ahmad Khan	6
Shakeel Riaz	2
Shamim Saleem	1
Shaukat Iqbal	4
Sher Afghan	1
Sohail Nadeem	2
Sohail Zafar	15

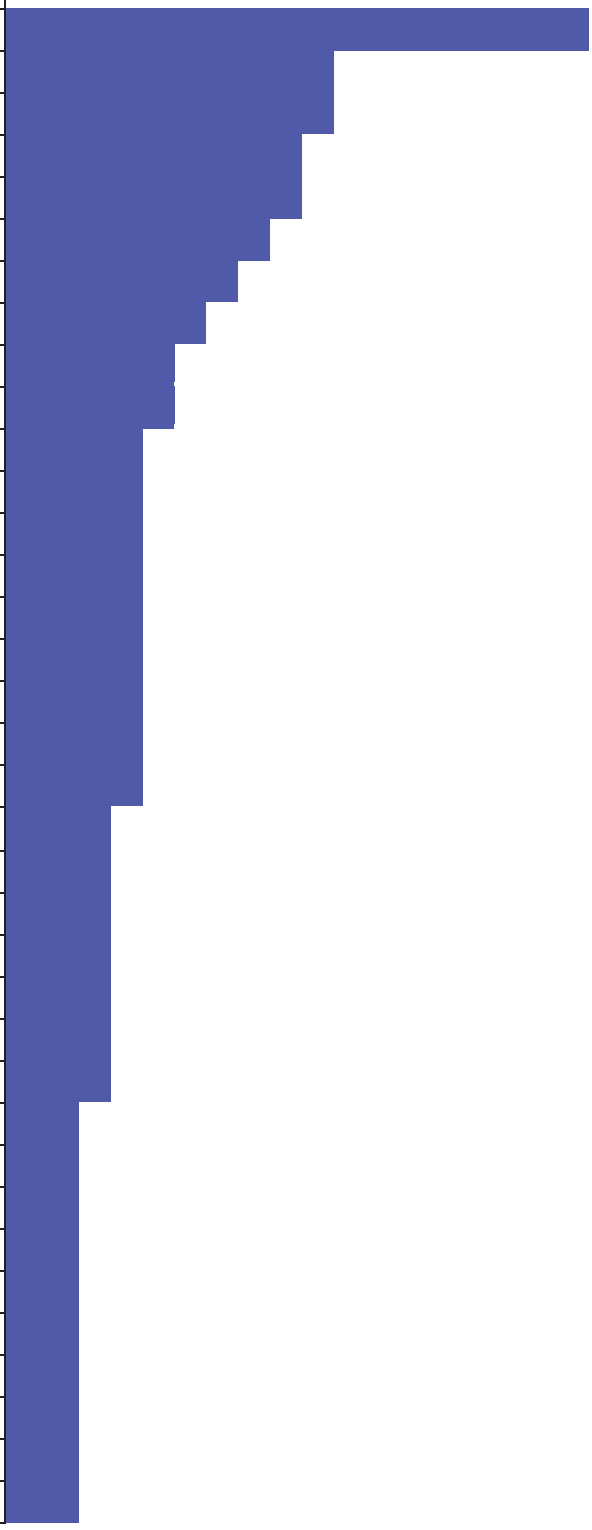
Sufian Munawar	1
Sumera Shan Ahmad	1
Summiya Nizami	1
Sunaina Muneer	1
Syed Ali H. Bukhari	1
Syed Ali Mardan Azmi	3
Syed Rehan Ashraf	2
Syed Sajjad Haider	1
Syed Sikander Ali Shah	1
Syeda Hameeda Batool Gillani	1
Syeda Namrah Mahmood	1
Tabasam Rashid	11
Tahseen Khan	1
Tahseen Mohsan Khan	1
Tashfeen M. Azhar	2
Tipu Sultan	1
Umar Bacha	10
Umar Ilyas	1
Umbreen Iftikhar	3
Umer Ali	1
Umer Ayub	3
Umer Sajjad	1
Urooj Fatima	1
Usman Ilyas	4
Usman Javed Gilani	1
Usman Mehmood	1
Uzma Ehtesham	1
Uzma Rashid	1
Wajad Ulfat	1
Waqar Ahmad	3
Waqar Hussain	2
Waqar Uddin	2
Waqas Farooq	1
Wasif Ali Waseer	1
Yaser Daanial Khan	2
Yasira Waqar	3
Zaheer Hussain Shah	1
Zahid Mahmood	7
Zahra Ali	1
Zakee Saadat	1
Zeeshan Hamid	1

Zeshan Ahmad	**2**
Zohaib Zahid	**7**
Zohair Farooq Malik	**1**

Table-V

Number wise (Descending-order) JCR publications by authors

Author	No.
Nauman Khalid	18
Tabasam Rashid	10
Umar Bacha	10
Muhammad Azhar Iqbal	9
Sohail Zafar	9
Mujahid Abbas	8
Nazia Erum	7
Muhammad Imran	6
Muhammad Imran Asjad	5
Muhammad Sohail Afzal	5
Akbar Ali	4
Aun Haider	4
Khizar Hameed	4
Muhammad Javaid	4
Naeem Saleem	4
Nouman Rasool	4
Rubab Manzoor	4
Sammia Shahid	4
Shahzad Faizi	4
Ifra Noureen	3
Khurram Shahzad	3
Mohsin Javed	3
Mudassar Abbas	3
Shakeel Ahmad Khan	3
Shaukat Iqbal	3
Syed Ali Mardan Azmi	3
Zohaib Zahid	3
Abdul Rafay	2
Imran Siddique	2
Junaid Haseeb	2
K. Zeb	2
Khurram Shahzad Munawar	2
Maryam Aleem	2
Muhammad Aziz ur Rehman	2
Muhammad Mobeen Ajmal	2
Muhammad Tayyab	2



Ramla Sadiq	2
Rao Sanaullah Khan	2
Rukhsana Kalim	2
Sami Ullah Bajwa	2
Waqar Ahmad	2
Waqar Uddin	2
Yaser Daanial Khan	2
Zeshan Ahmad	2
Abdul Aziz Bhatti	1
Abdul Rashid Kausar	1
Agha Muhammad Musa Khan	1
Ahmad Faisal Siddiqi	1
Ahmad Hassan Butt	1
Ali Abdullah	1
Amina Khalid	1
Amna Arif	1
Arshad Ali Khan	1
Ayesha Wajid	1
Babar Shahzaad	1
Dawood Mamoon	1
Faheem Ijaz	1
Farah Naz	1
Farhan Ashraf	1
Farhan Daud Qazi	1
Fatima Sajjad	1
Ghulam Haider	1
Hafiz Muhammad Umar Aslam	1
Hamid Raza	1
Haris Aslam	1
Hassan Sohaib Murad	1
Iftikhar Ahmad	1
Iqra Qaddir	1
Irfan Ullah	1
Khalil Ahmed Arbi	1
Khaliq Ur Rehman	1
M. A. Qamar	1
M. Imran Jamil	1
M. K. Azam	1
M. Saleem	1
Mafia Shahzadi	1
Maheen Saleem	1

Mahvish Kabir	1
Manan Aslam	1
Mohammad Shaukat Rahim Ch.	1
Muhammad Aizaz Akmal	1
Muhammad Akram Tariq	1
Muhammad Ali	1
Muhammad Asif Naveed	1
Muhammad Asim	1
Muhammad Athar Rashid	1
Muhammad Awais Abbasi	1
Muhammad Bilal Siddique	1
Muhammad Fahad Zia	1
Muhammad Farhat Kaleem	1
Muhammad Junaid	1
Muhammad Rafiq	1
Muhammad Shaban Rafi	1
Muhammad Shahid Hassan	1
Muhammad Shoaib Sardar	1
Muhammad Umer Azeem	1
Muhammad Usman Siddique	1
Muhammad Waqas	1
Mumtaz H Malik	1
Musharafa Shoaib Saleem	1
Nauman Munir	1
Naveda Kitchlew	1
Naveed Ahmad Noor	1
Nazim Tufail	1
Noman Arshed	1
Rahila Nizami	1
Rubeena Tashfeen	1
S. M. Sohail Gilani	1
Saad Ullah	1
Saima Ijaz	1
Sajed Ali	1
Sajid Mahmood	1
Sajid Nadeem	1
Sajjad Haider Shami	1
Shahid Bashir	1
Shahid Saghir	1
Shamim Saleem	1
Sohail Nadeem	1

Sufian Munawar	1
Sunaina Muneer	1
Syed Ali H. Bukhari	1
Syed Muhammad Muslim Raza	1
Tipu Sultan	1
Umer Ayub	1
Urooj Fatima	1
Usman Mehmood	1
Uzma Rashid	1
Waqar Hussain	1
Zaheer Hussain Shah	1
Zahra Ali	1
Zakee Saadat	1
Zeeshan Hamid	1

Table-VI

School/ Center/ Department wise/ Category wise table of publications:

School/Department wise listing of Publications								
	JCR	SJR	HEC X-Cat	HEC Y-Cat	HEC Z-Cat	NR	UMT	Total
School of Science								
Department of Chemistry	16	6	1	1		2		26
Department of Physics	14	1					1	16
Department of Life Sciences	3	6						9
Department of Biotechnology	1							1
Department of Mathematics	54	5	2	1	1	9		72
Total	**88**	**18**	**3**	**2**	**2**	**10**	**1**	**124**
School of Engineering								
Department of Civil Engineering			1	5	1	4		11
Department of Electrical Engineering	8							8
Department of Energy Engineering	7	3						10
Department of Industrial Engineering	1		1					2
Department of Mechanical Engineering	4							4
Total	**20**	**3**	**2**	**5**	**1**	**4**	**0**	**35**
Institute of Communication and Cultural Studies								
ICCS	1						1	2
Total	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**
Institute of Clinical Psychology								
ICP	1		3		5			9
Total	**1**	**0**	**3**	**0**	**5**	**0**	**0**	**9**
Institute of Islamic Banking								
IIB	2			1		2	1	6
Total	**2**	**0**	**0**	**1**	**0**	**2**	**1**	**6**
School of Architecture and Planning								
SAP				3		1	1	5
Total	**0**	**0**	**0**	**3**	**0**	**1**	**1**	**5**
School of Business and Economics								
Department of Economics	4	3		5		10		22
Department of Finance	3	2		2		1	1	9
Department of Management	5	3		2		1	2	13
Department of Operations and Supply Chain		1						1
Department of Quantitative Methods	1		1					2

Department of Skills Development				1				1
Department of Information Systems	1							1
Total	**14**	**9**	**1**	**10**	**0**	**12**	**3**	**49**
School of Commerce and Accountancy								
SCA					1			1
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
School of Food and Agricultural Sciences								
SFAS	18				1			19
Total	**18**	**0**	**0**	**0**	**1**	**0**	**0**	**19**
School of Governance and Society								
SGS	1	1						2
Total	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**2**
School of Health Sciences								
SHS	13							13
Total	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**13**
School of Professional Advancement								
SPA	1			2		1		4
Total	**1**	**0**	**0**	**2**	**0**	**1**	**0**	**4**
School of Social Sciences and Humanities								
Department of Education	1	1	1	1		3	1	8
Department of English Language and Literature	1			2	1	1	1	6
Department of Gender Studies					1		1	2
Department of Islamic Thought and Civilization							1	1
Department of Political Sciences	2					1		3
Department of Psychology	1							1
Department of Sociology	1	2						3
Department of Special Needs Education	1	1				1		3
Total	**7**	**4**	**1**	**3**	**2**	**6**	**4**	**27**
School of Systems and Technologies								
Department of Computer Science	9			1				10
Department of Informatics and Systems	3	1		1		1		6
Total	**12**	**1**	**0**	**2**	**0**	**1**	**0**	**16**
School of Textile Design								
STD	2	1				1		4
Total	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**4**
Grand Total	**180**	**37**	**10**	**28**	**12**	**38**	**11**	**316**