Learning Resources Center

RESEARCH OUTLOOK

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Contents

School of Science (SSC)

Publications by Department of Chemistry

01:

Afzal, M. S. (2016). Are efforts up to the mark? A cirrhotic state and knowledge about HCV prevalence in general population of Pakistan. *Asian Pacific Journal of Tropical Medicine, 9*(6), 616-618. **(Muhammad Sohail Afzal (Chemistry/SSC) JCR Listed (IF:0.841))**

02:

Nadeem, S., Tariq, S., **Jamil, M. I.**, **Ahmad, E., Gilani, S. M. S**., & **Munawar, K. S.** (2016). DFT study of structural, electronic, thermo-elastic properties and plausible origin of superconductivity due to quantum degenerate states in LaTiO3. *Journal of Theoretical and computational chemistry, 15*(5), 1-14. **(Sohail Nadeem, (Chemistry/SSC), Muhammad Imran Jamil, Ejaz Ahmad, Khurram Shahzad Munawar, JCR Listed (IF: 0.619))**

Abstract: In this paper, computations based on generalized gradient approximations were carried out to investigate the structural, electronic and thermo-elastic properties of LaTiO3 within the frame work of Density Functional Theory. In structural properties, the ground state structural parameters have been found to be in good agreement with those cited in recent literature. For electronic properties, in-depth analysis of quantum degenerate electronic states of LaTiO3 have been explained on the grounds of Projected Density of States. Elastic properties corresponds to anisotropy, elastic moduli's, phase stability, elastic wave velocities, thermal stability and Debye temperature were calculated and elaborated that has not yet been found in literature. In this observation, LaTiO3 exhibited ductile nature and physically stable indirect bandgap semiconductor behavior with quasi metallic nature near Fermi level due to La-Ti degenerate states. Moreover, longitudinal mode of vibration is observed to be maximum along [100] direction than transverse mode of vibration. A plausible reason of superconductivity may arise in LaTiO3 below Debye temperature.

Keywords: Electronic properties, Elastic properties, Cubic structure, Density functional theory.

03:

Hussain, S., Ali, S., Shahzadi, S., Tahir, M. N., Shahid, M., **Munawar, K. S.,** & Abbas, S. M. (2016). Synthesis, spectroscopy, single crystal XRD and biological studies of multinuclear organotin dicarboxylates. *Polyhedron, 117*, 64-72. (**Khurram Shahzad Munawar, (Chemistry/SSC), JCR Listed (IF: 2.108)**)

Abstract: Multinuclear organotin(IV) dicarboxylates of the general formula (Me3Sn)2L_H2O (1), (Ph3Sn)2L (2) and Me2SnL[Sn(Cl)2Me2]2 (3) were synthesized by refluxing disodium iminodiacetate hydrate (Na2L_H2O) with Me3SnCl/Ph3SnCl/Me2SnCl2 in methanol. The elemental analysis (C, H and N) data agreed well with the chemical compositions of the products. IR spectroscopy demonstrated a bridging coordination mode of the carboxylate group. 1H NMR spectroscopy suggested a penta-coordinated environment around the tin(IV) center in complexes 1 and 3. The title complex 3 represents one of the very few examples of organotin(IV) carboxylates showing simultaneously coordination with dimethyltin(IV) as well as dichlorodimethyltin(IV) moieties, by substitution and addition reactions, respectively. The 13C NMR spectroscopy demonstrated the carboxylate-metal linkages. EIMS and ESI spectra verified the molecular skeletons of the products 1–3. Thermogravimetric analysis revealed the bimetallic nature of 2. A single crystal XRD study of 3 has shown a predominantly square pyramidal geometry with some trigonal bipyramidal characteristics around each metal center. The novel products exhibited antibacterial/antifungal

potential and their minimal inhibitory concentrations (MIC) were also evaluated. In vitro hemolytic studies on human red blood cells indicated a slightly toxic nature of the synthesized complexes.

Keywords: Multinuclear organotin(IV), Spectroscopy, XRD, Antibacterial/antifungal, Hemolytic

04

Ikraam, M., Shahid, S., Zaman, S., & SARWAR, M.N. (2016). Fabrication and characterization of TiO2 nano rods by electrochemical deposition into an anodic alumina template. *Journal of Electronic Materials, 45*(8), 4228-4236. (**Muhammad Ikraam, (Chemistry/SSC), Sammia Shahid, JCR Listed (IF: 1.491)**)

Abstract: Titanium dioxide (TiO2) nanorods have been successfully grown into a tracketched anodized aluminium oxide membrane (AAM) by a particulate electrochemical deposition from an aqueous medium. The prepared TiO2 sols get stabilized against aging at pH 2. It was found that TiO2 nanorods grown from dilute aqueous solution with a low concentration gave a stable and uniform growth. X-ray diffraction (XRD) results revealed that TiO2 nanorods dried at 500C were a mixture of anatase and brookite phases. Atomic Force Microscope (AFM) images confirmed that TiO2 nanorods had a smooth morphology and longitudinal uniformity in diameter. A scanning electron microscope (SEM) image showed that TiO2 nanorods grown by electrochemical deposition from the dilute aqueous sol had a dense 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 at an applied potential of 5 V, a uniform current density of 500 mA, and a deposition time of 5 h.

Keywords: TiO2 nanorods, anodized aluminium oxide template, electrochemical deposition, kinetic studies.

05

Ahmed, H., **Afzal, M. S.**, Mobeen, M., & Simsek, S. (2016). An overview on differenct aspects of hypodermosis: current status and future propects. *Acta Tropica, 162*, 35-45. (**Muhammad Sohail Afzal (Chemistry/SSC) JCR Listed (IF:2.38)**)

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 ofthe 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

06

Afzal, M. S., Shah, Z. H., & Ahemd, H. (2016). Recent HCV genotype changing pattern in the Khyber Pakhtunkhwa province of Pakistan; Is it pointing out a forthcoming problem? Brazilian Journal of Infectious Diseases, 20(3), 312-313. **(Muhammad Sohail Afzal (Chemistry/SSC), Zaheer Hussain Shah JCR Listed (IF:1.299))**

07

Abbasi, M. A., Hussain, G., Rehman, A. U., Shahwar, D., Khan, K. M., **Mohyuddin, A.,** Ashraf, M., Rahman, J., Lodhi, M. A., & Khan, F. A. (2016). Enzyme inhibitory and molecular docking studies on some organic molecules of natural occurrence. *Journal of the Chemical Society of Pakistan, 38*(1), 166-170. (**Ayesha Mohyuddin (Chemistry/SSC), JCR Listed (IF:0.276)**)

Abstract: In the present study, in vitro enzyme inhibitory studies on cinchonidine (1), cinchonine (2), quinine (3), noscapine (narcotine, 4) and santonine (5) were carried out. The various enzymes included in the study were lipoxygenase, xanthine oxidase, acetyl cholinesterase, butyryl cholinesterase and protease. The results revealed that 2, 3, and 4 were moderate active against lipoxygenase and xanthine oxidase enzymes. The molecule 3 possessed weak activity against butyryl cholinesterase enzyme while remaining molecules were inactive against this enzyme. However, all these compounds were inactive against acetyl cholinestrase and protease enzymes. The synthesized compounds were computationally docked into the active site of lipoxygenase enzyme. The compounds 3 and 4 showed decent interactions, hence strengthening the observed results.

Keywords: Cinchonidine, cinchonine, quinine, noscapine, lipoxygenase, xanthine oxidase.

08

Jilani, A., Nadeem, A., Tahir, M. A., & **Rasool, N.** (2016). Genetic analysis of the Saraiki population living in Pakistan. *Canadian Society of Forensic Science Journal, 49*(3), 152-160. (**Nouman Rasool (Chemistry/SSC), JCR Listed**)

Abstract: Autosomal short tandem repeat (STR) markers are a powerful tool used in forensic sciences for profile matching and paternity testing, sibship and kinship analysis. This study represents the allele frequency distribution of 15 autosomal STR multiplex of the Saraiki population living in Pakistan. Allele frequencies of this population were compared with the other populations living in Pakistan. Buccal swabs were taken from 150 unrelated individuals of the Saraiki population living in different regions of Pakistan and profiles were generated using an AmpFlSTR Identifiler PCR Amplification kit. Population genetic calculations were performed on this population. Allele frequencies of the Saraiki population showed that this population is at Hardy Weinberg Equilibrium except at loci D3S1358, TH01, D13S317, TPOX and FGA, with distinct differences in HObs and HExp values. The average heterozygosity and polymorphism information content (PIC) at all loci were 0.77 and 0.766, respectively. Each STR marker showed a high

degree of polymorphism and a high power of discrimination (PD). A phylogenetic tree shows that the Saraiki population living in Pakistan is genetically distinct from other geographically neighboring populations of the country. The population data presented in this study can be used as a reference database for the Saraiki population in forensic casework.

Keywords: Autosomal short tandem repeats, Multiplex PCR, Saraiki population, allele frequency distribution

09

Ahmad, M. N., Zia, K. M., **Nadeem, S**., Anjum, M. N., Farooq, T., Shehzad, K., . . . Wantai, Y. (2016). Surface reforming of diamond particles by the dispersion enhancement in common liquids. Arabian Journal for Science and Engineering, 41(1), 97-103. **(Sohail Nadeem (Chemistry/SSC), JCR Listed (IF:0.728))**

Abstract: The dispersibility of diamond has been improved by reforming its surface with 2-propanol-2-yl[(CH3)2C· OH] radicals. These radicals were produced by the photochemical breakdown of 1-[4-(2-hydroxyethoxy)-phenyl]-2-hydroxy- 2-methyl-1-propane-1-one (HPHMP) under ultraviolet (UV) radiations. The diamond particles were mixed with HPHMP in acetone and were placed under UV rays for the generation of required free radicals which were in situ reformed the diamond surface. Fourier transform infrared, nuclear magnetic resonance spectroscopy and scanning electron microscopy (SEM) confirmed the structural and surface reforming of diamond. The thermogravimetric analysis, thermogravimetric analysis–mass spectrometry spectrogram confirmed the surface reforming of diamond with 2-propanol-2-yl radicals. The dispersion behavior of the diamond after reforming was observed by SEM analysis and revealed an improvement in dispersibility in common solvents.

Keywords: Diamond particles, Surface properties, Photochemical reforming, Enhanced dispersion.

10

Mushtaq, S., **Rasool, N.**, & Firiyal, S. (2016). Detection of dry bloodstains on different fabrics after washing with commercially available detergents. *Australian Journal of Forensic Sciences, 48*(1), 87-94. **(Nouman Rasool (Chemistry/SSC), JCR Listed (IF:0.833))**

Abstract: Blood is significant evidence that can help an investigator solve a crime. It can link a suspect to a crime and also help in reconstructing the crime scene. Criminals often attempt to eliminate bloodstained evidence at a scene by washing it. These attempts can result in alteration, or partial or complete removal of stained areas. Many presumptive tests are used to detect the bloodstains on clothes. In this study, bloodstained fabrics were washed with commercially available and frequently used detergents. Kastle-Meyer (KM), Leucomalachite green (LMG), Tetramethylbenzidine (TMB) and Hemastix tests were used to detect the presence of blood on these washed fabrics. The Hemastix test was found to be the most sensitive to detecting the washed stains on all cloths. The Leucomalachite green test was found to be the least sensitive. The ability of a fabric to retain blood after washing depends not only upon the chemistry and manufacturing of the fabric but also on the type of detergent. The time of immersion of the fabric with detergent also affects the removal of stains from fabrics. Ariel showed the best results in removing

bloodstains from all fabrics. Cotton polyester and khaddar showed the maximum retention of blood after washing with either of the detergents, whereas silk polyester had the minimum ability to hold bloodstains.

Keywords: Presumptive tests, Kastle-Meyer, Leucomalachite green, Tetramethylbenzidine, Hemastix, detergents, bloodstains

11:

Ahmad,T., Arshad,N., **Afzal,M.S.,** Adnan, F., Zaidi, N.-u.-S. S., Shahid, M.T., & Anjum, S. (2016). Prevalence of rotavirus, adenovirus, hepatitis A virus and enterovirus in water samples collected from different region of Peshawar, Pakistan. *Annals of Agricultural and Environmental Medicine*, *23*(4), 576-580. (**Muhammad Sohail Afzal (Chemistry/SSC), JCR LISTED (IF:0.895)**)

Abstract: Viral gastroenteritis and other water-borne diseases are the most neglected areas of research in Pakistan. To determine the quality of water, 4 enteric viruses were studied from different localities of Peshawar, Pakistan. The study validates the viral detection method for Rotavirus (RV), Human adenovirus (HAdV), Enterovirus (EV) and Hepatitis A virus (HAV), directly from water sources of rural areas of Peshawar, KPK, Pakistan. Overall, 95 five water samples were tested; among them, 9.47% were positive for RV, 38.94% for HAdV, 48.42% for EV and 12.63% for HAV. The presence of these viruses in water was directly correlated with meteorological data. High prevalence of EV and HAdV was detected frequently in the wet season from May – September, which can be the potential cause of spreading of gastroenteritis in the populationf. Environmental surveillance is an additional tool to evaluate the epidemiology of enteric viruses circulating in a given community.

Keywords: water, Enteric Viruses, Molecular Epidemiology, Diagnostic, Public Health.

12:

Ahmed, H., Malik, A., Mustafa, I., Arshad, M., Khan, M. R., **Afzal, S.,** & Simsek, S. (2016). Seroprevalence and spatial distribution of toxoplasmosis in sheep and goats in North-Eastern region of Pakistan. *Korean Journal of Parasitology, 5*(4), 439-446. (**Muhammad Sohail Afzal (Chemistry/SSC), JCR LISTED (IF:1.027)**)

Abstract: Toxoplasmosis is a protozoan disease that is caused by *Toxoplasma gondii* in livestock and humans. Due to its medical and veterinary importance, it is essential to study the seroprevalence of *T. gondii* infection among humans and animals in various parts of the world. The major objective of this study was to determine the seroprevalence and spatial distribution of toxoplasmosis in small ruminants (sheep and goats) of north-eastern region, Pakistan. A total of 1,000 animals comprising of sheep (n=470) and goats (n=530) were examined for *T. gondii* infection by using ELISA. An epidemiological data was collected in the form of questionnaire. A surface has been generated by using method of interpolation in Arc GIS with the help of IDW (inverse distance weight). The results showed higher seroprevalence of *T. gondii* in goats (42.8%) as compared to sheep (26.2%). The seroprevalence was higher in females as compared to males in all examined ruminants. Similarly, there is a wide variation in the seroprevalence of *T. gondii* in different breeds of sheep and goats showing higher seroprevalence in Teddy (52.8%) and Damani breed (34.5%) of goat and sheep's, respectively. The geographical and spatial distribution of *T. gondii* shows that it is widely

distributed in different parts of the north-eastern region of Pakistan. Our results suggest widespread environmental contamination with *T. gondii* oocysts. It suggests us that small ruminants could be a potentially important source of *T. gondii* infection if their infected meat is consumed undercooked.

Keywords: Toxoplasma gondii, ELISA, Seroprevalence, Sheep, Goat, Spatial Distribution.

13:

Amir, S., Khan, J., **Afzal, M. S.,** Amen, N.-E., Raza, H., Safdar, W., & Bostan, N. (2016). Molecular epidemiology and genotyping of SEN Virus in thalassemia patients in Pakistan. *Infection, Genetics and Evolution, 44*, 300-302. (**Muhammad Sohail Afzal (Chemistry/SSC), JCR LISTED (IF:2.591)**)

Key words: SEN Virus, SENV, HBV, HCV, Thalassemia, Blood transfusion.

14:

Kabir, M., & Afzal, M.S. (2016). Epidemiology of polio virus infection in Pakistan and possible risk factors for its transmission. *Asian Pacific Journal of Tropical Medicine, 9*(11), 1044-1047. (**Mahvish Kabir (Chemistry/SSC), Muhammad Sohail Afzal, JCR LISTED (IF:0.841)**)

Abstract: End Polio Pakistan program still has to overcome many hurdles; unfortunately on 8th February 2016 first polio case of the year has surfaced in Karachi. It seems that battle against polio demands little bit more conviction and motivation. WHO has set a goal of polio eradication in Pakistan till 2018, in order to evaluate the success of this target; polio eradication campaign in Pakistan has been analyzed in different perspectives. Our analysis indicated that major obstacles in eradication are low literacy rate, poor health infrastructure, lack of planning, natural disaster, economic crisis, counter insurgencies and almost no protection for polio health workers. WHO has allocated new funds to tackle this problem, now there is a need to spend this money more effectively; with proper planning and honest deployment of funds.

Keywords: Polio Eradication, Malnutrition, Counter insurgencies, Polio worker, Hurdles in polio, Q1

15:

Bostan, N., Naeem, M**., Afzal, M. S.,** Shah, Z. H., Mustafa, I., Arshad, M., Haider, W., & Ahmed, H. (2016). Sero-prevalence of Hepatitis B and C Virus from rural areas of northern Punjab (Sargodha District), Pakistan. *Tropical Biomedicine*, 33(4), 599-607. (**Muhammad Sohail Afzal (Chemistry/SSC), JCR LISTED (IF:0.685)**)

Abstract: Pakistan is endemic for hepatitis B virus (HBV) and hepatitis C virus (HCV) infections with 10 and 11 million infections, respectively. The epidemiological studies of these virus showed that the information is only from few cities of the country and is relevant to high risk groups. It is of great importance to have an idea about the prevalence of infectious agents in general population to help in identification of hot spot for infections. Identification of hot spots will help in disease management for

future. As the there is no report form district Sargodha (Punjab Province) so this study was designed to analyze the prevalence of HBV and HCV in general population. Blood samples of 2373 randomly selected individuals from six different tehsils were collected and were analyzed for HBV and HCV sero-positivity. An overall prevalence of both HBV and HCV in district Sargodha was 28.10% (667/2373). HCV prevalence was (20.01%) and HBV seropositivity was (8.09%). Males were more infected than females, and a significant difference was found in positive cases between male (58.77%) and female (41.22%). The most common routes of transmission of hepatitis virus in present study were shaving assisted by barbers in male patients 143 (21.43%), non sterile or used needles & syringes 127 (19.04%), dental surgical procedures 88 (13.19%), and sharing razors in males 49 (7.34%). In female patients a significant factor is labor and child birth process. Most cases of hepatitis were seen in mesons, farmers and house wives. The prevalence of HBV and HCV in general population of district Sargodha is very high. The study will help for better management of disease to contain the disease spread. The study highlighted that District Sargodha is endemic for these viral infections and it is highly warranted to carry out more studies to get better idea about the infection spread. Community education campaigns are also highly warranted to general population as well as high risk population to control future disease spread.

16:

Butt. S. J., Awan, M. F., Ali, A., Muzaffar, A., Abbas, M. A., Rao, A. Q., Qamar, Z., & Husnain, T. (2016).Transgenic cotton: Harboring board term resistance against insect and weeds through Incorporation of CEMB double Bt and cp4EPSPS Genes. *Pakistan Journal of Agricultural Sciences, 53*(3), 501-505. **(Shahid Javed Butt (Chemistry/SSC), JCR LISTED (IF:0.597))**

Abstract: Introduction of multiple traits in crop plants for desirable character is an essential tool of Biotechnological application. To overcome problem of insect pests and weeds cotton variety FBS-37 was genetically modified by transformation of CEMB Cry1Ac+Cry2A and GTGene cloned in different plant expression vectors under CaMV35S Promoter and nopaline synthase Nos Terminator. CEMB optimized protocol of cotton gene transformation i.e. Agrobacterium mediated shoot apex cut method was applied for transformation of these genes constructs in cotton. Overall transformation efficiency was found to be 1.05%. Putative transgenic cotton plants were shifted to soil pots and acclimatized in the green house conditions. PCR with gene specific primers amplified 190bp for EPSPS (Glyphosate GTG) and 1000bp for each of Cry1Ac and Cry2A. Quantification of Cry1Ac, Cry2A and GTG protein through ELISA determined maximum of 0.8µg/g, 1µg/g and 0.9µg/g of tissue respectively. 100% mortality was obtained in 2 nd instar larvae of Heliothus armigera when compared with non-transgenic control cotton plants where maximum damaged was seen in leaf bioassay. Moreover, transgenic cotton plants successfully survived when sprayed with 1600ml/acre of glyphosate as compared to control where 100% mortality and necrosis occur after 7 days of spray assay in control conditions.

Keyword: Herbicide resistant, Glyphosate, Cry1Ac, GTG, Weedicide resistant

17:

Rehman, A, U., Abbasi, M. A., Siddiqui, S. Z., **Mohyuddin, A., Nadeem, S.,** & Shah, S. A. A. (2016). Synthesis, spectral analysis and biological evaluation of N-alkyl/aralkyl/aryl-4-

chlorobenzenesulfonamide derivatives. *Pakistan Journal of Pharmaceutical Sciences, 29*(5), 1489-1496. **(Ayesha Mohyuddin, (Chemistry/SSC), Sohail Nadeem, JCR LISTED (IF:0.581))**

Abstract: New potent organic compounds were synthesized with an aim of good biological activities such as antibacterial and anti-enzymatic. Three series of sulfonamide derivatives were synthesized by treating N-alkyl/aryl substituted amines (2a-f) with 4-chlorobenzensulfonyl chloride (1) to yield N-alkyl/aryl-4-chlorobenzenesulfonamide(3af) that was then derivatized by gearing up with ethyl iodide (4), benzyl chloride (5) and 4-chlorobenzyl chloride (6) using sodium hydride as base to initialize the reaction in a polar aprotic solvent (DMF) to synthesize the derivatives, 7a-f, 8af and 9a-f respectively. Structure elucidation was brought about by IR, 1H-NMR and EIMS spectra for all the synthesized molecules which were evaluated for their antibacterial activities and inhibitory potentials for certain enzymes.

18:

Munawar, K. S., Ali, S., Khalid, N., Tahir M. N., & Abbas, S. M. (2016). Vanadium-Catalyzed Esterification of Carboxylates: Synthesis, X-Ray Crystal Structure and Biological Studies. *Chemistry Journal, 6*(1), 1-9. **(Khurram Shahzad Munawar (Chemistry/SSC), (NOT RECOGNIZED BY HEC))**

Abstract: The potentials of vanadium (III) chloride as catalyst were checked for the esterification of substituted carboxylic acids with methanol. The synthesised precursors and methyl esters formed were characterised by various analytical techniques such as FT-IR, 1H-NMR, 13C-NMR and single crystal analysis. The antimicrobial activities of the carboxylates and their methyl esters were found good against various strains of bacteria (Escherichia coli, Bacillus subtilis, Staphylococcus aureus and Pasteurella multocida) and fungi (Alternaria alternata, Ganoderma lucidum and Penicillium notatum). All these esters were tested for their activity against the alkaline phosphatase (ALP) and Methyl 4-oxo-4-(2,4,6-trichlorophenylamino)but- 2-enoate (compound 1) was found to be potent inhibitor while Methyl 4-(3,4-dichlorophenylamino)-4-oxobut-2-enoate (compound 2) showed intercalative mode of binding with DNA.

Keywords: Vanadium, Coordination Modes, Vibrational Spectroscopy, Antimicrobial Activities, Bacteria, Fungi

19:

Khan, S. A., Shahid, S., Jameel, M., & Ahmad, A. (2016). In vitro antibacterial, antifungal and GC-MS analysis of seeds of Mustard Brown. *International Journal of Pharmaceutical Chemistry, 06*(04), 107-115.**(Shakeel Ahmad Khan, (Chemistry/SSC) Sammia Shahid, Mehwish Jameel, (Not Recognized By HEC))**

Abstract: In this research work, antibacterial, antifungal and GC-MS analysis was carried out. For this, seeds extract of Mustard brown was prepared from methanol and fractions with solvents n-hexane, chloroform, ethyl acetate, and acetone; microbiologically tested against bacteria such as Rhodococcusspp, Bacillus subtilis and Escherichia coli and also against fungi such as Aspergillus niger, Aspergillus flavus and Trichoderma harzianum. Methanol extract and n-hexane fraction of methanol extract exhibited maximum antimicrobial inhibition activity. Acetone and n-hexane fraction of methanol extract of plant exposed highest

antifungal activity. It is concluded that plant is an opulent source of phenols that is responsible for inhibitory influences on bacteria and fungi. Whole results anticipated the plant antibacterial and antifungal potential and are valuable contender for the cure of several kinds of therapeutic illness.

Keywords: Mustard, Fraction, Extract, Antibacterial, Antifungal.

20:

Khan, S. A., Shahid, S., Khan, Z. A., & Iqbal, A. (2016). Assessment of stabilization of canola oil, free radical scavenging and cytotoxic potential of peucedanum graveolens (roots*). International Journal of Scientific and Research Publications*, *6*(3), 529- 535. **(Shakeel Ahmad Khan, (Chemistry/SSC), Sammia Shahid, (Not Recognized By HEC))**

Abstract: Peucedanum graveolens has been perceived as a wellspring of common cell reinforcement's aginst oxidative mechanism. The purposes of that study were to assess the antioxidative potential of different extracts of P. graveolens roots in different solvent systems by computing yield, TPC, TFC, DPPH and linoleic acid per-oxidation. Extracts yield observed in this study are found in range 6.90-10.80%.Total phenolic contents (TPC) and total flavonoid contents (TFC) were observed in the scale of 0.90-2.49 mg and 3.20-5.70 mg respectively. The DPPH-IC50 and %age-inhibition per-oxidation examined by different extracts of P. graveolens roots were come in the extent of 23.9-80.9 µg/mL and 40-71.9% respectively. By balancing out the canola oil as oxidative substrate, oxidative parameters like peroxide value (PV), free fatty acid (FFA) along with paraanisidine (PAV) were additionally analyzed. Cytotoxic potential investigated against the personage red blood corpuscles (RBCs) in vitro by measuring the haemolysis effect in different extracts of P. graveolens roots and range of % lysis 1.3-4.5%was explored. The outcomes from the present research work exhibited that petroleum ether and methanol extracts of P. graveolens roots exhibited enhanced anti-oxidative characteristics and lesser cytotoxic effect**.**

Keywords: Peucedanum, Extract, Antioxidants, Stabilization,

21:

Ali, S., Raza, S. A., **Butt, S. J.,** & Sarwar, Z. (2016). Effect of foliar boron application on rice (Oryza Sativa L.) growth and final crop harvest. *Agriculture and Food Sciences Research, 3*(2), 49-52. **(Sajed Ali, (Chemistry/SSC) Shahid Javed Butt, (Not Recognized By HEC))**

Abstract: Boron (B) is an essential micro nutrient and its deficiency caused a reduction in final crop harvest and quality of the yield. A field experiment was conducted to evaluate the effect of foliar application of B on yield and yield components of rice in calcareous soils under agro-climatic conditions of Lahore, Pakistan. The experiment was laid out in randomized complete block design (RCBD) with six B foliar application rates (0, 5, 10, 15, 20 and 25 mg L-1). The experiment was replicated three times. The results illustrated a significant effect of B foliar application on number of grains panicle-1, number of filled grains and final

grain yield. The highest grain yield (352 g m-2) was recorded in 20 mg L-1 foliar application, whereas an increase in B application to 25 mg L-1 reduces the final grain yield significantly (313 g m-2). Detrimental effects of the highest B application on yield components were also observed. The decline in the quantity and quality rice yield resulted by increasing B application might be due to the toxic effect of higher concentration of B application.

Keywords: Micronutrients, Boron, Rice, Yield.

22:

Afzal, M. S. (2016). Predictive potential of IL-28B genetic testing for interferon based hepatitis C virus therapy in Pakistan: Current scenario and future perspective. *World Journal of Hepatology, 8*(26), 1116-1118. **(Muhammad Sohail Afzal (Chemistry/SSC), (SJR LISTED))**

Abstract: In Pakistan which ranked second in terms of hepatitis C virus (HCV) infection, it is highly needed to have an established diagnostic test for antiviral therapy response prediction. Interleukin 28B (*IL-28B*) genetic testing is widely used throughout the world for interferon based therapy prediction for HCV patients and is quite helpful not only for health care workers but also for the patients. There is a strong relationship between single nucleotide polymorphisms at or near the *IL-28B* gene and the sustained virological response with pegylated interferon plus ribavirin treatment for chronic hepatitis C. Pakistan is a resource limited country, with very low per capita income and there is no proper social security (health insurance) system. The allocated health budget by the government is very low and is used on other health emergencies like polio virus and dengue virus infection. Therefore it is proposed that there should be a well established diagnostic test on the basis of *IL-28B* which can predict the antiviral therapy response to strengthen health care set-up of Pakistan. This test once established will help in better management of HCV infected patients.

Keywords: Diagnostics, Hepatitis C virus, Interferon therapy, Polymorphisms, IL-28B, Genetic testing.

Conference papers by Department of Chemistry

01:

Rasool, N. (2016). *Biometrics: A human identification tool.* Paper presented at International Conference of Biochemistry, Biotechnology and Biomaterials at University of Agriculture, Faisalabad. (**Nouman Rasool (Chemistry\SSC))**

02:

Amjad, H, Ahmad, A., & Rasool, N.(2016). *Energy dependent proteolysis in Archaea.* Paper presented at International Conference of Biochemistry, Biotechnology and Biomaterials at University of Agriculture, Faisalabad. **(Nouman Rasool (Chemistry\SSC))**

03:

Hussain, W., Munawar, T., Shahzaib, M., Masood, M., Rasool, N. & Naseer, A. (2016). *Automated enhancement of compromised fingerprint images.* Paper presented at International Conference of Biochemistry, Biotechnology and Biomaterials at University of Agriculture, Faisalabad. **(Nouman Rasool (Chemistry\SSC))**

04:

Mohyuddin, A. & Salamat, A.(2016).*Production and analysis of green and energy efficient biodiesel.* Paper presented at International Conference on Disruptive Innovation**.(Ayesha Mohyuddin, Aqsa Salamat(Chemistry\SSC))**

05:

Shahid, S. (2016). *Comparative study of antimicrobial and antioxident activities of onion, garlic and ginger and their effect on alopecia arata.* Paper presented at 5th invetion to innovation summit.**(Sammia Shahid(Chemistry\SSC))**

06:

Shahid, S. (2016). *Study of industrial waste for the identification and purification of valuable components.* Paper presented at 5th invention to innovation summit.**(Sammia Shahid(Chemistry\SSC))**

07:

Shahid, S. (2016).*Synthesis, characterization and applications of schiff bases*. Paper presented at 5th invention to innovation summit.**(Sammia Shahid(Chemistry\SSC))**

08:

Shahid, S.(2016). *Exploitation of some low cost absorbents for pollution water purifying*. Paper presented at 5th invention to innovation summit. **(Sammia Shahid(Chemistry\SSC))**

09:

Shahid, S.(2016). *Comparative study of ultrafine MnO2 nanowires.* Paper presented at 5th invention to innovation summit.**(Sammia Shahid(Chemistry\SSC))**

10:

Shahid, S.(2016).*Synthesis and characterization of poly lactic grafted TiO2 nano-composites*. Paper presented at 5th invention to innovation summit.**(Sammia Shahid(Chemistry\SSC))**

11:

Fatima, U. (2016). *Preparation of gelatin grafted vinyl acetate-methylmethacrylate nanocomposite.* Paper presented at the 1st UMT international conference on pure and applied science, University of Management & Technology. **(Urooj Fatima(Chemistry\SSC))**

12:

Fatima, U.(2016). *Review of pharmacological activities of Vetiveria zizanoide(Linn) Nash*. Paper presented at the 1st UMT international conference on pure and applied science, University of Management & Technology, Lahore. **(Urooj Fatima(Chemistry\SSC))**

13:

Mohyuddin, A. (2016). *Method development for the estimation of amoxicillin trihydrate in capsule dosage form.* Paper presented at the 1st international conference in pure and applied science, University of Management & Technology, Lahore. **. (Ayesha Mohyuddin(Chemistry\SSC))**

14:

Mohyuddin, A. (2016) .*Indegenous synthesis of food preservatives at commercial scale*. Paper presented at the 5th Innovation to innovation summit, University of Punjab, Lahore.**(Ayesha Mohyuddin(Chemistry\SSC))**

15:

Mohyuddin, A.(2016). *Extraction of oleic acid from natural sources*. Paper presented at the 5th Innovation to innovation summit, University of Punjab, Lahore. .**(Ayesha Mohyuddin(Chemistry\SSC))**

16:

Fatima, U. & Shahid, S. (2016). *Preparation and characterization of biodegradable thin film gelatin grafted vinyl acetate-methylmethacrylate nanocomposites.* Paper Presented at 3rd Conference on Frontiers of Nanoscience and Nanotechnology, Pinstech Nilore Islamabad, Rawalpindi, Pakistan.**(Sammia Shahid, Urooj Fatima(Chemistry\SSC))**

17:

Saleem, Q., & Shahid, S. (2016).*Synthesis of TiO2 nanoparticles and its applications as photocatalytic degradation of toxic organic pollutants.*Paper presented at 3rd Conference on Frontiers of Nanoscience and Nanotechnology, Pinstech Nilore Islamabad, *Rawalpindi, Pakistan.* **(Sammia Shahid(Chemistry\SSC))**

18:

Shahid, S., & Sher, M. (2016). *Synthesis, Characterization, Optical and Antibacterial Properties of Ni-doped ZnO Nanoparticles.* Paper presented at International Conference on Energy for Environment and Economics Sustainability, Pearl Continental Hotel, Lahore. **(Sammia Shahid(Chemistry\SSC))**

19:

Shahid , S., & Azam, M. (2016). *Synthesis, Characterization, Optical and Antibacterial Properties of Co-doped Tin dioxide Nanoparticles.* Paper presented at International Conference on Energy for Environment and Economics Sustainability, Pearl Continental Hotel, Lahore. **(Sammia Shahid(Chemistry\SSC))**

20:

Shahid, S., & Imran, M. (2016). *Fabrication and Characterization of Cadmium Sulfide Nanowires on Aluminum Template.* Paper presented at International Conference on Energy for Environment and Economics Sustainability, Pearl Continental Hotel, Lahore. **(Sammia Shahid(Chemistry\SSC))**

21:

Shahid,S., & Fatima, U. (2016).*Preparation of Gelatin Grafted Vinyl Acetate-Methylmethacrylate Nanocomposit*. Paper presented at 1st International Conference in Pure and Applied Science, University of Management and Technology, Lahore**. (Sammia Shahid, Urooj Fatima(Chemistry\SSC))**

22:

Shahid, S., Ikram, M. (2016). *Fabrication and Characterization of TiO2 Nanorods by Electrochemical Deposition into Anodic Alumina Template*. Paper presented at 1st International Conference in Pure and Applied Science, University of Management and Technology, Lahore. **(Sammia Shahid (Chemistry\SSC))**

Publications by Department of Physics

01:

Jabeen, M., **Iqbal, M. A.,** Javed, M. T., Ali, N., Ahmed, M., Ali, R., Sarfraz, S., & Kumar, R. V. (2016). Growth of ZnO nanorods by two-step solution process for ethanol and hydrogen gas sensing at low temperature. *Digest Journal of Nanomaterials and Biostructures, 11*(2), 663-674. (**Muhammad Azhar Iqbal (Physics/SSC), JCR LISTED (IF:0.756))**

Abstract: ZnO nanorods were grown by 2-step solution process. The seeding layer was prepared by thermal de-composition of zinc acetate di-hydrate at a temperature of 150 oC for 1 h and then ZnO nanorods were synthesized from a solution of Zn(NO3)2. The seed layer increase the nucleation during the growth by hydrothermal process but ZnO growth without seed layer is random in rod shape. The synthesized ZnO nanorods were found to have hexagonal wurtzite structure with good aspect ratio. The characterization of nanorods was carried out by X-ray diffraction, field emission scanning electron microscope and UVvisible spectroscopy. The experimental results on ZnO nanorods synthesized by hydrothermal process used for ethanol gas sensing are reported at low temperature from 50-80oC, in the presence of humidity at different gas concentrations 10, 20, 50 and 100 ppm. We also investigate the humidity level from 30-50 at a temperature range from 50- 80oC in the present study. The response (%) of 50 ppm of ethanol at a fixed temperature of 80oC verses time showed the same repeated values. The 100 ppm hydrogen gas detection was performed at various temperatures and sensitivity was observed highest at 50oC. Gas detection was carried out at lower temperature as compared to reported in the literature for the very first time. ZnO nanorods structure have diameter in the range of 100-150 nm and length more than 1μ as determined by FESEM. In addition, it was suggested from UVvisible spectroscopy that as grown ZnO nanorods has good absorption spectrum.

Keywords: ZnO nanorods, Ethanol sensor, Hydrothermal process, Hydrogen sensor, Sol-gel process

02:

Noor, N. A., Rashid, M., Abbas, S. M. A., Raza, M., Mahmood, A., Ramay, S. M., & Murtaza, G. (2016). Shift of indirect to direct bandgap and thermoelectric response of the cubic BiScO3 via DFT-mBJ studies. *Materials Science in Semiconductor Processing*, 49, 40–47. (**Naveed Ahmed Noor (Physics/SSC), JCR LISTED (IF:2.265))**

Abstract: The mechanical, electronic, optical and thermoelectric properties of cubic perovskite BiScO3 are studied by using density functional theory. The lattice parameter of BiScO3 calculated at zero pressure indicates good agreement with similar compounds crystallizing in the cubic perovskite structure. The exchangecorrelation functional based on Perdew-Burke-Ernzerhof GGA has been used for calculating structural and mechanical properties, while the functional proposed by Tran and Blaha in the form of modified Becke-Johnson (mBJ) exchange potential has been employed to calculate the electronic, optical and thermoelectric properties. The elastic constants and bulk modulus are calculated and their pressure dependence upto 50 GPa has been investigated. Cubic BiScO3 is found to be an indirect bandgap semiconductor at ambient pressure, while a direct bandgap appears under the influence of pressure. In addition to the electronic properties, the dielectric function, refractive index, reflectivity, extinction coefficient and absorption spectrum are also presented. Moreover, important thermoelectric properties of the

compounds are explained in terms of electrical conductivity, thermal conductivity, Seebeck coefficient and figure of merit.

Keywords: Ab-Initio calculations, Under pressure study, Mechanical properties, Electronic and optical study, Thermoelectric properties.

03:

Kamran, M. A., Zou, B., Majid, A., Alharbi, T., Saeed, M. A., **Abdullah, A**., & Javed, Q. (2016). Synthesis and photoluminescence of single-crystalline Fe(III) doped CdS nanobelts. *Journal of Nanoscience and Nanotechnology,* 2016, 4086-4093. **(Ali Abdullah (Physics/SSC), JCR LISTED (IF:1:338))**

Abstract: In this paper, we report the synthesis and optical properties of Fe(III) doped CdS nanobelts (NBs) via simple Chemical Vapor Deposition (CVD) technique to explore their potential in nano-optics. The energy dispersive X-ray spectroscopy (EDX) and X-ray diffraction (XRD) analysis manifested the presence of Fe(III) ions in the NBs subsequently confirmed by the peak shifting to lower phonon energies as recorded by Raman spectra and shorter lifetime in ns. Photoluminescence (PL) spectrum investigations of the single Fe(III)-doped CdS NBs depicted an additional PL peak centered at 573 nm (orange emission) in addition to the bandedge(BE) emission. The redshift and decrease in the BE intensity of the PL peaks, as compared to the bulk CdS, confirmed the quenching of spectra upon Fe doping. The synthesis and orange emission for Fe-doped CdS NBs have been observed for the first time and point out their potential in nanoscale devices.

Keywords: CdS; Chemical Vapor Deposition; Fe(III) Doping; Nanobelts; Photoluminescence

04:

Mahmood, Q., Abbas, S. M. A., Hassan M., & **Noor, N. A.** (2016). First-principles evaluation of Co-doped ZnS and ZnSe ferromagnetic semiconductors. *Journal of Alloys and Compounds, 688,* 899-907. **(Naveed Ahmed Noor (Physics/SSC), JCR LISTED (IF:3:014))**

Abstract: In this study, we have employed first-principle calculations to investigate the structural, mechanical, electronic, magnetic and the optical properties of Co-doped ZnS and ZnSe compounds. The ferromagnetic structural stability is determined from the calculated total energy difference between ferromagnetic and antiferromagnetic phases. The calculated mechanical properties show that these materials are mechanically stable, ductile and anisotropic. The modified Becke-Johnson local density approximation functional is used for accurate prediction of the electronic properties of Co-doped ZnS and ZnSe. The electronic band structures and density of states plots reveal ferromagnetic semiconducting behavior in these compounds, which is explained in terms of exchange and crystal field splitting energies, exchange constants and magnetic moments. The optical properties have been studied systematically by computing parameters like real and imaginary part of the dielectric constant, refractive index, extinction and absorption coefficients, optical conductivity, reflectivity and energy loss function. The tuning of band gap from ultraviolet to visible region with minimum optical loss, due to the Co doping, makes these materials suitable candidates for optoelectronic device fabrications

Keywords: Ferromagnetic semiconductors, DFT, Mechanical properties, Optical parameters.

05:

Mahmood, Q., Faridiy, A., Mahmood A., Rashid, M., Hassan, M., & **Noor, N. A**. (2016). Electronic
structure and magnetic properties of Zn1_xTMxTe (TM = Fe, Co, Ni) for 0 x 1 alloys.
International Journal of Modern Physics B, 30(23), 1-14. **(Naveed Ahmed Noor (Physics/SSC),
JCR LISTED (IF:0:85))**

Abstract: In this study, we employed Wu–Cohen generalized gradient approximation (WC-GGA) to
calculate the structural stability, whereas the modified Becke and Johnson local-density approximation
(mBJLDA) functional has been used to determine the electronic and magnetic properties
of Zn1−xTMxTeZn1−xTMxTe (TM=Fe, Co, Ni)(TM=Fe, Co, Ni) alloys in the xxrange 0–1. Structural
optimization in paramagnetic (PM), ferromagnetic (FM) and anti-ferromagnetic (AFM) orders has been
done to check the state stability of the doped alloys and then verified with the calculated values of enthalpy
of formation (ΔH)(ΔH). The erections of enthalpies were negative which gave the evidence of structural
stability in FM phase for all three alloys. Our calculated values of equilibrium lattice constants decreased by
increasing the TM concentration, in Zn1−xTMxTeZn1−xTMxTe (TM=Fe, Co, Ni)(TM=Fe, Co, Ni) alloys.
We found ferromagnetism caused by the spin polarization of electron in TM-dd states in the studied alloys
by analyzing the calculated band structure (BS), density of state (DOS) and magnetic moments. The
calculated ferromagnetism was also explained from the Zener model. Due to the tetrahedral crystal field,
the 3d3d-state of TM splits into double $e_g e_g$ and triple degenerate $t_{2g} t_{2g}$ states and our calculated results
show the strong pd interaction is only due to $t_{2g} t_{2g}$. Furthermore, we predict exchange splitting
energies Δx(d)Δx(d) and Δx(pd)Δx(pd) and exchange constants (N0α)(N0α) and (N0β)(N0β). Their
calculated values are consistent with typical magneto-optical experiment. The magnetic moments of TM
ions were reduced by increasing TM concentration in Zn1−xTMxTeZn1−xTMxTe (TM=Fe, Co, Ni)
(TM=Fe, Co, Ni) alloys, while trivial local magnetic moments at Zn and Te sites were also found.

Keywords: Zn1−xTMxTeZn1−xTMxTe (TM=Fe, Co)(TM=Fe, Co) alloys, first-principle calculations,
mBJLDA functional, spin polarized electronic properties, magnetic properties.

06:

Hassan, M., **Noor, N. A**., Mahmood, Q., & Amin, B. (2016). Investigation of ferromagnetic semiconducting
and opto-electronic properties of Zn1xMnxS (0 x 1) alloys: A DFT-mBJ approach. *Current applied
physics, 16*(11), 1473-1483C. **(Naveed Ahmed Noor (Physics/SSC), JCR LISTED (IF:2:144))**

Abstract: In this study, we report the mechanical, structural, electronic, magnetic and optical behaviors in
Zn1-xMnxS (0≤x≤1), which are determined by employing Wein2K code. The ferromagnetic (FM) state
stability of the Zn1-xMnxS alloys has been elucidated from the calculated values of enthalpy of formation.
The elastic constant (C11, C12, C14) are calculated to find various useful mechanical parameters, which
depend upon Mn concentrations. The calculated electronic band structure and density of states (DOS) have
demonstrated that exchange splitting through p-d hybridization, arising due to Mn impurities, stabilize a
ferromagnetic state. The exchange splitting of the bands is further elucidated from the sharing of magnetic

moment, charge and spin, between the impurity cations and the host lattice anions. Various parameters like direct spin-exchange splitting Δx(d), exchange constants N0α and N0β have also confirmed a stable ferromagnetic state. Various calculated optical parameters have indicated that the studied compounds respond to visible and ultraviolet energies. Moreover, the calculated optical band gap and static dielectric constant ε1(0) verify Penn's model. The studied compounds of $Zn_{1-x}Mn_xS$ have been shown theoretically that they find potential spintronic and optical device applications

Keywords: Magnetic semiconductors, density functional theory, opto-electronics, p-d hybridization, band structure

07:

Khalid, S., Sharif, R., & **Shah, Z. H.** (2016). Tailoring of magnetic easy axis of nickel nanowires by varying diameter. *Surface review and letters, 23*(04). **(Sidra Khalid (Physics/SSC), Zaheer Hussain Shah, JCR LISTED (IF:0:435))**

Abstract: Anodized aluminum oxide (AAO) templates with an average diameter of D1 20 nm and D2 200 nm are synthesized by two-step anodization. Nickel nanowires are fabricated by AC electro deposition with less microstructure defects at low voltage in AAO templates. Magnetic properties of compact nickel (Ni) nanowires show that easy axis is parallel to nanowire axis for diameter D1 20 nm while by varying diameter from D1 20 nm to D2 200 nm, easy axis shifts to perpendicular direction of nanowire axis. This shifting of magnetic easy axis from parallel to perpendicular direction is mainly due to shape anisotropy and interactive ⁻elds between the wires. The competition between shape anisotropy (due to individual wire) and interactive ⁻elds by varying diameter of nanowires could result in tailoring of the direction of magnetic easy axis of nanowires.

Keywords: Nanowires; easy axis; reversal of easy axis; anodization.

08:

Ullah, N., Murtaza, G., **Iqbal, M. A.,** Mahmood, A., & Khenata, R. (2016). Computational study of $Cu_2ZnSn(X_{1-x}Te_x)_4$ (X = S, Se) for optoelectronic applications. *International Journal of Modern Physics B, 30*(0), 1-11. **(Muhammad Azhar Iqbal (Physics/SSC), JCR LISTED (IF:0:98))**

Abstract: The Cu_2ZnSnS_4, $Cu_2ZnSnSe_4$ and $Cu_2ZnSnTe_4$ and their alloys have been frequently investigated experimentally owing to their suitable bandgap for the solar cell applications. For the first time, density functional theory is applied to explore the structural, electronic and optical properties of $Cu_2ZnSn(S_{1-x}Te_x)$ and $Cu_2ZnSn(Se_{1-x}Te_x)$ (x = 0, 0.25, 0.5, 0.75, 1). The energy minimization procedure reveals that the Kesterite phase is stable compared to the Stannite structure. Lattice constants of the compounds are in good agreement with the previous experimental results. The alloys have direct bandgaps which decrease by increasing the concentration of Te. The chemical bonding among the cations and anion is dominantly covalent. Electronic bandgap dependent optical properties like absorption coefficient and optical conductivity are studied in detail. The materials show strong response in the visible region of energy spectrum indicating the usefulness of these materials for optoelectronic devices.

Keywords: Chalcogenides, DFT; solar cells, electronic structure, optical properties.

09:

Erum, N., & **Iqbal, M. A.** (2016). First principles investigation of fluorine based strontium series of perovskites. *Communications in Theoretical Physics, 66*(5), 571-578. (**Muhammad Azhar Iqbal (Physics/SSC), JCR LISTED (IF:0:948)**)

Abstract: Density functional theory is used to explore structural, elastic, and mechanical properties of $SrLiF_3$, $SrNaF_3$, $SrKF_3$ and $SrRbF_3$ fluoroperovskite compounds by means of an ab-initio Full Potential-Linearized Augmented Plane Wave (FP-LAPW) method. Several lattice parameters are employed to obtain accurate equilibrium volume (Vo). The resultant quantities include ground state energy, elastic constants, shear modulus, bulk modulus, young's modulus, cauchy's pressure, poisson's ratio, shear constant, ratio of elastic anisotropy factor, kleinman's parameter, melting temperature, and lame's coefficient. The calculated structural parameters via DFT as well as analytical methods are found to be consistent with experimental findings. Chemical bonding is used to investigate corresponding chemical trends which authenticate combination of covalent-ionic behavior. Furthermore electron density plots as well as elastic and mechanical properties are reported for the first time which reveals that fluorine based strontium series of perovskites are mechanically stable and posses weak resistance towards shear deformation as compared to resistance towards unidirectional compression while brittleness and ionic behavior is dominated in them which decreases from $SrLiF_3$ to $SrRbF_3$. Calculated cauchy's pressure, poisson's ratio and B/G ratio also proves ionic nature in these compounds. The present methodology represents an effective and influential approach to calculate the whole set of elastic and mechanical parameters which would support to understand various physical phenomena and empower device engineers for implementing these materials in numerous applications

Keywords: Density functional theory, fluoroperovskites, mechanical properties, elastic constants

10:

Mahmood, Q., Hassan, M., & **Noor, N. A.** (2016). Systematic study of room-temperature ferromagnetism and the optical response of Zn1-xTMxS/Se (TM = Mn, Fe, Co, Ni) ferromagnets: first-principle approach. *Journal of Physics-Condensed Matter, 28*(50). (**Naveed Ahmed Noor (Physics/SSC), JCR LISTED (IF:2:209)**)

Abstract: The structural, magnetic and optical characteristics of Zn1−xTMxS/Se (TM = Mn, Fe, Co, Ni and x = 6.25%) have been investigated through the full-potential linearized augmented plane wave method within the framework of density functional theory. The optimized structures have been used to calculate the ferromagnetic and the antiferromagnetic ground-state energies. The stability of the ferromagnetic phase has been confirmed from the formation and the cohesive energies. The Heisenberg model is used to elucidate the Curie temperature (Tc) of these alloys. From the band structures and density of states plots, it has been observed that TM-doped ZnS/Se alloys appear to be semiconductors and exhibit ferromagnetism. In

addition, the observed ferromagnetism has also been explained in terms of direct exchange energy Δx(d), exchange splitting energy Δx(pd), crystal-field energy (Ecrys), exchange constants (N0α and N0β) and magnetic moments that shows potential spintronic applications. The optical behaviors of these alloys have been explained in terms of real and imaginary parts of the dielectric constant ε(ω), refractive index n(ω), extinction coefficient K(ω), reflectivity R(ω) and absorption coefficient σ(ω), in the energy range 0–25 eV. The calculated static limits of the band gaps and real part of the dielectric constants satisfy the Penn model. The critical limits of the imaginary part of the dielectric constants and absorption coefficients indicate that these alloys can be operated in the visible and the ultraviolet region of the electromagnetic spectrum; therefore, make them important for optoelectronic applications.

Keywords: Magnetic semiconductors, ferromagnetism, optical properties

11:

Manzoor, U., **Siddique, S.,** Ahmed, R., Noreen, Z., Bokhari, H., & Ahmad, I. (2016). Antibacterial, Structural and Optical Characterization of Mechano-Chemically Prepared ZnO Nanoparticles. *Plos One, 11*(5).). **(Sumera Siddique (SST), JCR LISTED (IF:3:057))**

Abstract: Structural investigations, optical properties and antibacterial performance of the pure Zinc Oxide (ZnO) nanoparticles (NPs) synthesized by mechano-chemical method are presented. The morphology, dimensions and crystallinity of the ZnO NPs were controlled by tweaking the mechanical agitation of the mixture and subsequent thermal treatment. ZnO nanoparticles in small (< 20 nm) dimensions with spherical morphology and narrow size distribution were successfully obtained after treating the mechano-chemically prepared samples at 250°C. However, higher temperature treatments produced larger particles. TEM, XRD and UV-Vis spectroscopy results suggested crystalline and phase pure ZnO. The NPs demonstrated promising antibacterial activity against Gram negative foodborne and waterborne bacterial pathogens i.e. Enteropathogenic *E. coli* (EPEC), *Campylobacter jejuni* and *Vibrio cholerae* as well as Gram positive methicillin resistant *Staphylococcus aureus* (MRSA), thus potential for medical applications. Scanning electron microscopy and survival assay indicated that most probably ZnO nanoparticles cause changes in cellular morphology which eventually causes bacterial cell death.

12:

Rehman, M. A., Rehman, R., Zahra, F., Saqib, M., **Abdullah, A.** (2016). Temperature dependent electrical properties of co-precipitated magnesium doped lithium nanoferrites, *Journal of Material Science : Material in Electronics 27*.5517-5525. **(Ali Abdullah (Physics/SSC), (NOT RECOGNIZED BY HEC))**

Abstract: Due to a number of unique properties, nanoferrites are considered among the most emerging materials for the manufacturing of microwave devices. In past few years, different elemental compositions of nanoferrites were fabricated for this purpose. In our work, magnesiumdoped lithium ferrites (Li2-xMgxFe2O4.5-d, where x = 0.0 to 1.0) were synthesized by using co-precipitation method in optimized conditions. Structural analysis was done by using X-ray diffraction (XRD); this data was further used to calculate the porosity, phase purity and crystallite size. The XRD results confirmed the formation of spinel structure for all the samples. The surface morphology of the prepared samples was examined by using

scanning electron microscope that showed particle like morphology. Thermogravimetric analysis and differential scanning calorimetry were used to investigate the phase transition and melting point of the prepared samples respectively. The analysis showed the phase transitions at two temperature ranges and the melting point of the all the samples was above 900 C except for composition x = 0.4. Dielectric loss, dielectric constant, AC electrical conductivity and DC electrical resistivity were studied as a function of temperature. Curie temperature was also estimated from the temperature dependent conductivity data and that were observed to be decreased with increase in Mg concentration. The result obtained from the electrical analysis of the prepared samples confirmed that they could be used in frequency dependent devices.

13:

Shaheen, S., Batool, H. Z., Latif, A., Jamshaid, Z., & Yasin, H. (2016). Surface and structural analysis of transition metals. *Science International (Lahore), 28*(3), 2227-2230. **(Saira Shaheen, (Physics/SSC), Hafiza Zahra Batool, (HEC YCAT))**

Abstract: Laser irradiation effects on transition metals have been investigated in terms of their surface modifications, changes in structural properties. Fine polished and 4N (99.99%) pure samples of copper (Cu), gold (Au) and platinum (Pt) are exposed to Q-switched Nd:YAG laser (1064nm, 10ns and 10mJ) in ambient air. Laser fluence used is 3.18 J/cm2 where the focal spot size on target surface is 100 µm. A grid is formed on each sample surface imposing 200 laser shots on each spot. Radiated and un-irradiated targets are then characterized by employing Optical microscope and X-ray diffarectrometer for the analysis of surface morphology and structural properties respectively. The thermal effects are dominant in gold: also the microstructures are observed on the ablated surface of copper which shows the non-uniform behavior of heat conduction. The ablation and splashing is observed on Platinum surface. The comparison of structural changes for exposed targets reveals the change in grain size, dislocation line density and micro-strain on the target surfaces. The correlations are found between grain size, dislocation line density and strain with 2(theta) of the materials.

Keywords: Laser irradiation, surface morphology, crystallography, surface hardening

Conference papers by Department of Physics

01:

Shah, Z. H., Riaz, S., Kayani, Z. N., & Naseem, S. (2016).*Tailoring the magnetic, dielectric and structural properties of co doped α-Fe2O3 nanoparticles.* Paper presented at The 2016 World Congress on Advances in Civil, Environmental and Materials Research (ACEM 16), Jeju Island Korea**. (Saira Riaz (Physics\SSC))**

02:

Shah, Z.H., Riaz, S., Kayani, Z.N., & Naseem, S.(2016) .*Size Distribution and Magnetic Optimization of Phase Pure Chromium Doped Magnetite Nanoparticles.* Paper presented at The 2016 World Congress on Advances in Civil, Environmental and Materials Research (ACEM 16), Jeju Island Korea. **(Saira Riaz (Physics\SSC))**

03:

Ahmad, I., & Khawaja, E. E.(2016). *Passive cooling of surface.* Paper presented at International conference on Energy for Environmental and Economic Sustainability (ICEEES2016), Pearl Continental Lahore, Pakistan. **(Imtiaz Ahmad (Physics\SSC), Ehsan Ellahi Khawaja)**

Publications by Department of Mathematics

01:

Zafar, S., & Zahid, Z. (2016). Binomial edge idealswith two associated prime, *Math Reports, 18*(68), 179-185. **(Sohail Zafar (Mathematics /SSC), Zohaib Zahid, JCR LISTED (IF:0:118))**

Abstract: We study binomial edge ideals JG with | Ass(JG)| = 2. We give an explicit description of the modules of deficiencies, the duals of local cohomology modules and compute the Castelnuovo-Mumford regularity. As an application, we characterize all graphs G with | Ass(JG)| = 2 such that S/JG is sequentially Cohen-Macaulay

Keywords: Binomial edge ideal, Castelnuovo-mumford regularity, Sequentially cohen-macaulay rings.

02:

Nadeem, M. F., **Zafar, S., & Zahid, Z.** (2016). On topological properties of the line graphs of subdivision graphs of certain nanostructure. *Applied Mathematics and Computation, 273,* 125–130 . **(Sohail Zafar (Mathematics /SSC), Zohaib Zahid, JCR LISTED (IF:1:551))**

Abstract: In the study of QSAR/QSPR, topological indices such as Shultz index, generalized Randic index, Zagreb index, general sum-connectivity index, atom-bond connectivity (ABC) index and geometric–arithmetic (GA) index are exploited to estimate the bioactivity of chemical compounds. A topological index attaches a chemical structure with a numeric number. There are numerous applications of graph theory in this field of research. In this paper we computed generalized Randic, general Zagreb, general sum-connectivity, ABC, GA, ABC4 and GA5 indices of the line graphs of 2D-lattice, nanotube and nanotorus of TUC4C8[p, q] by using the concept of subdivision.

Keywords: Topological indices, Line graph, Subdivision graph, Nanostructures.

03:

Nadeem, M. F., **Zafar, S., & Zahid, Z.** (2016). On the edge version of geometric-arithmetic index of nanocones. *Studia UBB Chemia, LXI, 1*, 273-282. **(Sohail Zafar (Mathematics /SSC), Zohaib Zahid, JCR LISTED (IF:0:119))**

Abstract: In this paper, the edge version geometric-arithmetic index of certain nanocones is presented.

Keywords: Geometric-arithmetic (GA) index, GAe index, Nanocones

04:

Zubair, M., Abbas, G., & **Noureen, I.** (2016). Possible formation of compact stars in f (R , T) gravity. *Astrophysics and Space Science, 361*(1), 1-10. **(Ifra Noureen (Mathematics /SSC), JCR LISTED (IF:1:678))**

Abstract: This paper reports on the investigations regarding the possible formation of compact stars in f (R,T) theory of gravity, where R is the Ricci scalar and T is the trace of the energy–momentum tensor. In this connection, we use the analytic solution of the Krori and Barua metric (Krori and Barua in J. Phys. A., Math. Gen. 8:508, 1975) for a spherically symmetric anisotropic star in the context of f (R,T) gravity. The masses and radii of compact star models, namely Model 1, Model 2, and Model 3, are employed to incorporate the unknown constants in the Krori and Barua metric. The physical features such as regularity at the center, the anisotropy measure, causality, and the well-behaved condition of the above-mentioned class of compact starts are analyzed. Moreover, we also discuss the energy conditions, stability, and surface redshift in f (R,T) gravity.

Keywords: Compact stars f (R,T) gravity.

05:

Sen, M. D. l., Abbas, M., **Saleem, N.** (2016). On optimal fuzzy best proximity coincidence points of fuzzy order preserving proximal Ψ(σ, α)-lower-bounding asymptotically contractive mappings in non-Archimedean fuzzy metric spaces. *Springer Plus, 5*(1478), 1-26. **(Naeem Saleem (Mathematics /SSC), JCR LISTED (IF:0.982))**

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, α)-Lower-bounding mapping, Ψ (σ, α)-Lower-bounding asymptotically contractive mapping, Switching rule.

06:

Sharif, M., & **Manzoor, R.** (2016). Dynamics of axial symmetric system in self-interacting Brans–Dicke gravity. *European Physics Journal C, 76*(330), 1-12. **(Rubab Manzoor (Mathematics /SSC), JCR LISTED (IF:4:912))**

Abstract: This paper investigates dynamics of axial reflection symmetric model in self-interacting Brans-Dicke gravity for anisotropic fluid. We formulate hydrodynamical equations and discuss oscillations using time-dependent perturbation for both spin as well as spin-independent cases. The expressions of frequency, total energy density and equation of motion of oscillating model are obtained. We study instability of oscillating models in weak approximations. It is found that the oscillations and stability of the model depend

upon the dark energy source along with anisotropy and reflection effects. We conclude that the axial reflection system remains stable for stiffness parameter $\Gamma = 1$, collapses for $\Gamma > 1$ and becomes unstable for $0 < \Gamma < 1$.

Keywords: Brans-Dicke theory; Axial symmetry; Instability; Newtonian and post-Newtonian regimes.

07:

Sharif, M., & **Manzoor, R.** (2016). Hydrodynamics of a gaseous system in massive Brans-Dicke gravity. *The European Physical Journal Plus, 131*(64), 1-13. **(Rubab Manzoor (Mathematics /SSC), JCR LISTED (IF:1:521))**

Abstract: This paper explores hydrodynamics and hydrostatic of a star in the post-Newtonian approximation of massive Brans-Dicke gravity. We study approximated solutions of the field equations up to $O(c-4)$ and generalize Euler equations of motion. We then formulate equations governing the stability and instability of the system. Finally, we discuss spherically symmetric stars for a specific barotropic case like dust, cosmic string and domain wall in this scenario.

08:

Sharif, M., & **Manzoor, R.** (2016). Instability analysis of a cylindrical stellar object in brans–dicke gravity. *Journal of Experimental and Theoretical Physics, 149*(5), 849-858. **(Rubab Manzoor (Mathematics /SSC), JCR LISTED (IF:0:953))**

Abstract: This paper investigates instability ranges of a cylindrically symmetric collapsing cosmic filamentary structure in Brans-Dicke theory of gravity. For this purpose, we use perturbation approach in the modified field equations as well as dynamical equations and construct a collapse equation. The collapse equation with adiabatic index (Γ) is used to explore the instability ranges of both isotropic as well as anisotropic fluid in Newtonian and post-Newtonian approximations. It turns out that the instability ranges depend on the dynamical variables of collapsing filaments. We conclude that the system always remains unstable for $0 < \Gamma < 1$ while $\Gamma > 1$ provides instability only for the special case.

Keywords: Brans-Dicke theory; Instability; Newtonian and post-Newtonian regimes

09:

M. Sharif., **Manzoor. R.** (2016). Stellar filaments in self-interacting Brans–Dicke gravity. *European Physics Journal C,76*(276), 1-8. **(Rubab Manzoor (Mathematics /SSC), JCR LISTED (IF:4:912))**

Abstract: This paper is devoted to the study of the cylindrically symmetric stellar filaments in self-interacting Brans– Dicke gravity. For this purpose, we construct polytropic filamentary models through a generalized Lane–Emden equation in the Newtonian regime. The resulting models depend upon the values of the cosmological constant (due to the scalar field) along with the polytropic index and represent a generalization of the corresponding models in general relativity. We also investigate the fragmentation of the filaments by exploring the radial oscillations through a stability analysis. This stability criterion depends only upon the adiabatic index.

10:

Azam, M., **Mardan, S.A., & Rehman, M.A.** (2016). Stability of Quark Star Model. *Communications in Theoretical Physics, 65,* 575–584. **(Syed Ali Mardan Azmi (Mathematics /SSC), Muhammad Aziz-ur-Rehman,   JCR LISTED (IF:0:948))**

Abstract: In this paper, we investigate the stability of quark stars with four different types of inner matter configurations; isotropic, charged isotropic, anisotropic and charged anisotropic by using the concept of cracking. For this purpose, we have applied local density perturbations technique to the hydrostatic equilibrium equation as well as on physical parameters involved in the model. We conclude that quark stars become potentially unstable when inner matter configuration is changed and electromagnetic field is applied.

Keywords: Quark stars, Cracking, Density perturbations, Electromagnetic field.

11:

Azam, M., **Mardan, S. A., Noureen, I., & Rehman, M. A.** (2016). Study of polytropes with Generalized polytropic Equation of State. *European Physics Journal C, 76*(315), 1-9. **(Syed Ali Mardan Azmi (Mathematics /SSC), Ifra Noureen, Muhammad Aziz ur Rehman, JCR LISTED (IF:4:912))**

Abstract: The aim of this paper is to discuss the theory of Newtonian and relativistic polytropes with a generalized polytropic equation of state. For this purpose, we formulated the general framework to discuss the physical properties of polytropes with an anisotropic inner fluid distribution under conformally flat condition in the presence of charge. We investigate the stability of these polytropes in the vicinity of a generalized polytropic equation through the Tolman mass. It is concluded that one of the derived models is physically acceptable.

Keywords: Relativistic Anisotropic Fluids, Polytropes, Electromagnetic Field, Tolman-mass.

12:

Azam, M., **Mardan, S. A., & Rehman, M. A.** (2016). The stability of some viable stars and electromagnetic field. *Chinese Physics Letters, 33*(7), 1-4. **(Syed Ali Mardan Azmi (Mathematics /SSC), Muhammad Aziz ur Rehman, JCR LISTED (IF:0:875))**

Abstract: We examine the impact of electromagnetic field on the stability of compact stars corresponding to embedded class one metric using the concept of cracking. For this purpose, we develop the generalized hydrostatic equilibrium equation for charged perfect fluid distribution of compact stars and perturb it by means of local density perturbation scheme to check the stability of inner matter configuration. We investigate the cracking of Her X-1, PSR 1937+21, PSR J 1614-2230, PSR J 0348+0432 and RX J 1856-37.

We conclude that PSR J 0348+0432 and RX J 1856-37 exhibit cracking when charge is introduced on these astrophysical objects.

13:

Rashid, T., & Beg, I. (2016). Convex hesitant fuzzy sets. *Journal of Intelligent & Fuzzy Systems, 30,* 2791–2796. **(Tabasam Rashid (Mathematics /SSC), JCR LISTED (IF:1:004))**

Abstract: Convex hesitant fuzzy sets are defined as an extension of convex fuzzy sets. Also level sets are defined for hesitant fuzzy sets and discussed with their convexity. We focus on aggregation functions for hesitant fuzzy elements. These aggregation functions are further extended for hesitant fuzzy sets as well as for the convex structures of these sets.

Keywords: Fuzzy set, hesitant fuzzy set, convexity, aggregation function

14:

Beg, I., & **Rashid, T.** (2016). Hesitant 2-tuple linguistic information in multiple attributes group decision making, *Journal of Intelligent & Fuzzy Systems, 30,* 109–116. **(Tabasam Rashid (Mathematics /SSC), JCR LISTED (IF:1:004))**

Abstract: In this paper, the concept of a hesitant 2-tuple linguistic information model is introduced. It provides a linguistic and computational basis to manage the situations in which experts assess an alternative in linguistic term while feeling some hesitation to present its possible linguistic translations. A distance measure is defined between any two hesitant 2-tuple linguistic information. Then technique for order preference by similarity to ideal solution is formulated to solve the group decision making problem based on hesitant 2-tuple linguistic information by experts. An example is given to illustrate the practicality and feasibility of our proposed method.

Keywords: Multiple attributes group decision making, hesitant fuzzy sets, 2-tuple information

15:

Beg, I., & **Rashid, T.** (2016). Ideal solutions for hesitant fuzzy soft sets, Journal of Intelligent & *Fuzzy Systems, 30,* 143–150. **(Tabasam Rashid (Mathematics /SSC), JCR LISTED (IF:1:004))**

Abstract: Dealing with uncertainty is a difficult task and different tools have been proposed in the literature to handle it. Hesitant fuzzy sets are highly useful in resolving situations where people hesitate when providing their preferences. In this paper, the concept of a hesitant fuzzy soft set is modified to manage the situations in which experts assess an alternative according to finite criteria in all possible values. Next a distance measure is defined between any two elements of hesitant fuzzy soft set. Technique for order preference by similarity to ideal solution is also proposed in hesitant fuzzy soft set. An example is constructed for ranking of alternatives

16:

Ismat, B., & **Rashid, T.** (2016). Intuitionistic fuzzy similarity measure: Theory and applications. *Journal of Intelligent and Fuzzy Systems, 30*(2), 821-829. **(Tabasam Rashid (Mathematics /SSC), JCR LISTED (IF:1:004))**

Abstract: First we give notion of integral of intuitionistic fuzzy set and introduce intuitionistic fuzzy implicator and intuitionistic fuzzy inclusion measure. Then we propose a new measure of similarity between two intuitionistic fuzzy sets based on intuitionistic fuzzy inclusion measure. Examples are given to illustrate our notion and the application of this new similarity measure in multi-criteria decision making.

17:

Azam, M., **Mardan, S. A., Noureen, I., & Rehman, M. A.** (2016). Charged cylindrical polytropes with generalized polytropic equation of state. *The European Physical Journal C, 76*(510), 1-9. **(Syed Ali Mardan Azmi (Mathematics /SSC), Ifra Noureen, Muhammad Aziz ur Rehman, JCR LISTED (IF:4:912))**

Abstract: We study the general formalism of polytropes in the relativistic regime with generalized polytropic equations of state in the vicinity of cylindrical symmetry. We take a charged anisotropic fluid distribution of matter with a conformally flat condition for the development of a general framework of the polytropes. We discuss the stability of the model by the Whittaker formula and conclude that one of the models developed is physically viable.

18:

Beg, I., & **Rashid, T.** (2016). An intuitionistic 2-tuple linguistic information model and aggregation operators. *International Journal of Intelligent System, 31*(6), 569–592. **(Tabasam Rashid (Mathematics /SSC), JCR LISTED (IF:2:05))**

Abstract: Dealing with uncertainty is always a challenging problem, and different tools have been proposed to deal with it. Fuzzy sets was presented to manage situations in which experts have some membership value to assess an alternative. The fuzzy linguistic approach has been applied successfully to many problems. The linguistic information expressed by means of 2-tuples, which were composed by a linguistic term and a numeric value assessed in [−0.5, 0.5). Linguistic values was used to assess an alternative and variable in

qualitative settings. Intuitionistic fuzzy sets were presented to manage situations in which experts have some membership and nonmembership value to assess an alternative. In this paper, the concept of an I2LI model is developed to provide a linguistic and computational basis to manage the situations in which experts assess an alternative in possible and impossible linguistic variable and their translation parameter. A method to solve the group decision making problem based on intuitionistic 2-tuple linguistic information (I2LI) by the group of experts is formulated. Some operational laws on I2LI are introduced. Based on these laws, new aggregation operators are introduced to aggregate the collective opinion of decision makers. An illustrative example is given to show the practicality and feasibility of our proposed aggregation operators and group decision making method.

19:

Chowdhury, M. S. R., & Cho, Y. J. (2016). Generalized bi-quasi-variational inequalities for quasi-pseudo-monotone type II operators in non-compact settings. *Filomat, 30*(7), 1801–1810. (**Muhammad Showkat Rahim Chowdhury (Mathematics /SSC), JCR LISTED (IF:2:603)**)

Abstract: In this paper, we introduce a new class of generalized bi-quasi-variational inequalities for quasipseudo-monotone type II operators in non-compact settings of locally convex Hausdorff topological vector spaces and show the existence results of solutions for generalized bi-quasi-variational inequalities. Our results improve, extend and generalized the corresponding results given by some authors.

Keywords: Escaping sequences, cone, dual cone, bilinear functional, quasi-pseudomonotone type II operators, locally convex Hausdorff topological vector spaces, Generalized bi-quasi-variational inequalities, generalized bi-complementarity problems

20:

Talib, I., Asif, N. A., & Tunc, C. (2016). Coupled lower and upper solution approach for the existence of solutions of nonlinear coupled system with nonlinear coupled boundary conditions. *Proyecciones Journal of Mathematics, 35*(1), 99-117. (**Imran Talib (Mathematics /SSC), Naseer Ahmad Asif, JCR LISTED**)

Abstract: The present article investigates the existence of solutions of the following nonlinear second order coupled system with nonlinear coupled boundary conditions (CBCs) $\left\{\begin{array}{l}\end{array}\right.$ $-u 00 (t) = f1(t, v(t))$, t ∈ [0, 1], $-v 00 (t) = f2(t, u(t))$, t ∈ [0, 1], $\mu(u(0), v(0), u0 (0), v0 (0), u0 (1), v0 (1)) = (0, 0)$, $\nu(u(0), v(0)) + (u(1), v(1)) = (0, 0)$, where $f1, f2 : [0, 1] \times R \to R$, $\mu : R6 \to R2$ and $\nu : R2 \to R2$ are continuous functions. The results presented in [7, 11] are extended in our article. Coupled lower and upper solutions, Arzela-Ascoli theorem and Schauder's fixed point theorem play an important role in establishing the arguments. Some examples are taken to ensure the validity of the theoretical results.

Keywords: Lower and upper solutions, Nonlinear coupled system, Coupled nonlinear boundary conditions, Arzela-Ascoli theorem, Schauder's fixed point theorem.

21:

Asjad, M. I., Tahir, M., Javaid, M., & Imran, M. (2016). Exact solutions for unsteady flow of a fractional maxwell fluid through moving co-axial circular cylinders. *Journal of Computational and Theoretical Nanoscience, 13*(5), 3405-3413. **(Muhammad Imran Asjad (Mathematics /SSC), JCR LISTED (IF:1:666))**

Abstract: The purpose of this proposed investigation is to study the longitudinal flow of a fractional Maxwell fluid, between two infinite coaxial circular cylinders. The solutions will be determined by applying the Laplace and finite Hankel transforms. Initially both the cylinders are at rest and after $t = 0$ both cylinders begin to translate along their common axis. The solutions that have been obtained are presented in terms of generalized G functions. Moreover, these solutions satisfy both the governing differential equation and all imposed initial and boundary conditions. The corresponding solutions for ordinary Maxwell and Newtonian fluids are obtained as limiting case of our present analysis. Furthermore, the solutions for the motion between the cylinders, when one of them is at rest is also obtained from our general solutions. Finally, some graphically representations confirm the above assentations.

Keywords: Annulus, Fractional maxwell fluid, Laplace and finite hankel transforms, Shear stress, Velocity field

22:

Sharif, M., & **Manzoor, R.** (2016). Dark energy and collapsing axial system. *International Journal of Modern Physics D, 26*(6), 1750057-1750082. **(Rubab Manzoor (Mathematics /SSC), JCR LISTED (IF:1:963))**

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.

23:

Asjad, M. I., Sarwar, S., & Imran, M. (2016). Effects of slip on free convection flow of casson fluid over an oscillating vertical plate. *Boundary Value Problem, 30,* 1-11. **(Muhammad Imran Asjad (Mathematics /SSC), JCR LISTED (IF:0:642))**

Abstract: The slip effect on free convection of a Casson fluid past an infinite oscillating vertical plate with constant wall temperature is investigated. It is used to characterize the non-Newtonian fluid behavior. By

introducing appropriate non-dimensional variables, the resulting equations are solved analytically by using the Laplace transform technique. The corresponding solutions for a Casson fluid without slip at the boundary for $\lambda \to 0$, a Newtonian fluid with slip for $\gamma \to \infty$, and a Newtonian fluid in the absence of slip for $\lambda \to 0$ and $\gamma \to \infty$ are obtained as limiting cases. The effect of the Casson parameter is seen to suppress the velocity field. Also, the influence of the slip parameter causes a decrease in the velocity field. Numerical results for velocity, temperature, and Nusselt number are shown in various graphs and discussed for the embedded flow parameters.

Keywords: Casson fluid; oscillating flows; free convection; velocity field; exact solutions; slip effect

24:

Noreen, S., & **Saleem, M.** (2016). Soret and dufour effects on the MHD peristaltic flow in a porous medium with thermal radiation and chemical reaction. *Heat Transfer Research, 47*(1), 1-28. **(Musharafa Saleem (Mathematics /SSC), JCR LISTED (IF:0:93))**

Abstract: This study discusses the Soret and Dufour effects on the MHD peristaltic flow of a Maxwell fluid in the presence of thermal radiation and chemical reaction. The whole analysis is carried out in a porous space in a vertical asymmetric channel. A long wavelength and low Reynold number approximation is adopted. The walls are kept at different but constant temperatures and concentrations. A perturbation solution is acquired, which satisfies the momentum, energy, and concentration equations. Pressure rise per wavelength and frictional forces at the walls are computed numerically. The flow characteristics are analyzed at various pertinent parameters of interest.

Keywords: Soret and Dufour effects, Porous medium, Thermal radiation, Mixed convection.

25:

Riasat, A., Kanwal, S., & Javed, S. (2016). On odd-graceful labeling of disjoint union of graphs. *Utilitas Mathematica, 101,* 189-214. **(Ayesha Riasat (Mathematics /SSC), JCR LISTED (IF:0:273))**

Abstract: Let G = (V, E) be a finite, simple and undirected graph having v = |V (G)| and e = |E(G)|. A graph G with q edges is said to be odd-graceful if there is an injection f : V (G) $\to$ {0, 1, 2, . . ., 2q −1} such that, when each edge xy is assigned the label |f(x)−f(y)|, the resulting edge labels are {1, 3, 5, . . ., 2q−1}. Motivated by the work of Z. Gao [6], we have defined odd graceful labeling for some other union of graphs. In this paper we formulate odd-graceful labeling for disjoint unions of graphs consisting of generalized combs, ladder, star, bistar, caterpillar and path.

Keywords: odd-graceful labeling, comb, caterpillar, bistar, ladder.

26:

Ahmad, S., Nakahara, T., & Hameed, A. (2016). On certain pure sextic fields related to a problem of Hasse. *International Journal of Algebra and Computation, 26*(3), 577-583. **(Shahzad Ahmad (Mathematics /SSC), JCR LISTED (IF:0:469))**

Abstract: An algebraic number ring is monogenic, or one-generated, if it has the form Z[α] for a single algebraic integer α. It is a problem of Hasse to characterize, whether an algebraic number ring is monogenic or not. In this note, we prove that if m is a square-free rational integer, m ≡ 1 (mod 4) and m ≡ ±1 (mod 9), then the pure sextic field L = Q(√6 m) is not monogenic. Our results are illustrated by examples.

Keywords: Power integral basis; relative integral basis; pure sextic field; non-monogenesis

27:

Ali, A., Raza, Z., & Bhatti, A. A. (2016). Extremal pentagonal chains with respect to bond incident degree indices. *Canadian Journal of Chemistry, 94*(10), 870-876. **(Akbar Ali (Mathematics /SSC), JCR LISTED)**

Abstract: Numerous molecular structure descriptors, which may be used in theoretical chemistry, are the bond incident degree (BID) indices. This study is devoted to establish a general expression for calculating the BID indices of pentagonal chains and to find the extremal (maximal and minimal) values for a variety of BID indices over the certain collection of pentagonal chains with a fixed number of pentagons.

Key words: degree-based topological index, bond incident degree index, k-polygonal chain, pentagonal chain.

28:

Tufail, M. N., Butt, A. S., & Ai, A. (2016). Group theoretical analysis of non-newtonian fluid flow, heat and mass transfer over a stretching surface in the presence of thermal radiation. *Journal of Applied Fluid Mechanics, 9*(3), 1515-1524. **(Muhammad Nazim Tufail (Mathematics /SSC), JCR LISTED (IF:0:888))**

Abstract: The present article examines the flow, heat and mass transfer of a non-Newtonian fluid known as Casson fluid over a stretching surface in the presence of thermal radiations effects. Lie Group analysis is used to reduce the governing partial differential equations into non-linear ordinary differential equations. These equations are then solved by an analytical technique known as Homotopy Analysis Method (HAM). A comprehensive study of the problem is being made for various parameters involving in the equations through tables and graphs.

Keywords: Lie group analysis; Heat transfer; Magnetic field; Mass transfer; Thermal radiation

29:

Huo, Y., Liu, J., **Zahid, Z., Zafar, S.,** Farahani, M.R., & Nadeem, M. F. (2016). On certain topological indices of the line graph of CNCK[N] Nanocones. *Journal of Computational and Theoretical Nanoscince, 13*, 1-5. **(Zohaib Zahid (Mathematics /SSC) Sohail Zafar, JCR LISTED (IF:1:665))**

Abstract: The edge adjacency matrix of a molecular graph is equivalent with vertex adjacency matrix of the line graph of this molecular graph. Therefore the edge connectivity index of molecular graph is identical as Randic vertex connectivity index of the corresponding line graph. This inspection provides a new direction in the field of topological indices: computation of the topological indices of a line graph of molecular graphs. In this paper, we computed ABC 4 and GA 5 indices of the line graph of CNC k [n] nanocones.

Keywords: ABC4 Index; CNC k [n] Nanocones; GA5 Index

30:

Riaz, M. B., Asjad, M. I., & Shabbir, K. (2016). New Exact Solutions for the Flow of Generalized Maxwell Fluid. *Journal of Computational and Theoretical Nanoscience, 13*(8), 5254-5257. **(Muhammad Bilal Riaz (Mathematics /SSC) Muhammad Imran Asjad, JCR LISTED (IF:1:666))**

Abstract: Exact solutions for unsteady flow of the fractional Maxwell fluid have been investigated using integral transforms technique. Expressions for velocity can be written as a sum of Newtonian and nonNewtonian contributions and are presented in term of generalized G-function. Three particular cases namely translation of plate with uniform velocity, constant acceleration and sinusoidal acceleration of the plate are considered. The unsteady motion of the Maxwell fluid with fractional derivative over an infinite plate is obtained as limiting case. Influence of the fractional parameter as well as material parameters on the fluid motion are studied. By graphical illustrations, comparison between the velocity of the fractional and classical fluids is also made.

Keywords: Maxwell fluid, Fractional calculus, Exact solutions, Velocity field.

31:

Riaz, M. B., Asjad, M. I., & Shabbir, K. (2016). Analytic solutions of oldyrod-B fluid with fractional derivatives in a circular duct that applies a constant couple. *Alexendria Engineering Journal, 3*(43), 1-9. **(Muhammad Bilal Riaz (Mathematics /SSC) Muhammad Imran Asjad, (NOT RECOGNIZED BY HEC))**

Abstract: The aim of this article was to analyze the rotational flow of an Oldroyd-B fluid with fractional derivatives, induced by an infinite circular cylinder that applies a constant couple to the fluid. Such kind of problem in the settings of fractional derivatives has not been found in the literature. The solutions are based on an important remark regarding the governing equation for the nontrivial shear stress. The solutions that have been obtained satisfy all imposed initial and boundary conditions and can easily be reduced to the similar solutions corresponding to ordinary Oldroyd-B, fractional/ordinary Maxwell, fractional/ordinary second-grade, and Newtonian fluids performing the same motion. The obtained results are expressed in

terms of Newtonian and non-Newtonian contributions. Finally, the influence of fractional parameters on the velocity, shear stress and a comparison between generalized and ordinary fluids is graphically underlined

Keywords: Oldyrod-B fluid, Fractional calculus, Velocity field, Shear stress, Circular duct, Analytic solutions.

32:

Yan, L., Li, Y. F., Farhani M. R., Jamil M. K., **Zafar S.** (2016). Vertex version of Co-PI index of the polycyclic aromatic hydrocarbon systems PAHk. *International Journal of Biology, Pharmacy and Allied Sciences, 5*(6), 1244-1253. **(Sohail Zafar (Mathematics /SSC), (NOT RECOGNIZED BY HEC))**

Abstract: Let G be a simple connected graph having vertex set V and edge set E. The length of the smallest V(G) is called the distance, d(u,v), between the vertices u,v.∈path between vertices u,v Mathematical chemistry is the area of research engaged in new application of mathematics in chemistry. In mathematics chemistry, we have many topological indices for any molecular graph, that they are invariant on the graph automorphism. The length of the smallest path V(G) is called the distance, d(u,v), between the vertices u,v. For an edge∈between vertices u,v E(G), nu(e|G) represents the number of vertices of G whose distance to u is less than the∈e=uv distance to v in G and nv(e|G) represents the number of vertices of G whose distance to v is less than the distance to u in G. In 2010, A Iranmanesh et.al introduced the new topological indices. The Co-PIv index is the vertex version of Co-PI topological index and is defined as Co PI G n e G n e G ∈ In this present study, we introduce a closed formula of∑ − = − this new index of the Polycyclic Aromatic Hydrocarbon systems PAHk

Keywords: Molecular graphs, chemical structures Polycyclic Aromatic Hydrocarbon (PAHk), Circumcoronene series of Benzenoid; Padmakar-Ivan index; Co-PI index; Cut Method; Orthogonal Cut.

33

Nazir, R., Sardar, S., Zafar. S., & Zahid, Z. (2016). Edge version of harmonic index and harmonic polynomial of some classes of graphs. *Journal of Applied mathematics and Informatics, 34*(5), 479-486. **(Sohail Zafar (Mathematics /SSC), Rabia Nazir, Muhammad Shoaib Sardar, Zohaib Zahid (NOT RECOGNIZED BY HEC)**

Abstract:. In this paper we define the edge version of harmonic index and harmonic polynomial of a graph G. We computed explicit formulas for the edge version of harmonic index and harmonic polynomial of many well known classes of graphs.

Keywords: Topological indices, line graph.

34:

Baig, I., & **Rashid, T.** (2016). Approximations for soft fuzzy rough sets. *Scientific publications of the state University of NOVI Pazar (Series A: Applied Mathematics,Informatics, & Mechanics), 8*(2), 161-175. **(Tabasam Rashid (Mathematics /SSC),** (NOT RECOGNIZED BY HEC)**)**

Abstract: In this paper, we introduce a modified soft fuzzy rough set model. The lower and upper approximation operators are presented and their related properties are investigated. It is shown that these new models of approximations are finer than already known in the literature.

Keywords: Fuzzy set; rough set; soft set; soft fuzzy rough set; approximations.

35:

Ali, A., & Bhatti, A. A. (2016). A note on the augmented zagreb index of cacti with fixed number of vertices and cycles. *Kuwait Journal of Science, 43*(4), 11-17. **(Akbar Ali (Mathematics /SSC),** (NOT RECOGNIZED BY HEC)**)**

Abstract: Let Cn,k be the family of all cacti with k cycles and n ≥ 4 vertices. In the present note, the element of the class Cn,k having minimum augmented Zagreb index (AZI) is characterized. Moreover, some structural properties of the graph(s) having maximum AZI value over the collection Cn,0, are also reported.

Keywords: Topological index, Augmented zagreb index, Cactus graph.

36:

Ali, A., Javid, M., & **Rehman, M. A.** (2016). SEMT labeling on disjoint union of subdivided stars. *Journal of Mathematics, 48*(1), 111-122. **(Muhammad Aziz ur Rehman (Mathematics /SSC),** (HEC X CAT)**)**

Abstract: In this paper, we prove the existence of a super edge magic total (SEMT) labeling on some particular subclasses of the disjoint union of subdivided stars.

Keywords: SEMT labeling, Union of graphs, Subdivided stars.

37:

Sana, A., **Saeed**, **M.,** Chaudhry, N. A., **Tabbasum, M. F.**, & Rafiq, M. (2016). Optimal design of 16 bar truss structure by pattern search methods. *Pakistan Journal of Science, 68*(1), 74-81. **(Muhammad Saeed (Mathematics /SSC) Muhammad Farhan Tabassum,** (HEC X CAT)**)**

Abstract: The focus of this research was to formulate optimization model of 16-bar trussesalong with stress, stability and deflection constraints. The derivative free methods were used for theoptimization of engineering design problems. These methods were basically designed forunconstrained optimization problems. In formulated optimization truss problems the constraints werehandled by using exterior penalty functions. The results of the truss optimization model were obtainedby using MATLAB which demonstrated the effectiveness and applicability of these derivative freemethods. It was concluded that the results of

Nelder-Mead method were not acceptable due to their faraway convergence even its number of function evaluations were smaller than number of functionevaluations of Multi-Directional Search method and Hooke and Jeeves method. By comparing theoptimal function values obtained by these three methods, the performance of Hooke-Jeeves methodwas better than the other two methods.

Keywords: Derivative free methods, Penalty function, Structural Optimization, Truss Structure, and Unconstrained optimization.

39:

Imran, M. A., Sarwar, S., Imran, M., & Aleem, M. (2016). Combined effect of slip and radiation on MHD flow past a constantly moving vertical plate with variable temperature. *Journal of Prime Research in Mathematics, 12*, 130-144. **(Muhammad Imran Asjad (Mathematics /SSC), (HEC X CAT))**

Abstract: The unsteady free convection of an MHD flow of a viscous fluid passing a vertical plate which is constantly moving with variable temperature is analyzed by taking slip and radiation into consideration. The dimensionless governing equations for temperature and velocity fields are solved using Laplace transform technique. The radiative and slip effects are taken into consideration and the whole system is rotating as a rigid body with a constant angular velocity about the z-axis. Exact solutions are obtained for the two components of velocity. Some known solutions from the literature are obtained as a limiting case. The obtained solutions satisfy the initial and boundary conditions. Some physical aspects of flow parameters on the fluid motion are graphically presented.

Keywords: Slip effect, Viscous fluid, MHD flow, Rotating frame, Free convection, Vertical plate

40:

Jamil, R. N., Javaid, M., **Rehman, M. A., & Kirmani, K. N.** (2016). On the construction of fuzzy magic graphs. *Science International (Lahore), 28*(3), 2309-2311.**(Raja Noshad Jamil (Mathematics /SSC) Muhammad Aziz ur Rehman, Syed Khawer Nadeem Kirmani, (HEC Y CAT))**

Abstract: In this paper, we discussed the idea of fuzzy magic graphs. A fuzzy graph is knows as a fuzzy magic graph if there exist two bijective functions [ ] and [ ]such that and for all where [ ]is a fuzzy magic constant. Additionally, we investigated that fuzzy paths, fuzzy stars and fuzzy cycles are fuzzy magic graphs. To illustrate the applicability of fuzzy magic graphs we gave an illustrative example.

Keywords: fuzzy magic graphs, Fuzzy paths, Fuzzy stars, Fuzzy cycles

41:

Azam, M. K., Rehman, M. A., Ahmad, F., Imran, M., and Yaqoob, M. T. (2016). Integral transforms of K-WEYL fractional integrals. *Science International, 28*(4), 3287-3290. **(Muhammad Khurshid Azam (Mathematics /SSC) Muhammad Aziz ur Rehman, (HEC Y CAT))**

Abstract: In this paper, we find Mellin, Laplace, Fourier and generalized Stieltjes transforms of k - Weyl fractional integral. When 1→k, these results hold true for the usual Weyl fractional integral.

Keywords: Mellin, Laplace, Fourier and generalized Stieltjes Transforms, k -Weyl fractional integral

42:

Zulqarnain, M. & **Saeed, M.** (2016). An application of interval valued fuzzy soft matrix (IVFSM) in decision making. *Science International, 28*(3), 2261-2264. **(Muhammad Saeed (Mathematics /SSC), (HEC Y CAT))**

Abstract: In this era of high technology and scientific advancement, the complexities and oddities of life seek its solutions and comforts from various fields of mathematics. One of these helpful hands of mathematics is soft set theory. In this paper, we have proposed IVFSM, its kinds with meaningful illustrations and have proved its utility in decision making problems. Moreover, its distinctive properties have also been highlighted.

Keywords: Soft set, Fuzzy soft set, Interval valued fuzzy set, Interval valued soft set, Soft matrix, Interval valued fuzzy soft set.

43:

Sana, A., Tabbasum M. F., Chaudhry, N. A., and **Saeed, M.,** (2016), A numerical study of non-linear boundary value problem with robin boundary conditions. *Science International (Lahore), 28*(1), 43-48. **(Sana Akram (Mathematics /SSC), Muhammad Farhan Tabassum, Muhammad Saeed, (HEC Y CAT))**

Abstract: The Adomian decomposition method (ADM) is a creative and effective method for exact solution of functional equations of various kinds. Adomian decomposition method solves wide class of linear and non-linear, ordinary or partial differential equations. This paper presents the Adomian decomposition method for the solution of nonlinear boundary value problem using Robin boundary conditions. In this approach, the solution is found in the form of a convergent power series with easily computed components. To show the efficiency of the method, numerical results and graphical representation of results are presented and compared with exact solution.

Keywords: Adomian decomposition method, Robin boundary conditions, Nonlinear boundary value problem

44:

Nagina, F., Saeed, M., Tabbasum, M. F., & Ali, J. (2016). Solution of quarter car model by pattern search methods. *Science International (Lahore), 28*(1), 7-13. **(Nagina, F. (Mathematics /SSC) Muhammad Saeed, Muhammad Farhan Tabassum, J. Ali, (HEC Y CAT))**

Abstract: This paper involves a relative study of three optimization methods, which are Hooke-Jeeves, Nelder-Mead, and Multi-Directional Search Methods, for design optimizing vehicle suspensions constructed

on quarter vehicle model with different types of constrains. In optimization, three design norms are suspension working space, dynamic tire load and vertical vehicle acceleration. To execute design optimization five variables are nominated which are the tire stiffness, damping coefficient, sprung mass, spring stiffness and un sprung mass. It was resulted from the comparative study that the Multidirectional Search Method is more reliable than Hooke-Jeeves Method and Nelder-Mead Method. The optimum results of the quarter car model were obtained by using MATLAB programming environment which demonstrated the effectiveness and applicability of the methods.

Keywords: Quarter car model, Hooke-jeeves method, Nelder-mead method, Multi-directional search method.

45:

Tabbasum, M. F., Saeed, M., Chaudhry N. A., **Ali, J., & Sana, A.** (2016). Modeling and optimizing oxygen production system using differential evolution. *Science International (Lahore), 28*(1), 1-6. **(Muhammad Farhan Tabassum (Mathematics /SSC), M. Saeed, J. Ali., Sana Akram, (HEC Y CAT))**

Abstract: In this article a non-linear optimization model of Oxygen production system is formulated. The production rate, pressure in storage tank, compressor power and storage tank volume are considered as the constraints of the model. The constraints in the formulated Oxygen production system model are handled by using 2-parameter-exponential penalty function. A novel optimization method based on a recently introduced Evolutionary Algorithm called Differential Evolution is described. Oxygen production system model is selected to demonstrate the capabilities and practical use of the method. The novel method is found easy to implement effectively, efficient and robust. The results obtained by this technique make it an attractive applicable approach for solving design problems in various engineering disciplines. The results are compared with previous studies also.

Keywords: Optimization, Differential evolution, 2-parameter-exponential penalty function, Oxygen production system.

46:

Saeed, M., Sana, A., & Rubi, N. (2016). Comparative study of airport evaluation problem by using fuzzy soft expert set and AHP technique. *Science International (Lahore), 28*(3), 2439-2443. **(Muhammad Saeed (Mathematics /SSC) Sana Akram, N. Rubi (HEC Y CAT))**

Abstract: The fuzzy soft expert set theory is applied to evaluate problems having vague data in addition with expert opinion. In this paper, quality of services provided by airline has been analyzed. The quality of service is a combination of different attributes but not all can be measured easily. In order to overcome the issue, different techniques are applied. Analytic Hierarchy Process and Soft expert set theory are among different ways to provide fruitful results about performance of airline. The concerned attributes are finance, time, safety, environment and comfort. Multi criteria decision making decision making problem has been discussed with soft Expert set and airport evaluation problem. The computational cost of Fuzzy Soft Expert set theory is less than AHP technique for the same outcome.

Keywords: Soft expert set, Analytic hierarchy process, Airport evaluation problem.

47:

Tabassum, M. F., Sadaf, S., Shahid, N. A., Sana, A., Nazir, S. (2016). Minimization of flagpole optimization problem through derivative free methods. *Science International (Lahore), 28*(1), 49-52. **(Muhammad Farhan Tabassum (Mathematics /SSC), (HEC Y CAT))**

Abstract: The purpose of this research is to formulate optimization model flagpole with stress, deflection, and bending shear constraints. Three derivative free methods, namely Nelder-Meed method, Hooke-Jeeve Method and Multidirectional search Methods are used. In this model penalty functions are utilized to remove constraints. In thusly the constrained optimization model is changed into unconstrained model. MATLAB is being used to get results which show the efficiency and success of these methods.

Keywords: Derivative free methods, Penalty function, Structural optimization problem, Unconstrained optimization.

48:

Tabassum, M. F., & Sana, A., (2016). Finite element analysis of plane truss structures. *Science International (Lahore), 28*(4), 3387-3392. **(Muhammad Farhan Tabassum (Mathematics /SSC) Sana Akram, (HEC Y CAT))**

Abstract: The focus of this research is to calculate element equations; assemble them to form global equations, incorporate essential boundary conditions into the system and obtain the final reduced system of equations in terms of the unknowns, solve it for nodal values, compute reactions and verify overall equilibrium and also determine axial strains, axial stresses, and axial forces in different elements of the truss by using finite element Analysis. We use five bar plane trusses. Also five bar truss problem with an inclined support with multipoint constraint due to inclined support, Lagrange multiplier used with global equations and Truss Supporting a Rigid Plate to use the penalty function approach and we choose the penalty parameter equal to l05 . The results of the trusses problems were obtained by using MATLAB which demonstrate the effectiveness, applicability of results.

Keywords: Plane trusses, Finite element analysis, Trusses with an inclined support, Trusses supporting rigid plate, Penalty function

49:

Rubina, S., Shahid, N. A., **Tabassum M. F.,** Nazir, S. and Sana, A. (2016). Comparison of solutions for two=dimensional fluid flow problems. *Science International (Lahore). 28*(1), 37-41. **(Muhammad Farhan Tabassum (Mathematics /SSC), (HEC Y CAT))**

Abstract: The flow past a wedge of a viscous incompressible fluid has been discussed. The steady flow of Newtonian and Micro-polar fluid is under discussion. A similarity transformation is used to condense the non-linear Partial Differential Equations to a system of ordinary differential equations. The resultant equations are then merged by using the required numerical ways and means. The system is solved numerically. The different three grid sizes are used to maintain the accurateness. The excellent comparison obtained. The results calculated for Newtonian fluid are approximate to the previous. The dimensionless Micro-polar fluid equations are used to establish the resulting governing equation. The difference equations for numerical solutions are finite. At the end all cases with numerical results are described in both graphical and tabular form.

Keywords: Flow past a wedge, Newtonian fluid, Micro polar fluid

50:

Zulqarnain, M., **Saeed, M., & Tabassum, M. F.** (2016). Comparison between fuzzy soft Matrix (FSM) and interval valued fuzzy soft matrix (IVFSM) in dicision making. *Science Internaitonal (Lahore), 28*(5), 4277-4283. **(Muhammad Saeed (Mathematics /SSC) Muhammad Farhan Tabassum, (HEC Y CAT))**

Abstract: In this paper we study FSM and IVFSM. First of all we redefined the product of IVFSM and use IVFSM and FSM in decision making problem with examples. Secondly we compare the results and see that FSM method is more appropriate for decision making. Finally we defined the And-Product and Or-Product of IVFSM with examples and discuss some properties.

51:

Raheem, A., **Javaid, M.**, & Baig, A. Q., (2016), On the antimagicness of the generalized extended w-trees. *Science International (Lahore), 28*(5), 5017-5022. **(Muhammad Javaid (Mathematics /SSC), (HEC Y CAT))**

Abstract: T In this paper, we find a new family of generalized extended w-trees and prove that it admits a Super ,d)-η(edge-antimagic total labeling for different possible values of d . The existence of a super ,d)-edge-antimagic totalη(labeling for the disjoint unions of isomorphic and non isomorphic copies of this generalized extended w-trees is also proved.

Keywords: Labeling, w-trees and generalized extended w-trees.

52:

Rihan, F. A., Hashish, A., Fatma, A.M., Hussein, M. S., Ahmed, E., M. **Riaz, M. B.,** & Yafia, R. (2016). Dynamics of Tumor-Immune System with Fractional-Order. *Journal of Tumor Research, 2*(1), 1-6. **(Muhammad Bilal Riaz (Mathematics /SSC) (NOT RECOGNIZED BY HEC))**

Abstract: Most of biological systems have long-range temporal memory. Modeling of such systems by fractional-order (or arbitrary-order) models provides the systems with long-time memory and gains them extra degrees of freedom. Herein, we suggest a simple fractional-order model to describe the dynamics of tumor-immune interactions. Two effector cells are considered, in the model, with a Holling function response of type-III. The model is extended to include treatment terms which represent an external source of the effectors cells by ACI and an external input of IL- 2. Asymptotic stabilities of tumour-free steady state and persistent- tumour steady state are studied. The threshold parameter R0 (average number of newly infected cells produced by a single councerous cell) is deduced. The numerical simulations show that the fractional-order derivative enriches the dynamics of the system and increases the complexity of the observed behaviours, which confirms that the fractional-order may play the role of memory in the system.

Keywords: Cancer, Fractional-order, Numerical simulation, Stability, Steady states, Tumor-immune system.

Conference papers by Department of Mathematics

01:

Rashid, T. (2016). *Hesitant 2-tuple linguistic information in multi-criteria group decision making.* Paper presented at Conference on Recent Advances in Mathematical Methods, Models & Applications held at Lahore School of Economics, Lahore, Pakistan**.(Tabasam Rashid(Mathematics\SSC))**

02:

Saleem, N. (2016).*Optimal coincidence point results in partially ordered non-Archimedean fuzzy metric spaces.* Paper presented at Second International Conference on Pure and Applied Mathematics, University of Sargodha, Pakistan. **(Naeem Saleem (Mathematics\SSC))**

School of Engineering (SEN)

Publications by Department of Civil Engineering

01:

Latif, M., Haider, S. S., & Rashid, M., U. (2016). Adoption of high efficiency irrigation systems to overcome scarcity of irrigation water in Pakistan. *Proceedings of the Pakistan Academy of Sciences: B. Life and Environmental Sciences 53*(4), 243–252. **(Muhammad Latif (Civil Engineering /SEN) Syed Sajjad Haider Shami, Muhammad Usman Rashid, (X CAT LISTED))**

Abstract: Water resources of Pakistan are dwindling but its water needs are continuously rising due to tremendous increase in population and urbanization. Fulfillment of increasing water demands is a challenge for the policy makers, planners, researchers as well as the end water users. Under the situation of looming water resources development in the country, efficient and economical use of existing water resources is inevitable. Unfortunately, efficiency of existing irrigation method which is predominately surface irrigation is less than 40 percent. Inadequate storage of surface water, sedimentation of existing reservoirs, falling groundwater levels, low land and water productivities are some of the major challenges of water resources in the country. The relevant literature tells that irrigation efficiency of pressurized irrigation systems, particularly of drip irrigation, is more than double the efficiency of traditional surface irrigation methods. Due to competitive water demands, it is very unlikely that in future more water will be made available to the agriculture sector. Thus agriculture is facing the challenge of 'producing more with less water'. Climate change is further intensifying this challenge due to more variability, increased frequency and intensity of extreme hydrologic events. Under these scenarios, accelerated and sustainable adaption of pressurized irrigation especially drip irrigation must be implemented judiciously (not just experimenting as has been done in the last 4-5 decades) to fulfill future water needs as illustrated for different countries in this article. For instance, in the United States, California State which contributes about 50 percent of its total production of vegetables, fruits and nuts in addition to cereal crops. Results of a study revealed that 30 percent of the irrigators' switched from surface irrigation (gravity) to drip irrigation from 1972 to 2001 in this state. Comparison of data for the last 3 decades in California further revealed consistent trend of decreasing use of surface irrigation and there is corresponding increase in high efficient drip irrigation. Due to water conservation and adaption of high efficiency irrigation systems (HEIS), proportion of irrigation water has reduced by 27 percent in China and 35 percent in Australia. Similarly, more examples cited in the paper also demonstrate rapid adaption of pressurized irrigation to fulfill increasing irrigation water demands. Therefore, to meet increasing irrigation demands, meticulous adaption of sustainable pressurized irrigation system is proposed along with other measures such as growing of short duration & drought resisting crop varieties, promoting water conservation and rain-water harvesting, deficit irrigation and other similar measures.

Keywords: Water resources, irrigation methods, surface, sprinkler and drip irrigations, water saving, water productivity

02:

Ajwad, A., Qureshi, L. A., Javed, M. A., Aqdas, A., **Rasheed, U., & Adnan, M. A.** (2016). Evaluating techniques to strengthen bonding between old and fresh concrete. *Science International (Lahore), 28*(4), 4259-4261. **(Ali Ajwad (Civil Engineering /SEN) Muhammad Usman Rashid, Muhammad Ahmad Adnan, (NOT RECOGNIZED BY HEC))**

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.

03:

Ali, T., **Ajwad, A.,** Iqbal, A., Khan, M., Farooq, M. U., Zada, N., & Khan, N. M. (2016). Comparison of different treatment methods to treat textile effluent. *Science International (Lahore), 28*(4), 4255-4258. **(Ali Ajwad (Civil Engineering /SEN), (HEC Y CAT))**

Abstract: Textile processing industry is one of the most important industries of Pakistan with regard to production, export and labor force. Environmental degradation by the textile industry sector is a matter of serious concern in Pakistan. The waste generated from the textile industries is very dangerous for the life existing on the earth.In this research suitable and appropriate method of treatment was adopted. The different parameters like nitrogen, chemical oxygen demand (COD) was investigated in this research. The mean value of COD was taken 1253 mg/L and Average daily flow was 4582 m3 /day. In this research the secondary treatment feasibility was analyzed for the treatment plantsi.e. Waste Stabilization Ponds and Trickling Filter. Furthermore, an effort has been made to propose a wastewater treatment technology which is relatively cheap, indigenous and easy to operate by comparing them on the basis of different parameters i.e.Overall efficiency, Cost and Environmental aspects.

Keywords: Secondary treatment, wastewater treatment, Waste Stabilization Ponds, Trickling Filter

04:

Qureshi, M. M., **Rashid, M. U.,** Shah, M. A., & Baluch, M. A. (2016). Hill torrent management in Southern Punjab of Pakistan. Historic Perspective and newtrends. *Technical Journal UET Taxila, Lahore, 21*(2), 2-9. **(Muhammad Usman Rashid (Civil Engineering /SEN), (HEC Y CAT))**

Abstract: Hill torrents (locally known as Rodh Kohi) are distinct type of waterways in which water drains from the mountains and hit the localities and infrastructure in its way with enormous speed. More than 200 hill torrents originate from the west of Suleiman Range and hit Taunsa, Dera Ghazi (D.G.) Khan and Rajanpur Districts of Punjab in Pakistan. Among these, 13 hill torrents are having large catchment areas and flood potential. These Hill Torrents after crossing fan area locally named as "Pachad area" crosses D.G.

Khan Canal through 22 numbers cross drainage structures and frequently creates disaster up to River Indus. Hill Torrents generally associated with uncertain flood flows have kept D.G. Khan and Rajanpur Districts Hill Torrent fan area socio economically very weak. Most often catastrophic flood events cause loss of billions of rupees to infrastructure, houses and irrigated lands. Conversely huge area, about 2.02 hectares, cultivable piedmont (Pachad) area fails to receive valuable irrigation water. Since the ancient times, diversion embankments of small size have been utilized by local people for diverting flood flows to their irrigation fields. These earthen embankments usually fail for high flow events but effectively divert low floods. Anumber of studies and plans were suggested to manage the Hill Torrent Floods since 1929 to date. It has been noted that these projects have shown some improvements in terms of utilization of Hill Torrent water for irrigation to uplift the economy of the area. It has been observed that piedmont area of the hill torrents is very fertile but due to erratic nature of floods land utilization is very low. The flood water due to its erratic nature one side destroys the infrastructure while on the other side barren land in piedmont area (Pachad area) is deprived off water for agriculture. This situation demands that there is a lot of space to improve the management of Hill Torrent floods. In this study existing management practices and appraisal of previous studies for Hill Torrents management in southern Punjab have been discussed with focus on additional prospective for sustainability of initiatives to gain full benefits of Hill Torrent water with an improved protection against flood vulnerabilities

Keywords: Hill torrents, Catastrophic floods, Flood water management, Piedmont area irrigation.

05:

Rashid, M. U., Latif, A., & Ghani, U. (2016). Sustainable and optimized utilization of water resources: Inflamable dams potential in Pakistan. Pakistan *Academy of Science, 53*(3), 149-161. (**Muhammad Usman Rashid (Civil Engineering /SEN), (HEC X CAT)**)

Abstract: Development of new reservoirs are utmost important for their utilization of providing water for irrigation, hydropower and flood damages reduction etc. In-addition to constructing new reservoirs, the efficient and sustainable use of existing reservoirs is also important for rapid economic growth of world. Pakistan is blessed with rich surface water resources of 180 Billion m3 annualy. However, total storage capacity of the three large dams is 17 Billion m3 which is only 10% of the available water resources. The current study identifies the latest trends for optimizing the utilization of water from reservoir to agriculture farm and their possible application to Pakistan. The paper also investigates the potential of inflatable dams in Pakistan for recharging of groundwater, as diversion weir for small hydropower plants, water supply and creating artificial lakes for recreation purposes. On the basis of criteria developed in the study, 31 sites were selected for checking their feasibility. SRTM 90m digital elevation database and Google Mapper were used to develop digital elevation models and contours for studying different technical parameters. Total 27 sites were found feasible and indicated the potential for Inflatable Dams in Pakistan on the basis of preliminary results. For sustainable and optimized utilization of water resources, it is utmost important to implement the following measures identified for supplying water from reservoir to crop root zone are: remodeling/ modernization of barrages and canals including lining of distributaries and minors. Adoption of resource conservation technologies, and optimized cropping systems by including high value and high yield crops are recommended in the study for achieving the desired objectives.

Keywords: Water resources, inflatable dams, reservoirs operation, sedimentation, Tarbela, Diamer Basha

06:

Munir, M. M., Ahmed, T., Munir, J., & **Rasheed, U.** (2016). Application of Computational Flow Dynamics Analysis for Surge Inception and Propagation for Low Head Hydropower Projects. Proceedings of the *Pakistan Academy of Sciences: A. Physical and Computational Sciences, 53*(2), 177–185. **(Muhammad Usman Rashid (Civil Engineering /SEN), (HEC X CAT))**

Abstract: Determination of maximum elevation of a flowing fluid due to sudden rejection of load in a hydropower facility is of great interest to hydraulic engineers to ensure safety of the hydraulic structures. Several mathematical models exist that employ one-dimensional modeling for the determination of surge but none of these perfectly simulate real-time circumstances. The paper envisages investigation, inception and propagation of surge for a Low-Head Hydropower project using Computational Fluid Dynamics (CFD) analysis in FLOW-3D software. The fluid dynamic model utilizes Reynolds' Averaged Navier-Stokes Equations (RANSE) for surge analysis. The CFD model is designed for a case study at Taunsa Hydropower Project in Pakistan which has been run for various scenarios keeping in view the upstream boundary conditions. The prototype results were compared with the results of physical model and proved quite accurate and coherent. It is concluded that CFD Model gives an insight of the phenomenon which are not apparent in physical model and shall be adopted in future for the similar low head projects. Its application will be helpful in limiting delays and cost incurred in the physical model testing.

Keywords: Surge, FLOW-3D, numerical model, Taunsa, RANSE

07:

Munir, M. M., Ahmed, T., Munir, J., & **Rasheed, U.,** (2016), Application of coputational flow dynamics analysis for surge inception and propagation for low head hydropower projects. *Pakistan Academy of Science, 53*(2), 177-185. **(Muhammad Usman Rasheed (Civil Engineering /SEN), (NOT RECOGNIZED BY HEC))**

Abstract: Determination of maximum elevation of a flowing fluid due to sudden rejection of load in a hydropower facility is of great interest to hydraulic engineers to ensure safety of the hydraulic structures. Several mathematical models exist that employ one-dimensional modeling for the determination of surge but none of these perfectly simulate real-time circumstances. The paper envisages investigation, inception and propagation of surge for a Low-Head Hydropower project using Computational Fluid Dynamics (CFD) analysis in FLOW-3D software. The fluid dynamic model utilizes Reynolds' Averaged Navier-Stokes Equations (RANSE) for surge analysis. The CFD model is designed for a case study at Taunsa Hydropower Project in Pakistan which has been run for various scenarios keeping in view the upstream boundary conditions. The prototype results were compared with the results of physical model and proved quite accurate and coherent. It is concluded that CFD Model gives an insight of the phenomenon which are not apparent in physical model and shall be adopted in future for the similar low head projects. Its application will be helpful in limiting delays and cost incurred in the physical model testing.

Keywords: Surge, FLOW-3D, Numerical model, Taunsa, RANSE

08:

Asif, S., **Ajwad, A.,** Zahid, F., Ali, H. Q., & Aqdas, A. (2016). Amount of residual chlorine at user end in Lahore (a case study). *Science International (Lahore), 28*(4), 4235-4238. **(Ali Ajwad (Civil Engineering /SEN),** (HEC Y CAT)**)**

Abstract: Availability of safe drinking water has become a questionable commodity. Millions of people lack access to safe drinking water. Developing countries like Pakistan are still striving for making clean drinking water available to every person in large cities and the remotest areas. Environmental Engineers and Researchers have used several techniques for treating water and making it potable. One of the easiest and cheapest techniques is chlorination. This paper focuses on analyzing the chlorination process and comparing the actual and residual amounts of chlorine and their impacts on water quality in one of the best maintained private societies in Lahore, Bahria Town. Specifically, in this project ?the quality of sampled water is analyzed and compared with national and international standards, impacts on human health and quantity of chlorine to be maintained at consumer end. The water is pumped after every 2 hours. The values of residual chlorine have been measured at 6 points depending upon the water distribution pattern. The minimum amount of the residual chorine concentration required was 0.1mg/L at a pH of 8.0. The results show that overall values are between 0.2 to 0.5 mg/l which is within the required amount, however at some points the amount of residual chlorine is less than minimum required amount.

Keywords: Water, Safe water , Waste water treatment, Impacts of waste water techniques on water quality.

09:

Aamir, M., Ali, T., Khan, M., **Ajwad, A.,** Zada, N., Najam, A., & Ahmad, A. (2016). Performance of geotechnical properties on soil stabilization incorporating fly ash. *Science International (Lahore), 28*(4), 4231-4234. **(Ali Ajwad (Civil Engineering /SEN),** (HEC Y CAT)**)**

Abstract: The onemost important techniques used in construction speciallyin pavement and foundation is soil stabilizationbecause it improves the engineering properties of soil such as durability,volume stability andstrength.In this study the Pozzoplast, a processed siliceous(fly ash) is used as stabilizing agent for non-plastic soil collected from district Lahore Punjab. Prepared a soil sample 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 showsthat 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.

Keywords: Soil stabilization, Pozzoplast, Optimum moisture content, Maximum dry density.

Conference Papers by Department of Civil Engineering

01:

Ajwad, A., Ilyas, U., Ibne Shafiq, M., Abbas, A., Khan, M. A., & Ali, T. (2016). *Assessing durability of concrete with addition of low quality fly ash.* Paper presented at 2nd International Multi-Disciplinary Conference (IMDC 2016), University of Lahore, Gujrat Campus, Pakistan. **(Ali Ajwad (Civil Engineering\SEN))**

02:

Ajwad, A., Ali, T., Abbas, A., & Khan, M. A.(2016). *Assessing the water quality at user end in Islamabad: A case study of Rawal Lake filteration plant.* Paper presented at Second International Conference on Emerging Trends in Engineering, Management and Sciences, City University of Science and Information Technology, Peshawar, Pakistan. **(Ali Ajwad (Civil Engineering\SEN))**

Publications by Department of Electrical Engineering

01:

Shami, S. H., Ahmad, J., Zafar, R., Haris, M., & Bashir, S. (2016). Evaluating wind energy potential in Pakistan's three provinces, with proposal for integration into national power grid. *Renewable and Sustainable Energy Reviews, 53,* 408–421. **(Syed Sajjad Haider Shami (Eletrical Engineering /SEN) Jameel Ahmad, Raheel Zafar, Muhammad Haris, JCR LISTED (IF:7:896))**

Abstract: Pakistan is facing increasing power shortage from the last two decades. The Government of Pakistan (GoP) has taken various remedial measures and is offering incentives for private investment to generate electricity at cheap rates. New hydropower dams were proposed in the past, such as Kalabagh Dam, but could not be commissioned to date. Fossil fuels are depleting and oil has to be imported for oil-fired power plants, which is highly expensive and a burden for the country's economy. This scenario has raised serious concerns among citizens. In this frustrating situation, there is dire need for exploration and installation of alternate renewable energy resources, in particular, wind energy and solar energy to augment the existing power generation and distribution apparatus. These then need to be integrated with the national power grid. Pakistan has enormous wind energy potential, especially in three of its four provinces namely, Khyber Pakhtun Khwa (KPK), Sindh and Balochistan. The country's multifarious terrain includes coastal and hilly areas suitable for installation of large wind turbines. The GoP has taken active steps towards measuring wind speed statistics in various parts of the country. In this paper, the authors analyze wind speed data for the mentioned three provinces. The fourth province, Punjab, has very limited wind energy potential and hence is not considered. Wind speed data for Jiwani (a reference site in Balochistan) was obtained from Pakistan Meteorological Department (PMD) as a case study. The paper attempts to assess how much wind energy can be harnessed from the three provinces. It then focuses on Jiwani whose specific power density is estimated for wind turbine sizing. Lastly, a practical scheme is proposed for integration of wind power output (from windy sites) with the national power grid.

Keywords: Wind energy, Wind turbine, Feasibility analysis, Weibull distribution.

02:

Zeb, K., Ali, S.M., Khan, B., Mehmood, C.A., Tareen, N., **Din, W.,** Farid, U., & **Haider, A.** (2016). A survey on waste heat recovery: Electric power generation and potential prospects within Pakistan. *Renewable and Sustainable Energy Reviews*. **(Kamran Zeb (Eletrical Engineering /SEN) Waqar Uddin, Aun Haider, JCR LISTED (IF:6:798))**

Abstract: Waste heat recovery system plays a pivotal role for heat extractions in every energy consuming sector. ThermoElectric 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,

03:

Abstract: Abstract: A novel electrical model of neuron is proposed in this presentation. The suggested neural network model has linear/nonlinear input-output characteristics. This new deterministic model has joint biological properties in excellent agreement with the earlier deterministic neuron model of Hopfield and Tank and to the stochastic neuron model of McCulloch and Pitts. It is an accurate portrayal of differential equation presented by Hopfield and Tank to mimic neurons. Operational amplifiers, resistances, capacitor, and diodes are used to design this system. The presented biological model of neurons remains to be advantageous for simulations. Impulse response is studied and conferred to certify the stability and strength of this innovative model. A simple illustration is mapped to demonstrate the exactness of the intended system. Precisely mapped illustration exhibits 100 % accurate results.

Keywords: Hopfield neural network, Linear/Nonlinear model, Neural network hardware, Neural network processing.

Conference Papers by Department of Electrical Engineering

01:

Zeb, K. & Haider, A.(2016).*Control of DC link voltage for grid interfaced DFIG using adaptive sliding mode & fuzzy based on levenberg-marquardt algorithm during symmetrical fault.* Paper presented atIEEE International Conference on Computing, Electronic and Electrical Engineering.**(Kamran Zeb, Aun Haider(Electrical Engineering \SEN))**

02:

Zeb, K. & Haider, A. (2016) *Sliding mode control for PMSG based wind energy conversion system connected to the grid .* Paper presented at IEEE International Conference on Computing, Electronic and Electrical Engineering. **(Kamran Zeb, Aun Haider(Electrical Engineering \SEN))**

03:

Zeb, K., Saleem, K., Mehmood, C. A., Waqqar Uddin, Muhammad Zia ur Rehman, Haider, A., & Javed, M. A. (2016).*Performance of adaptive PI based on fuzzy logic for Indirect Vector Control Induction Motor drive.* Paper presented at 2nd International Conference on Robotics and Artificial Intelligence (ICRAI), Rawalpindi, Pakistan.   **(Kamran Zeb, Waqar Uddin, Aun Haider(Electrical Engineering \SEN))**

04:

Ayesha, Khan, B., Zeb, K., Zeb, N., Sajjad, R., Aqib, M., Haider, A., Abood, H. G., & Sreeram, V. (2016).*An adaptive controller scheme implemented on multiple links VSC-HVDC for effective damping of low frequency power oscillations.* Paper presented at IEEE International Conference on Power System Technology (POWERCON) Wollongong, NSW, Australia. **(Kamran Zeb, Aun Haider(Electrical Engineering \SEN))**

05:

Mushtaq, Z., Yaqub, A., Jabbar M., Khalid, A., Iqbal, S., Zeb, K., & Naqvi, A. A.(2016). *Environment Control System for Livestock Sheds using Fuzzy Logic Technique.* Paper presented at 3rd International Conference on Information Science and Control Engineering, Beijing, China**.(Zohaib Mushtaq, Adnan Khalid, Kamran Zeb(Electrical Engineering \SEN))**

06:

Adnan, M., Irfan, A., Ishtiaq, A., Hua, C. S., Wang, Y., & Yang, D.(2016). *OFDM based SCP for Multicast Dual Amplify and Forward Relays.* Paper presented at IEEE International Symposium on Communication, Systems, Networks & Digital Signal Processing, Czech Republic. **(Muhammad Adnan(Electrical Engineering \SEN))**

Publications by Department of Energy Engineering

01:

Asim, M., Kumar, N. T. U., & Martin, A. R. (2016). Feasibility analysis of solar combi-system for simultaneous production of pure drinking water via membrane distillation and domestic hot water for single-family villa: pilot plant setup in Dubai. *Desalination and Water Treatment, 57*, 21674-21684. **(Muhammad Asim (Energy Engineering /SEN), JCR LISTED (IF:1:272))**

Abstract: This paper presents the feasibility study of installation of a solar-driven integrated MD desalination system for simultaneous production of pure drinking water and solar domestic hot water in United Arab Emirates (UAE) for a single-family villa comprising of 4–5 persons. In order to satisfy the current and future demand of water for domestic purposes, the desalination of seawater is considered to be one of the most effective and strategic technique in UAE. The stress on the underground water aquifers, rapid industrial growth, and increase in urban population in UAE results in the tremendous increase in fresh water demand during the past few decades. Since the local municipalities also provide the desalinated fresh water to the people but they mostly rely on bottled water for drinking purpose. In this paper, the pilot setup plant is designed, commissioned, and installed on site in UAE using air gap membrane distillation desalination process to fulfill the demand of 15–25 L/d of pure drinking water and 250 L/d of domestic hot water for a single-family villa. Experimental analyses have been performed on this setup during summer on flat plate solar collectors having different aperture areas (Experiments have been performed for aperture area of 11.9 m2 in this research study for feasibility purpose). The average hot-side temperature ranges from 50 to 70°C and average cold-side temperature of 35°C.

Keywords: Air gap membrane distillation, Solar domestic hot water, Desalination, Flat plate collector, Bottled water.

Publications by Department of Industrial Engineering

01:

Rasheed, F., Tabassum, S. A., Chaudhry, I. A., Arif, U., & **Osaid, H. M.** (2016). Development, control and stuctural analysis of bionic elbow joint. *Science International (Lahore), 28*(6), 5075-5078.
(Faiza Rasheed (Industrial Engineering /SEN) Salim Abid Tabassum, Ijaz Ahmad Chaudhry, Hafiz Muhammad Osaid, (HEC Y CAT))

ABSTRACT: During the last decade or so, Pakistan is unlucky to face the increasing number of amputees owing to a series of earthquakes, road accidents and terrorism. But the paucity of progress and advancement in the field of prosthetics is failing the provision of artificial limbs for doomed amputees. This field demands extensive work, consideration and dedication for amelioration of damned Pakistani populace. This research aims to provide amputees the potential for their routine life errands; to ameliorate their pecuniary and personal autonomy through the establishment of bionic elbow joint. Presently, many developed countries are functioning well in the realm of prosthetics, and are offering mobile and user friendly feigned limbs to amputees but a catholic research work is obligatory in Pakistan to create cost-effective and handy artificial limbs. This delve rally round to study the subject of biomedical engineering and its relevant techniques in detail with the help of Matlab, DAQNavi, ANSYS. It explores mathematical techniques and artificial intelligence for the study of electromyographic signals; likewise Artificial Neural Networks (ANN), dynamic recurrent neural networks (DRNN), and fuzzy logic system.

Keywords: Prosthetics, Bionic elbow, Artificial elbow joint.

Conference Papers by Department of Industrial Engineering

01:

Naeem, A. A., Rabbani, M. T., Raza, A., & Ahsen, M.(2016). *Ecopreneurship and sustainopereurship: Pathways to sustainable development.* Paper presented at 1st National Conference on Emerging Trends and Challenges in Social Sciences, Bahauddin Zakariaya University, Multan**.(Adnan Ahmad Naeem, (Industrial Engineering \SEN) M. Tayyab Rabbani, Abbas Raza)**

02:

Naeem, A. A., Rabbani, M. T., Raza, A., & Zaid, O. (2016). *Enterpreneurship development in Pakistan 2016: A review*. Paper presented at CUST Business Research Conference under the theme of Achieving Globalization Through Innovation & Creation, Capital University of Science and Technology, Islamabad. **.(Adnan Ahmad Naeem, M. Tayyab Rabbani, Abbas Raza(Industrial Engineering \SEN))**

Publications by Department of Mechanical Engineering

01:

Mabrouki, T., Courbon C., Yancheng Z., Rech J., Nelias D., **Asad M.,** Hadi H., Saleem B., & Fernando S. (2016). Some insight on the modeling of chip information and its morphology during metal cutting operations. *C. R. Mecanique, 344*(4), 335-354. **(Muhammad Asad (Mechanical Engineering /SEN), JCR LISTED (IF:0:988))**

Abstract: The present paper deals with the mechanisms of chip formation during cutting operations. It deals with some experiments characterising the chip morphologies and microstructure chip investigations under high loadings. In this contribution, mechanisms of chip segmentation are presented. The effect of cutting conditions on cutting forces is treated. Consequently, the chip segmentation phenomenon was correlated to cutting forces evolutions. Also, an investigation on chip strain localisation is carried out. Numerical simulations dealing with chip formation and considering thermomechanical phenomena are also presented. Some numerical results related to chip formation based on the theory of strain gradient plasticity are also discussed. Moreover, the effect of machining system stiffness on chip segmentation is analysed.

Keywords: Cutting simulation, Plasticity, Damage, Chip formation, Size effect.

02:

Ijaz, H., Abdein, M. Z., Saleem, W., **Asad, M.,** & Mabrouki, T. (2016). A numerical approach on parametric sensitivity analysis for an aeronautic aluminium alloy turning process. *Mechanica, 22*(2), 149-155. **(Muhammad Asad (Mechanical Engineering /SEN), JCR LISTED (IF:0:277))**

Abstract: The understanding of physical parameters of machining processes of aerospace grade aluminium alloy is always of prime importance. The main concern is always to understand the chip formation process and the resultant cutting force experienced by the tool due to different parameters like cutting speeds, feed rate, friction coefficient and tool rake angle etc. The finite element analysis has replaced many expensive and time consuming physical machining processes. In the present work, an extensive study of different parameters affecting the turning process of aluminium alloy (A2024-T351) is performed using finite element analysis. The Johnson-Cook ductile material model based on coupled plasticity and damage evolution is employed to simulate the cutting process. The authenticity of the performed simulation work is verified by comparing the simulation results with available experimental data on machining of aluminium alloy (A2024-T351).

Keywords: Finite element analysis, Johnson-Cook material model, Damage evolution, A2024-T351 al alloy

03:

Sultan, T., **Ahmad, Z.,** & Cho, J. (2016). Optimization of lamp arrangement in a closed-conduit UV reactor based on a genetic algorithm. 73(10), **(Zeshan Ahmad (Mechanical Engineering /SEN), JCR LISTED (IF:1:064))**

Abstract: The choice for the arrangement of the UV lamps in a closed-conduit ultraviolet (CCUV) reactor significantly affects the performance. However, a systematic methodology for the optimal lamp arrangement within the chamber of the CCUV reactor is not well established in the literature. In this research work, we propose a viable systematic methodology for the lamp arrangement based on a genetic algorithm (GA). In addition, we analyze the impacts of the diameter, angle, and symmetry of the lamp arrangement on the reduction equivalent dose (RED). The results are compared based on the simulated RED values and evaluated using the computational fluid dynamics simulations software ANSYS FLUENT. The fluence rate was calculated using commercial software UVCalc3D, and the GA-based lamp arrangement optimization was achieved using MATLAB. The simulation results provide detailed information about the GA-based methodology for the lamp arrangement, the pathogen transport, and the simulated RED values. A significant increase in the RED values was achieved by using the GA-based lamp arrangement methodology. This increase in RED value was highest for the asymmetric lamp arrangement within the chamber of the CCUV reactor. These results demonstrate that the proposed GA-based methodology for symmetric and asymmetric lamp arrangement provides a viable technical solution to the design and optimization of the CCUV reacto.

Keywords: Fluence rate, Genetic algorithms, RED, UV reactor, UV lamps, Water disinfection

04:

Khan, M. A., Saleem, W., **Asad, M.,** & Ijaz, H. (2016). A parametric sensitivity study on preforming simulations of woven composites using a hypoelastic computational model. *Journal of Reinforced Plastics and Composites, 35*(3), 243-257. **(Muhammad Asad (Mechanical Engineering /SEN), JCR LISTED (IF:0:901))**

Abstract: Preforming simulation for structural composite processing can significantly assist in the development of forming tools, prediction of manufacturing issues, optimization of process parameters and structural design analysis. The present study is aimed at investigating the influence of some important parameters in composite forming using a hypoelastic computational model developed for simulating the deformation behaviour of fibrous materials. The process parameters considered within this numerical work investigate the effects of binder force, coefficient of friction and forming speed. The study is conducted using two most commonly used double-curvature geometries for analysis of woven composites: double dome and hemisphere. It has been shown with this comprehensive study that the forming simulations are greatly affected by the choice of process parameters, and models based on finite element approach, such as the proposed hypoelastic model, can only predict its effects.

Keywords: Preforming simulation, Sensitivity study, Hypoelastic model, Hemisphere, Double dome

School of System and Technology (SST)

Publications by Department of Computer Science

01:

Butt, A. H., Khan, S. A., **Jamil, H., Rasool, N.,** & **Khan, Y. D.** (2016). A prediction model for membrane proteins using moments based features, *BioMed Research International,* **(Ahmad Hassan Butt (Computer Science /SST), Hamza Jamil, Nouman Rasool, Yaser Daanial Khan, JCR LISTED (IF:2:134))**

Abstract: The most expedient unit of the human body is its cell. Encapsulated within the cell are many infinitesimal entities and molecules which are protected by a cell membrane. The proteins that are associated with this lipid based bilayer cell membrane are known as membrane proteins and are considered to play a significant role. These membrane proteins exhibit their effect in cellular activities inside and outside of the cell. According to the scientists in pharmaceutical organizations, these membrane proteins perform key task in drug interactions. In this study, a technique is presented that is based on various computationally intelligent methods used for the prediction of membrane protein without the experimental use of mass spectrometry. Statistical moments were used to extract features and furthermore a Multilayer Neural Network was trained using backpropagation for the prediction of membrane proteins. Results show that the proposed technique performs better than existing methodologies.

02:

Mahmood M. K., & **Khan, Y. D.** (2016). A generalized classification and enumeration of orbits of $Q*^*(\sqrt{n})$ by P SL(2, Z*). UPB Scientific bulletin, Series A, 78*(3), 53-60**. (Yaser Daanial Khan (Computer Science /SST), JCR LISTED (IF:0:365))**

Abstract: Several attempts have been made to find orbits of invariant sets under the action of projective special linear groups using coset diagrams. We present a novel approach to resolve the problem for the enumeration of P SL(2, Z)-orbits using its invariant set $Q*(\sqrt{n})$. The proposed technique is free from coset diagram and is less computationally intensive as compared to its existing techniques. Let $g = \prod_{i=1}^{r} p_{ki}$, $ki \geq 1$, where p1, p2, ..., pr are distinct odd primes. The cardinality of the the set Eg, consisting of all classes [a, b, c] mod g, of the elements in $Q*(\sqrt{n})$ has been determined and shown to be equal to $g^3 \prod_{i=1}^{r}(1 - \frac{1}{p^3 i})$. Finally, we use classification and propose algorithms to enumerate P SL(2, Z)-orbits of $Q*(\sqrt{n})$.

Keywords: Classification, Quadratic congruence, G-Orbits.//05C25, 11E04,20G15.

03:

Abid, A., Farooq, M. S., Farooq, U., Sabir, N., Khan, Y. D., Hussain, N., & Naeem, M. A., (2016). A survey on search results diversification techniques. *Neural Computing and Applications, 27*(5), 1207-1229. **(Adnan Abid (Computer Science /SST) Muhammad Shoaib Farooq, Uzma Farooq, Nabeel Sabir, Yaser Daanial Khan, JCR LISTED (IF:1:492))**

Abstract: The quantity of information placed on the web has been greater than before and is increasing rapidly day by day. Searching through the huge amount of data and finding the most relevant and useful

result set involves searching, ranking, and presenting the results. Most of the users probe into the top few results and neglect the rest. In order to increase user's satisfaction, the presented result set should not only be relevant to the search topic, but should also present a variety of perspectives, that is, the results should be different from one another. The effectiveness of web search and the satisfaction of users can be enhanced through providing various results of a search query in a certain order of relevance and concern. The technique used to avoid presenting similar, though relevant, results to the user is known as a diversification of search results. This article presents a survey of the approaches used for search result diversification. To this end, this article not only provides a technical survey of existing diversification techniques, but also presents a taxonomy of diversification algorithms with respect to the types of search queries.

Keywords: Web search Diversification of search results Diversification techniques

04:

Junejo, K. N., **Karim, A., Hassan, M. T.,** & Jeon, M., (2016), Terms-based discriminative information space for robust text classification. *Information Sciences 372*, 518-538. **(Asim Karim (Computer Science /SST) Malik Tahir Hassan, JCR LISTED (IF:3:364))**

Abstract: With the popularity of Web 2.0, there has been a phenomenal increase in the utility of text classification in applications like document filtering and sentiment categorization. Many of these applications demand that the classification method be efficient and robust, yet produce accurate categorizations by using the terms in the documents only. In this paper, we propose a novel and efficient method using terms-based discriminative information space for robust text classification. Terms in the documents are assigned weights according to the discrimination information they provide for one category over the others. These weights also serve to partition the terms into category sets. A linear opinion pool is adopted for combining the discrimination information provided by each set of terms to yield a feature space (discriminative information space) having dimensions equal to the number of classes. Subsequently, a discriminant function is learned to categorize the documents in the feature space. This classification methodology relies upon corpus information only, and is robust to distribution shifts and noise. We develop theoretical parallels of our methodology with generative, discriminative, and hybrid classifiers. We evaluate our methodology extensively with five different discriminative term weighting schemes on six data sets from different application areas. We give a side-by-side comparison with four well-known text classification techniques. The results show that our methodology consistently outperforms the rest, especially when there is a distribution shift from training to test sets. Moreover, our methodology is simple and effective for different application domains and training set sizes. It is also fast with a small and tunable memory footprint.

Keywords: Text classification, Discriminative term weights, Linear opinion pooling, Feature construction.

05:

Munawar, S., Saleem, N., & Mehmood, A. (2016). Entropy production in the flow over a swirling stretchable cylinder. *Thermophysics and Aeromechanics, 23*(3), 435-444. **(Sufian Munawar (Computer Science /SST), JCR LISTED (IF:0:365))**

Abstract: In the present work, the entropy generation due to the heat transfer and fluid friction irreversibility is investigated numerically for a three-dimensional flow induced by rotating and stretching motion of a cylinder. The isothermal boundary conditions are taken into account for the heat transfer analysis. The similarity transformations are utilized to convert the governing partial differential equations to ordinary differential equations. Resulting nonlinear differential equations are solved using a numerical scheme. Expressions for the entropy generation number, the Nusselt number and the Bejan number are obtained and discussed through graphs for various physical parameters. An analysis has been made to compare the heat transfer irreversibility with fluid friction irreversibility using the expression of the Bejan number. It is found that the surface is a durable source of irreversibility and the curvature of cylinder is to enhance the fluid friction irreversibility.

Keywords: Swirling flow, stretching cylinder, entropy generation, heat transfer

06:

Saleem, N., & **Munawar, S.** (2016). A mathematical analysis of MHD blood flow of Eyring-Powell fluid through a constricted artery. *International Journal of Biomathematics, 9*(2), 1-12. (**Sufian Munawar (Computer Science /SST), JCR LISTED (IF:0:938)**)

Abstract: The present study deals with the flow of blood through a stenotic artery in the presence of a uniform magnetic field. Different flow situations are taken into account by considering the regular and irregular shapes of stenosis lying inside the walls of artery. Blood inside the artery is assumed to be Eyring–Powell fluid. A mathematical model is developed and simplified under the physical assumptions of stenosis. The regular perturbation method is adopted to find the solutions for axial velocity and pressure gradient. The variations in pressure drop across the stenosis length, the impedance and the shear stress at the walls of stenotic artery are discussed in detail through graphs. It is observed that the Eyring–Powell fluid is helpful in reducing the resistance to the flow in stenotic artery. Moreover, symmetric form of stenosis is more hazardous as compared to asymmetric stenosis.

Keywords: Blood flow, Magnetic field, Stenotic artery, Eyring powell fluid.

07:

Hassan, B., Farooq, M. S., Abid, A., & Khan, N. S. (2015). Pakistan Sign Language: Computer Vision Analysis & Recommendations. *VFAST Transactions on Software Engineering, 9*(1), 1-6. (**Bilal Hassan (Computer Science /SST) Muhammad Shoaib Farooq, Adnan Abid, Nabeel Sabir Khan, (Not Recognized By HEC)**)

Abstract: Pakistan sign language (PSL) is one of the sign languages of the world used by the Pakistani deaf community. Unfortunately, PSL has developed over the years without any greater attention from the state institutions. Most of the efforts for the development of PSL are done at the individual or group level, which is mostly impressed by regional or traditional norms. That's why, the learning and teaching PSL is being done in various regions as per their developed version of PSL. A communications barrier occurs when the deaf of two different regions interact with each other as they are trained on their own version of PSL. Another major problem is related to the communication with normal people. The normal people in our

society are completely unaware from the signs/gestures of PSL. This communication barrier seizes the basic right of communication between a deaf and a normal. Our contribution in this regard is actually two tiers. First, to the best of our knowledge, we have tried to combine all the efforts made for the development of PSL till date. Second, as a computer vision researcher, we have tried to analyze all the imaging systems developed to aid deaf to deaf and deaf to normal communication of PSL. We are hopeful that this effort will surely help to develop the systems for reducing gap between deaf to deaf, deaf to normal and Pakistan deaf to any other deaf communication.

Keywords: PSL, Computer Vision, Gestures; Signs, Deaf.

08:

Iqbal, R., Sherazi, H., Gilani, A., Ahmad, B., & **Hassan, B., & Farooq, M. S.** (2016). Evaluation of Low Power Mobile Devices in Intelligent Transportation Systems. *J. Appl. Environ. Biol. Sci., 6*(3S), 6. **(Bilal Hassan (Computer Science /SST) Muhammad Shoaib Farooq, (Not Recognized By HEC))**

Abstract: The paper discusses the use of mobile devices like smart phones and tablets in Demand Responsive Transit (DRT). The paper will specifically focus on a special DRT called "Flexible Bus Systems" (FBS). In FBS the routes of the buses are so flexible that even they can take a short route to pick up the passenger waiting at the bus stops by skipping the bus stops where no passenger is waiting to ride the bus and no passenger wants to drop off. The major objective of using the mobile devices in FBS is to provide passengers with real time information of buses, facility of booking bus tickets on the fly using their mobile devices. Furthermore, NFC tags are used to help tourists get the information about the city along with bus schedules on their NFC enabled smart devices.

Keywords: Demand Responsive Transit; Intelligent Transportation Systems; Flexible Bus Systems; Near Field Communication

09:

Khan, A., Ahmad, F., **Khan, Y. D**., He, D., & Naseer, M. (2016). Gait recognition progress in recognizing image characteristics. *VAWKUM Transactions on Computer Sciences*, *9*(1), 1-10. **(Yaser Daanial Khan (Computer Science /SST), (Not Recognized By HEC))**

10:

Jamil, M., Mahmood, M. K., & **Khan, Y. D.** (2016). An appraisal of automated hand gesture techniques. *Pakistan Journal of Science, 68*(4), 432-440. **(Yaser Daanial Khan (Computer Science /SST), (HEC recognized X CAT))**

Abstract: Hand gesture segmentation for identification and prediction analysis has been a prevalent topic in the community of the researchers working in the field of image processing and computer vision. Hand gestures were used by humans to signify various expressions, moods and actions. The advent of intelligent

devices has made hand gesture recognition even more interesting. Many researchers have worked on intelligent interfaces that use hand gestures for its operations. Various state of art techniques used for hand gesture recognition has been critically analyzed. A method using Hahn moments and neural networks has been proposed. A subsequent comparative study has been drawn in terms of performance of the proposed and other competitive techniques. It was observed that the proposed technique was quite accurate and efficient.

11:

Butt, A. H., Mahmood, M. K., & Khan, Y. D. (2016). An exposition analysis of facial expression recognition techniques. *Pakistan Journal of Science, 68*(3), 334-339. **(Yaser Daanial Khan (Computer Science /SST),** (HEC

Publications by Department of Informatics and System

01:

Sarwar, S., Zahid, M. A., & **Iqbal, S.** (2016). Mathematical study of fractional-order biological population model using optimal homotopy asymptotic method. *International Journal of Biomathematics, 9*(6), 1650081-1650098. **(Shaukat Iqbal (Informatics and Systems /SST),** **JCR LISTED (IF:0:938)****)**

Abstract: In this paper, we study the fractional-order biological population models (FBPMs) with Malthusian, Verhulst, and porous media laws. The fractional derivative is defined in Caputo sense. The optimal homotopy asymptotic method (OHAM) for partial differential equations (PDEs) is extended and successfully implemented to solve FBPMs. Third-order approximate solutions are obtained and compared with the exact solutions. The numerical results unveil that the proposed extension in the OHAM for fractional-order differential problems is very effective and simple in computation. The results reveal the effectiveness with high accuracy and extremely efficient to handle most complicated biological population models.

Keywords: Biological models; population models; fractional calculus; optimal homotopy asymptotic method; partial differential equations

02:

Mufti, M. R., Butt, Q. R., **Iqbal S.,** & Ramzan, M. (2016). Position Control of Switched Reluctance Motor Using Super Twisting Algorithm, *Mathematical problems in Engineering, , 1-9.* **(Shaukat Iqbal (Informatics and Systems /SST),** **JCR LISTED (IF:0:644)****)**

Abstract: The inherent problem of chattering in traditional sliding mode control is harmful for practical application of control system. This paper pays a considerable attention to a chattering-free control method, that is, higher-order sliding mode (super twisting algorithm). The design of a position controller for switched reluctance motor is presented and its stability is assured using Lyapunov stability theorem. In order to highlight the advantages of higher-order sliding mode controller (HOSMC), a classical first-order sliding mode controller (FOSMC) is also applied to the same system and compared. The simulation results reflect the effectiveness of the proposed technique.

03:

Qureshi, M. I., **Iqbal S.,** & Siddiqui, A. M. (2016). Exact solution of Fredholmintegro-differential equations using optimal homotopy asymptotic method. *Journal of applied environmental and biological sciences, 6*(4S), 162-166. **(Shaukat Iqbal (Informatics and Systems /SST),** **(Not Recognized By HEC)****)**

Abstract: The aim of this paper is to present the analytical solutions of nonlinear Fredholmintegro-differential equations of second kind with different orders by using powerful analytical technique namely optimal homotopy asymptotic method (OHAM). Here, we consider the linear, non-linear Fredholmintegro-differential equations of second kind and compared the results with Homotopy perturbation method (HPM), Homotopy analysis method (HAM), CAS wavelet method, Differential transformation (DT) method, Legendre polynomial.These results reveals that the OHAM is very effective and simple and in these examples leads to the exact solutions.

Keywords: Integro-differential equations, Optimalhomotopy asymptotic method, series solution

04:

Hashmi, M. S., **Iqbal S.,** & Khan. N. (2016). Semi-analytical treatment of singularly perturbed differential equations arising in biology. *Journal of applied environmental and biological sciences, 6*(4S), 201-205. **(Shaukat Iqbal (Informatics and Systems /SST), (Not Recognized By HEC))**

Abstract: Optimal homotopy asymptotic method (OHAM) is used to obtain the semi-analytical solution of singularly perturbed differential equations arising in biology. The effectiveness of OHAM is ensured by its applicability in various problems of singular perturbed differential equations. Results are found to be in a good agreement with the exact solution. The tested problems for the various effect of perturbed parameter is discussed and displayed through tables and figures.

Keywords: perturbed differential equations, Optimal homotopy asymptotic method, convection dominated problem.

05:

Qureshi, M. I., **Iqbal, S.,** & Siddiqui, A. M. (2016). Exact solutions of second order obstacle problems using reduction-to-first order method. *Science International (Lahore), 28*(1), 95-98. **(Shaukat Iqbal (Informatics and Systems /SST), (HEC recognized Y CAT))**

Abstract: In this article we used the Reduction-to-First –Order method to solve the systems of second order boundary value problems. Two examples are presented to get exact solution, which illustrate the effectiveness of the method.

Keywords: Reduction-to-First-Order, Obstacle Problems, System of Boundary value Problems.

06:

Khan, M. S., **Mushtaq, M. T.,** Syed, T., & Yasmeen, S. (2016). GUI based fuzzy logic control system. *Science International (Lahore), 28*(5), 4303-4307. **(Muhammad Tahir Mushtaq (Informatics/SST), (HEC Y CAT))**

Abstract: The work presented in this paper addresses a generalized graphic user interface(GUI) based Fuzzy Logic Control System(FLCS) to design, edit and execute control system. The proposed system is a user friendly and easy to implement. It helps the user to create a fuzzy logic system in simple steps, inserting the names and membership functions details of all inputs and outputs defining the rule base for FLCS. Detailed structure of the system and design of modules, fuzzifier, inference engine, rule base and defuzzifier were discussed. The results of proposed model were compared with the results of MATLAB Simulink. This research work proposed to develop a novel control system to create and succeed FLCS in few steps efficiently.

Keyword: GUI, FLC, Fuzzifier, Defuzzifier, Rule base, Inference Engine.

07:

Salik, M., **Zia, M. F., & Ali, F.** (2016). An efficient electricity theft and fault detection scheme in distribution system. *Science International (Lahore), 28*(4), 3531-3534. **(Muhammad Fahad Zia (Informatics/SST) Fahad Ali, (HEC Y CAT))**

Abstract: Currently the world is facing energy (electricity) crisis and it is becoming severe with the passage of time. Every country is striving to produce and save electricity. In developing countries, especially, a considerable amount of revenue is lost due to electricity pilferage and fault occurrence on the distribution system. Therefore, it is required to design a system that would be able to detect electricity theft as well as the faults on the distribution system. This paper presents an efficient and simple technique which operates efficaciously as an electricity theft detector and also serves the function of a protective relay. In this scheme, each customer is provided with smart meter and a main observer meter is connected to distribution transformer. Meters send the readings to the data acquisition center where the proposed algorithm is applied to detect theft or fault scenario. Electricity theft can be considerably reduced by using this proposed metering technique. This algorithm can also identify associated areas of electricity theft.

Keywords: Distribution system, electricity pilferage, protective relay, smart meter, theft detector.

Conference Papers by Department of Informatics and System

01:

Salman, M., Mushtaq, M. T., & Jaffer, G. (2016).*Receiving the national oceanic and atmospheric administration weather satellite data.* IEEE Aeroconf., Yellowstone Conference Centre, Big Sky,Montana**.(Muhammad Tahir Mushtaq(Informatics\SST))**

02:

Waqas, M., & Zia, M. F. (2016). *Demand side management proposed algorithm for cost and peak load optimization.* Paper presented at the 4th International Istanbul Smart Grid Congress and Fair, Istanbul, Turkey. **(Muhammad Fahad Zia(Informatics\SST), Muhammad Waqas)**

03:

Hussain, A., Javed, I., Case, K., Ahmad, A., & Safdar, N. (2016).*Ergonomic risk assessment - A case study of a garment manufacturing industry. Paper presented at the 14th International conference on manufacturing research, Loughborough University, UK .***(Iqra Javed (Informatics\SST))**

04:

Zia, M. F., & Sundhu, M. W. (2016).*Demand side management proposed algorithm for cost and peak load optimization.* Paper presented at 4th International Istanbul Smart Grid Congress and Fair, Istanbul**.(Muhammad Fahad Zia, Muhammad Waqas Sundhu(Informatics\SST))**

School of Business and Economics (SBE)

Publications by Department of Economics

01:

Satti, S. L., **Hassan, M. S., Hayat, F.,** & Paramati, S. R. (2016). Economic growth and inflow of remittances: Do they combat poverty in an emerging economy?. *Social Indicators Research, 127*(3), 1119-1134. **(Muhammad Shahid Hassan (Economics /SBE) Fozia Hayat, JCR LISTED (IF:1:38))**

Abstract: Poverty is such a social problem which itself begets so many socio-economic evils in a country. It never lets the government of a country to sit easy and focus on some other issues. Almost all countries who are running through this lurch; at there, governments, policy advisors and researchers are always busy in formulating strategies to combat poverty. Therefore; feeling the significance of the topic, this study is designed to empirically test the impact of economic growth, workers remittances, rural population and literacy rate on poverty in Pakistan. The empirical findings of the study reveal that economic growth; workers' remittances and rural population significantly deteriorate poverty. Moreover; it has found that there exists bidirectional causality between economic growth and poverty and between workers' remittances and poverty in Pakistan.

Keywords: Pakistan Poverty Economic growth Remittances

02:

Ahmad, N., & **Kalim, R.,** (2016), Assessing impact of quota elimination on factor productivity growth of textile sector of Pakistan. *Journal of Applied Economics and Business Research. 6*(1), 73-92. **(Rukhsana Kalim (Economics /SBE), (Not Recognized By HEC))**

Abstract Export of textile sector of Pakistan is also dependent on the trade policy of importing countries, particularly European Union and USA, as these countries have been major importer of textile goods of Pakistan. This study is unique in the way that it contributes in existing literature by estimating factor productivity growth of textile sector in the perspective of pre quota and post quota elimination situation, as this has been ignored in past. We explored that textile sector of Pakistan did not get benefit of quota elimination and productivity remained almost stagnant over the period. We suggest penetrating textile export in unrestricted markets apart from European Union and USA and closure of sick units and outdated technology.

Keywords: Quota elimination, Total factor productivity growth, Import penetration, Multi-Fiber. Arrangements

03:

Raza, S. M. M., & Moeen, M. (2016). New shewhart and EWMA type control charts using exponential type estimator with two auxiliary variables under two phase sampling. *QUQU-D-16*-00182. **(Economics /SBE), (Not Recognized By HEC))**

04:

Arshad, N., Hassan, M. S., & Mushtaq, A. (2016). Smoking advertisements and its impact on human behavior, *International Journal of Scientific Research and Management, 4*(3), 4030-4047. **(Noman Arshed (Economics /SBE) Muhammad Shahid Hassan, Afia Mushtaq, (Not Recognized By HEC))**

Abstract: Advertisements facilitate households to respond to adjust behavior. This study has designed to examine the behavior of individuals about their future health behavior related choices in the light of pro- and

antismoking advertisements respectively. Both advertisement follow the Health Belief Model which states that an advertisement must cover the cycle of exposure, recognition, receptivity and agreement respectively. This primary study which covers 222 respondents in order to judge the socioeconomic factors affecting the future decisions of the individuals about smoking using Multinomial Logit Model. This study concluded for prosmoking advertisement, only T.V and movies are encouraging individuals to smoke. However; in anti-smoking advertisement, we have found T.V and movies & magazines and newspapers are also discouraging individuals to smoke. The study indicates that purchase of merchandise promotes individuals to smoke, whereas, the antismoking law is discouraging individuals to smoke.

Keywords: multinomial logit model, advertisement, health belief model, smoking

05:

Hassan,M. S., Ijaz, M., & Islam, F. (2016). Inflation in Pakistan: evidence from ARDL bounds testing approach. *International Journal of Management Development, 1*(3), 181 -195. (**Muhammad Shahid Hassan (Economics /SBE) Muhammad Ijaz, (Not Recognized By HEC)**)

Abstract: This paper applies the ARDL bounds testing approach to cointegration to explore a long- and short-run relationship among export per capita; indirect taxes per capita; external debt per capita; exchange rate; crude oil prices and inflation in Pakistan over the period of 1976-2011. The ADF and PP unit root tests are applied to examine the stationarity properties of each series. We find that the series are cointegrated. The impacts of exports, exchange rate and crude oil prices on inflation are found to be positive and highly significant; but that of indirect taxes is positive, significant at the 10% level only. The impact of external debt is negative but not statistically significant. Finally, based on CUSUM and CUSUM square graphs, we confirm that the estimates are structurally stable. The findings shed new insight for the policymakers in controlling inflation in Pakistan**.**

Keywords: Exports, Indirect taxes, Exchange rate, Crude oil price, inflation.

06:

Raza, A., Murad, H. S., & Zakar, M. Z. (2016). Contextualizing poverty and culture; towards a social economy of community centered knowledge based development. *International Journal of Social Economics, 43*(5), 486 – 501. (**Ahmad Raza (Economics /SBE) Hasan Sohaib Murad, (Not Recognized By HEC)**)

Keywords: Culture, Analysis, Poverty, Community, Development discourse, Knowledge based.

08:

Sulaiman, I., Arshed, N., & Hassan, M. S. (2016). Stock Market Development, Can it Help Reduce Inflation in SAARC Countries? *Journal of Accounting, Finance and Economics, 6*(1), 10. (**Ibrahim Sulaiman (Economics /SBE) Noman Arshed, Muhammad Shahid Hassan, (Not Recognized By HEC)**)

Abstract: This study is designed to evaluate the impact of stock market development on general price level in five SAARC countries. The estimated results of Panel OLS, Fixed Effect model and Random Effect model has revealed that OLS model is not applicable thus, we have to use panel cointegration to find out the unbiased and normally distributed coefficient estimates to find out how the stock market development influences inflation. The results of long run estimates Fully Modified OLS suggests that in the long run, market capitalization is decreasing inflation, total value of stock traded is increasing inflation and turnover ratio is decreasing inflation in the long run. Thus, the results of our two proxies suggest that stock market

development can help put chains on inflation in SAARC countries by introducing more firms to increase size and volume of share transaction, as they will load to rise in production.

09:

Arshed, N., & Abduqayumov, S. (2016). Economic Impact of climate change on wheat and cotton in major districts of Punjab. *International Journal of Economics and Financial Research, 2*(10), 183-191. **(Noman Arshed, Shukrillo Abduqayumov (Economics /SBE), (Not Recognized By HEC))**

Abstract: The long run impact of climate change on the productivity of major crops in the districts of Punjab is analyzed for the time period of 1970 to 2010. This study used deviations from average maximum annual temperature and deviations from average rainfall are used as indicators for climate change. While other variables include sale price, fertilizer use and number of tube wells. In order to incorporate long timer periods, this study used Panel ARDL model. The results show that cotton productivity is more positively sensitive to price changes; an increase in temperature, tube wells and fertilizers while wheat productivity is more positively sensitive to the rainfall in the long run. Consequently, in the short run, wheat productivity equilibrium is faster converging. Hence deviations from average rainfall are harmful to cotton crop in the long run and cotton & wheat in the short run, while deviations in maximum temperature is only harmful for cotton crop in the short run.

Keywords: Climate Change, Agricultural productivity, Panel Co-integration, Panel ARDL, Punjab Districts.

10:

Hassan, M. S., Akbar, M. S., Wajid, A., & Arshed, N. (2016). Poverty, urbanization and crime: Are they related in Pakistan? *International Journal of Economics and Empirical Research, 4*(9), 483-492. **(Muhammad Shahid Hassan (Economics /SBE) Muhammad Shahid Akbar, Ayesha Wajid, (Not Recognized By HEC))**

Abstract: Purpose: This study attempts to analyze the possible impact of poverty; inflation, economic growth, and urbanization on crime for a developing economy like Pakistan. Methodology: This study applies autoregressive distributed lag model (ARDL) to find long term relationship and Granger causality test for finding direction of causality between crime and its determinants for the period from 1978 to 2011. Findings: The empirical findings of the study have exposed that poverty; economic growth and urbanization have a significant and positive impact on crime in both long and short terms. Moreover; the findings of the Granger causality test demonstrate bidirectional Granger causality between urbanization and crime and uniâ€'directional Granger causality running from between economic growth and crime which runs from economic growth to crime. Recommendations: Policy recommendations have been provided.

Keywords: Pakistan; Crime; Poverty; Economic Growth and Urbanization

11:

Anwar, A., **Arshed, N.,** & Anwar, D. S. (2016). Causal relationship between military expenditure, foreign aid and terrorism: an analysis of muslim countries. *International Journal of Economics and Research, 7*(6), 1-9. **(Noman Arshed (Economics /SBE), (Not Recognized By HEC))**

Abstract: This study quantifies the causal relationship between military expenditure, foreign assistance and terrorism using data of 26 Muslim countries. The paper explores the period of 1990-2014. This study evaluated the determinants of incidence of terrorism on domestic and total (domestic plus transnational) incidents. We have applied panel Poisson and panel Negative binomial regression to incorporate the count nature of incidence of terrorism. Hausman test suggested that all Muslim countries are randomly different in terms of cross sectional heterogeneities facing attempts of terrorism. Empirical results confirm the negative

relationship between terrorism, military expenditure, health and education. However, bilateral trade and number of refugees is the positive predictor of terrorism.

Keywords: Panel poisson regression, Panel negative binomial regression, Domestic terrorism, Transnational terrorism, Refugees, Military expenditure, Hausman test.

12:

Arshed, N., Anwar, A., & Sarwar, S. (2016). Role of expenditures and economic factors in determining the incidence of crime: cross districts analysis of Punjab. *Caspian Journal of Applied Sciences Research, 5*(2), 32-40. **(Noman Arshed (Economics /SBE), (Not Recognized By HEC))**

Abstract: This paper investigates the role of expenditures and economic factors in determining the incidence of crime across the districts of Punjab from 2005 to 2013. We have applied pooled OLS (Ordinary Least Square), fixed effect and generalized method of moment approaches to examine the relationship among variables. Empirical results illustrate that Police and health expenditure exhibits positive relationship with all reported crime. Education elucidates different results with different variable. Education expenditure and primary school density are valuable in reducing crime while middle school density shows positive relationship with crime. However population density expresses the positive association with all reported crime.

Keywords: Pooled OLS, Fixed Effect, Generalized Method of Moment, Health Expenditure.

13:

Mamoon, D. (2016). Integrating the concepts of global freedom: Economics versus Society. *Journal of Economic and Social Thought, 3*(4), 1-7. **(Dawood Mamoon (Economics /SBE), (Not Recognized By HEC))**

Abstract: The paper carries out a context specific debate on why the real sector of the economy is important to look into to establish a framework of effective development. While doing that the paper highlights that the economic policy in the real sector is to be complemented by intervening in the progress of the society by developing social, political and legal institutions. This paper presents a post Washington consensus intellectual debate that eventually made the Prelog for first Millenium Development Goals (MDGs) and now Sustainable Development Goals (SDGs).

Keywords: Role of Economics, Relation of Economics to Social Values, Sociology of Economics.

14:

Tahir, M. N., **Ali, F., & Mamoon, D.** (2016). Appropriate exchange rate regime for economic structure of Pakistan. *Turkish Economic Review, 3*(4), 1-14. **(Faran Ali (Economics /SBE) Dawood Mamoon, (Not Recognized By HEC))**

Abstract: This study empirically finds the appropriate exchange rate regime for economic structure of Pakistan. To find long run association between exchange rate regime and its determinants; ARDL bond testing approach is concern however for the estimation of short run analysis Error correction model (ECM) is applied. Time series data is used over the period from 1984 to 2012. Findings reveal that Trade openness, foreign exchange reserves, rate of inflation and financial development are important determinant while choosing appropriate exchange-rate regime for economy having features like Pakistan. On the basis of analysis, this study suggests that both extreme ends hard peg and free float are unfavorable for it. Still, lot of

attention is required on this topic. Choice of regime is a difficult task in empirical analysis because few factors cannot explain actual regime.

Keywords: Exchange Rate Regime, Classification, ARDL.

15:

Qadri, M. M., & **Mamoon, D.** (2016). Understanding 'shared valued' and social capital link to pave the path of next generation of innovation. *Journal of Economics Library, 3*(4), 1-16. **(Dawood Mamoon (Economics /SBE),** (Not Recognized By HEC)**)**

Abstract: The idea "Creating shared value" (CSV) offers a resolute direction to the debate on the link between business and society which can be restored through three distinct actions such as a) reconceiving products and markets; b) redefining productivity in the value chain; and c) building supportive industry clusters. The critical analysis predicts that the path of these actions is progressive in nature and their scope apparently ranges from narrow to wider deliberations. Keeping variant scope of proposed actions, this paper focuses only first course of action as it paves the path of new wave of innovation. For this new wave of innovation, the role of social capital is explored to determine the extent this capital can derive next wave of innovation. In this regard, a model is proposed to predict the link between various dimensions of social capital and innovation that can produce both social and business revenues. The proposed model assumes that narrow conceptualization of social capital to network theory only and ignoring its origins and deep rooted relations with community will lead towards routine innovations that lacking potential benefits of shared value. If organizations emphasize more and invest in developing relationships restricted to network actors, then potential benefits might be unnoticed. Therefore, like defining „value" too narrowly due to strategic myopia, keeping the social circle of small radius also limit the organization"s ability to exploit the embedded potential of social capital necessary to pave the path of new generation of innovation benefiting both business and society.

Keywords: Creating shared value (CSV), Social capital, Innovation, Network relationship(s)

16:

Saadat, Z., & Mamoom, D. (2016). Destination EU and USA: Improving export potential of Pakistan by trading with India. *Journal of Economics and Political Economy, 3*(4), 1-11. **(Dawood Mamoon, Zakee Saadat (Economics /SBE),** (Not Recognized By HEC)**)**

Abstract: This paper is the extension of popular work of Murshed and Mamoon(2010) that suggests that India Pakistan proximity to global trade can significantly mitigate conflict between these two nations. The paper analyses bilateral trade patterns between India Pakistan with its major exporting destinations in a simple OLS framework. It finds that if bilateral trade between two nations increases that will improve exports of Pakistan in US, EU and UAE. This finding has significant implications for improvement of ties between the two countries. Furthermore, trading with India also full fills Pakistani Government's emphasis on Trade not Aid. This aspect of India Pakistan trade has not been investigated before.

Keywords: Economic integration**.**

17:

Iftikhar, U., Mamoon, D., & Hassan, M. S. (2016). Revisiting determinants of money demand function in Pakistan. *Journal of Economics Bibliography, 3*(4), 559-569. **(Umbreen Iftekhar (Economics /SBE) Dawood Mamoon, Muhammad Shahid Hassan,** (Not Recognized By HEC)**)**

Abstract: This study investigates the factors such as interest rate, GDP per capita, exchange rate, fiscal deficit, urban and rural population to determine money demand function for Pakistan over the period from 1972-2013. We use ARDL Bound Testing approach in order to test long run relation between money demand and its factors whereas both long and short run coefficients will be found using similar approach. The results show that real interest rate exerts significant and negative effect upon money demand in both long and short run in Pakistan. The results also disclose that exchange rate and rural population are leaving significant but negative effect on the demand for money. These findings are robust to different diagnostic tests.

Keywords: Pakistan, Money Demand, Interest Rate, Per Capita GDP, Fiscal Deficit, Exchange Rate.

18:

Arshed, N., & Zahid, A. (2016). Panel monetary model and determination of multilateral exchange rate with major trading partners. *International Journal of Recent Scientific Research, 7*(4), 10551-10560. **(Noman Arshed (Economics /SBE) Ayesha Zahid, (Not Recognized By HEC))**

Abstract: Ever since humans started barter trade there is existence of exchange rate. Considering several countries simultaneously trading,hence this study has used the panel data models to incorporate the spillover effects of trade and heterogeneous technology effects in long run and short run.By using Common Correlated Effect Mean Group panel data model between 4 trading partners based on their contribution in Pakistan's trade and capital inflow for the years of 1992 to 2012, it can be concluded, Monetary model has significantly determined the exchange rate. For this group of countries only interest rate and monetary differential is significant in managing exchange rate. It takes 13 months to recover any disequilibrium in this Model suggesting that any exchange rate management policy option can be realized in a year. The monetary model superseded the random walk model in terms of in-sample forecasting.

Keywords: Monetary model, Hong Kong, Germany, UK, USA, Mean group model, Panel cointegration

19:

Kalim, R., Mushtaq, A., & Arshed, N. (2016). Islamic banking and economic growth: Case of Pakistan. *Islamic Banking and Finance Review, 3*(1), 14-28. **(Rukhsana Kalim (Economics /SBE) Afia Mushtaq, Noman Arshed, (UMT Journal))**

Abstract: Islamic banking in Pakistan has gained recognition in last ten to eleven years. Islamic banks offer many products which are different from conventional banking and the most significant constituent is zero interest. Currently, a chunk of people have motivation towards Islamic banking compared to conventional banking in view of its growth in terms of assets, investment and deposits. This growing number of Islamic banking institutes indicates an increased trend of Islamic banking in Pakistan. People trust on this mode of banking motivates different conventional banks to open Islamic windows besides full-fledged Islamic branches to cater the increasing demand of people in Pakistan. The present study investigates short run and long run relationship between Islamic finance development, its various products and economic growth in Pakistan. Using quarterly data for the period 2006-2013, the study applied bound integration test and error correction models (ECMs) developed within an autoregressive distributed lag (ARDL) structure. The study found that there is a supply side relation between economic growth and Islamic banking in Pakistan. The study also found that Islamic banking industry exerts significant impact on economic growth.

Keywords: Economic Growth, Islamic banking, Cointegration, ARDL.

20:

Rehman, H. U. (2016). Comparative analysis of the socioeconomic determinants of foreign direct investment: evidence from Pakistan. *Pakistan Economic and Social Review, 54*(2), 255-274. **(Hafeez ur Rehman (Economics /SBE), (HEC X CAT))**

Abstract: Foreign direct investment has become an important element in current globalized world. It plays an important role in raising the pace of economic development particularly in developing countries by bridging saving-investment gap and bringing the latest technology from developed countries. The basic objective behind this study is to examine both economic and social determinants of foreign direct investment (FDI) in Pakistan for the period 1984–2015. The study uses cointegration and error correction techniques to examine both the long-run and short-run impact of these determinants on the flow of FDI in Pakistan. Results of the study show that both economic as well as social factors have long-run impact on the flow of FDI in Pakistan. Moreover, vector error correction model confirms the existence of short-run relationship. The results point out that social factors are more important than economic factors in attracting FDI in Pakistan.

Keywords: Foreign direct investment, Socio-economic factors, Co-integration

21:

Asghar, N., **Rehman, H. U.,** & Nadeem, M. (2016). Sorting out synergy among inequality redistribution and economic growth: Recent evidence from selected Asian countries. *Journal of Quality and Technology Management, XII*(I), 173-192. **(Hafeez ur Rehman (Economics /SBE), (HEC X CAT))**

Abstract: A persistent increase in income inequality has raised concerns about its potential impact on economic performance of developing countries and at the same time it brings up the need for redistribution of income. This study is an attempt to explore this contrivance. The study uses data of twelve Asian developing countries for the period 1996-2013. Seemingly Unrelated Regression technique has been used for estimation purposes. The results of the study reveal that income inequality has negative impact on economic growth, while redistribution effects economic growth positively. The study finds the existence of inverse bidirectional causality between: inequality and growth; redistribution and inequality; however there is unidirectional causality observed between redistribution and economic growth which runs from redistribution to economic growth. The study suggests that better redistribution policies for reducing inequality and enhancing economic growth need to be formulated and implemented in these countries for economic prosperity.

Keywords: Inequality, Redistribution, Economic growth, Seemingly unrelated regression, Asia

22:

Bashir, F, **Rehman , H.,** Chaudhry, I. S., & Bakar, A. (2016). A panel data analysis of energy consumption and trade openness in developing countries. *Pakistan Journal of Social Sciences (PJSS), 36(*1), 373-386. **(Hafeez ur Rehman (Economics /SBE), (HEC X CAT))**

Abstract: The present study is carried out keeping the aim of investigating the role of Energy consumption in influencing Trade of developing countries. Developing countries are then divided into three groups based on their income (GNI per capita per year) i.e. low income (LDCs), middle income (MDCs) and high income (HDCs). Panel data of 69 developing countries is collected for the period from 1990 to 2014 using World Development Indicators. Im, Pesaran and Shin W test is applied to examine the stationary of the variables which suggest Panel ARDL as most suitable technique. Energy consumption provides positive impression in terms trade openness in low income, middle income and high income suggesting that higher will be the

energy use, the higher will be the trade in developing economies. In developing countries, bi-directional causality is examined among Energy Consumption and Trade Openness.

23:

Nadeem, M., Asghar, N., & Rehman, H. U. (2016). The Role of Institutional Quality in Enhancing Social Cohesion. *, 31*(2), 583–597. **(Hafeez ur Rehman (Economics /SBE), (HEC X CAT))**

Abstract: Social cohesion is considered to be important for a society. The role of state institutions is to bring state closer to its population. The effective connection between state and society may be possible only through changing institutions. Present study is an attempt to explore the impact of institutional quality in enhancing social cohesion in a society. For analysis purpose, the study uses five year average panel data from 1990 to 2010 of 68 developing countries. For estimation purpose fixed effect and random effect models as suggested by Hausman test have been used in different specification of the model. The results of the study reveal that better institutional quality enhances social cohesion and income inequality is a threat to social cohesion while diversity is not a harmful to social cohesion. Furthermore, equality and prosperity both enhance social cohesion. The study recommends that on one hand efforts should be made to reduce inequality and on the other hand there is a need to build up social cohesion. These can be achieved through redesigning the institutions ensuring that it is better fit to local needs. The study concludes that social cohesion can be achieved through introducing and re-structuring the policy reforms in developing countries.

Conference Papers by Department of Economics

01:

Rukhsana Kalim , Mohammad Shahid Hassan. (2016). *A Sluggish Trend of National Savings and its Causes: The Case of Pakistan.* Paper presented in Global Conference on Business and Economics. Cambridge University. **(Rukhsana Kalim (Ecomomic \SBE), Mohammad Shahid Hassan)**

02:

Mushtaq, A., Kalim, R., & Arshed, N. (2016).*Islamic finance and prospective growth.* Paper presented at Global forum of Islamic Economics, Finance and Banking Conference, University of Management and Technology, Lahore. **(Rukhsana Kalim (Ecomomic \SBE))**

Publications by Department of Finance

01:

Rafay, A. & Khan, A. (2016). Shift towards Next Generation Networks (NGNs) for sustainability: Evidence from an emerging Economy. *Journal of Cases on Information Technology, 18*(3), 1-12. **(Abdul Rafay (Finance /SBE), Arsala Khan, (SJR))**

Abstract: This paper examined the shift towards the Next Generation Networks (NGNs) like 4G from 2G and the role of technology for sustainable development in the telecommunication sector of Pakistan. WARID was one of the four cellular companies of Pakistan. All the big players in the market had auctioned for 3G/4G licenses but WARID remained distant from the process of spectrum auction. The paper investigated issues and decisions involved when WARID decided to launch 4G/LTE nationwide due to its technology neutral license. It was also studied that how this decision was necessary and beneficial for all internal and external stakeholders of the organization in terms of sustainability, customer satisfaction, technological advancements etc. The study used secondary data as well as unstructured interviews where interaction with the management/employees of the organization was deliberated to stimulate discussions and opinions.

02:

Rafay, A., & Gilani, U. J. (2016). Banking Competition and Stability: Evidence from Inter-continental Markets. *DLSU Business and Economics Review, 25*(2),24-40. **(Abdul Rafay(Finance /SBE), Usman Javed Gilani, (SJR))**

Abstract: In this paper partial adjustment process to Panzar and Rosse's (1987) H-Statistics is introduced. The basic aim is to estimate the speed at which the EU, US, and ANZ banking markets adjust to their long-run equilibrium levels. Normally, banking markets adjust towards long-run equilibrium in a non-instantaneous manner. Moreover, while estimating the market structure, the speed of adjustment process is taken into account. We introduced an empirical model based on Nerlove's (1956) partial adjustment model to capture the speed of convergence of transition in the EU, US and ANZ banking market. Empirical results suggest that the transition and speed of adjustment towards long-run equilibrium varies from market to market depending on the profit deviation from average market profits.

Keywords: Adjustment Speed, Banking, Competition, H-Statistics, Partial adjustment model

03:

Rafay, A., Sadiq, R., & Ajmal, M. (2016). Fragmentation of Islamic financial products – An exploratory study of Islamic schools of thought. *Abasyn Journal of Social Sciences, 9*(2), 349-362. **(Abdul Rafay (Finance /SBE) Ramla Sadiq, Muhammad Mubeen Ajmal, (HEC X CAT))**

Abstract: The international emergence and expansion of Islamic finance is an undeniable fact. Significant efforts from all stakeholders including regulatory bodies are currently under way to formulate universal framework, standards and codes of conduct for Islamic finance. This is necessary because of the heterogeneity of the Muslim community in the presence of different "Schools of thought" (hanafi, hanbali, maliki and shafi). "Schools of thought" has a great impact on development of Islamic jurisprudence and analytical thinking. Sources of Shari'ah law are clearly defined through Quran, Sunnah, Ijtihad, Ijma and Qiyas. However, multiple interpretations by various "Schools of thought" regarding Islamic jurisprudence including Islamic Finance result in minor and major disparities. Keeping in view this fact, it is logical that without a universal Shari'ah code, the acceptability of products introduced in Islamic finance shall remain

fragmented. Moreover, the permissibility of certain Islamic financial products varies by region, depending on the "Schools of thought" prevalent in that geographical area. This paper explores the necessity of convergence of various "Schools of thought" to formulate a single Shari'ah code that will be universally applicable. We also intend to look at similarities between "Schools of thought" with special reference to Islamic finance. This effort may lead to development of instruments that have broader markets, multiple customer segments, enhanced liquidity and reduced liquidity premium.

Keywords: Fragmentation, Islamic banking and finance, Jurisprudence, Madhahib, Schools of thought, Framework

04:

Rafay, A., Sadiq, R., & Khan, T. M. (2016). X-Efficiency in banking industry - Evidence from South Asian economy. *Global Management Journal for Academic & Corporate Studies, 6*(1), 25-36.
(Abdul Rafay (Finance /SBE), Ramla Sadiq, Tahseen Mohsan Khan, (HEC Y CAT))

Abstract: Around the globe, a number of researches are conducted to measure the X-efficiency of banking sector. The obvious reason is that economic growth, macroeconomic stability and expansion of monetary policy are directly dependant on banking sector performance and efficiency in any country (Berger & Humphrey, 1997). In order to measure the banking efficiency, some parametric and nonparametric frontier analysis techniques are commonly used. After financial crises of 2007, the banking Industry of Pakistan witnessed deregulation resulting in massive cost rationalization and rightsizing. In Pakistan, few studies are conducted to gauge the X-efficiency in banking sector and those too before the financial crises. So in order to measure recent X-Efficiency, this study was conducted using NonParametric efficient frontier approach known as DEA. Data was obtained for 32 banks operating in Pakistan. The data is further subdivided into (1) Government banks (2) Local Banks (3) Foreign banks (4) Islamic Banks and (5) All Banks. Results of the study indicate uniform efficiency among local and foreign banks but local conventional banks are ahead of Islamic banks in terms of efficiency.

Keywords: Banks, DEA, Non-Parametric, X-Efficiency

05:

Rafay, A., Sadiq, R., & Ajmal, M. M. (2016). Effect of IAS-24 disclosures on governance gechanism and ownership structures: Evidence from a South Asian economy, Lahore. *Journal of Business, 5*(1).
(Abdul Rafay (Finance /SBE), Ramla Sadiq, Muhammad Mubeen Ajmal, (HEC Y CAT))

Abstract: IAS-24 of the International Financial Reporting Standards focuses on the concept and disclosures of related party transactions (RPTs) for a reporting entity. This study examines the interrelationship between RPTs (as disclosed under IAS- 24), agency theory, ownership structures and firm performance. Our sample includes nonfinancial companies indexed by the KSE-100 of the Pakistan Stock Exchange during 2006–15. To run the regression models, we determine the regression assumptions, normality, heteroskedasticity, autocorrelation and multicollinearity. We investigate the impact of different RPTs, including cash inflows and outflows, whereas other studies generally look at the impact of RPTs on firm performance in totality. The empirical analysis suggests that institutional ownership has a positive, significant impact on firm performance. Related party purchases have a significant, negative impact on performance, resulting in the expropriation of institutional ownership. RPTs that generate revenues have a significant, positive impact on performance, such that institutional ownership has a propping-up effect with respect to the related parties. In practice, institutional ownership leads to strong corporate governance and contributes to firm performance. While other studies find family ownership responsible for the expropriation effect, we argue that institutional ownership has a propping-up and expropriation effect on related parties. Our study also suggests that certain ownership structures lead to weaker corporate governance mechanisms, resulting in

greater agency problems. This, in turn, badly affects company performance and leads to the exploitation of minority shareholders.

Keywords: IAS-24, IFRS, related party transactions, ownership structures, conflict of interest, governance.

06:

Naqvi, S. M. W. A., **Khan, T. M.**, & Rizavi, S. S. (2016). The efficiency of credit portfolio management in Pakistan's banking sector. *The Lahore Journal of Business, 4*(2), 51–72. **(Tahseen Mohsan Khan (Finance /SBE),** (HEC Y CAT)**)**

Abstract: This study highlights the differences in performance of commercial banks operating in Pakistan in the context of credit portfolio management. Specifically, we look at their credit allocation policies and outcomes in the shape of nonperforming loans (NPLs). We categorize a sample of 34 banks into four major groups: public, private, Islamic and foreign banks. The study tests several hypotheses related to the overall efficiency of banks' credit portfolio management over time as well as the drivers of NPLs and priority sectors for lending across these four categories. The findings broadly suggest that public banks tend to suffer most from NPLs, whereas Islamic and foreign banks manage their portfolios more efficiently. NPLs are highest in the priority lending sectors across all types of banks, which underscores the inefficiency of managerial decision-making when managing credit portfolios. Over time, at an aggregate level, all four types of banks have become less efficient, as reflected by the increase in NPLs as a percentage of gross credit and assets.

Keywords: Credit portfolio, nonperforming loans, priority sector lending

Conference Papers by School of Finance

01:

Farid, S., & Rafay, A.(2016). *Does Islamic banking reinforce real economic activity?* Paper presented at The Islamic Economics, Finance and Banking Forum, Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

02:

Rafay, A. & Ajmal, M. M.(2016). *Necessity of standardized universal agenda for financial instrument structures in Islamic banking and finance.* Paper presented at The Islamic Economics, Finance and Banking Forum (IFEB), Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

03:

Mohsan, T. & Rafay, A. (2016). *Dynamic structural mix of credit portfolios in Islamic banking system: Evidence from South Asian economy.* Paper presented at The Islamic Economics, Finance and Banking Forum (IFEB), Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

04:

Rafay, A., Sadiq, R., & Ajmal, M. M. (2016). *Fragmentation of Islamic financial products – An exploratory study of Islamic schools of   thought.* Paper presented at The CEIF 1st International Conference on Towards Financial Inclusion:Developments in Islamic Economics, Banking and Finance, Peshawar, Pakistan. **(Abdul Rafay (Finance \SBE))**

05:

Rafay, A. & Farid, S. (2016).*Dynamic Relationship between Islamic Banking System and Real Economic Activity   – Evidence from an Emerging Economy.* Paper presented at Islamic Finance Banking & Business Ethics Global Conference 2016, LUMS, Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

06:

Rafay, A. & Farid, S. (2016). *Islamic Banking System as Credit of Monetary Policy – Evidence from an Emerging Economy.* Paper presented at Islamic Finance Banking & Business Ethics Global Conference 2016, LUMS, Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

07:

Ajmal, M., Rafay, A. & Sadiq, R. (2016).*Pricing of Bai   Salam: An Analytical Perspective.* Paper presented at Islamic Finance Banking & Business Ethics Global Conference 2016, LUMS, Lahore, Pakistan. **(Abdul Rafay (Finance \SBE))**

08:

Nosheen, S., Sadiq, R. & Rafay, A.(2016).*The Primacy of Innovation in Strategic Financial Management-Understanding the Impact of Innovation and Performance on Capital Structure.* Paper presented at IEEE International Conference on Management of Innovation and Technology (ICMIT), Thailand. **(Abdul Rafay (Finance \SBE))**

Publications by Department of Management

01:

Shahzad, K., Muller, & Alan R. (2016). An integrative conceptualization of organizational compassion and organizational justice: a sensemaking perspective. *Business Ethics: A European Review, 25*(2), 144-158. **(Khuram Shahzad (Management /SBE), JCR LISTED (IF:1:39))**

Abstract: Organizational scholars tend to view justice and compassion as incompatible. While both have important functions in organizational life, compassion's affective elements appear difficult to synthesize with the reasoning and impartiality that underlie the concept of justice. We draw on theoretical arguments from the sensemaking perspective to argue that we can integrate organizational compassion and organizational justice conceptually because both are inherently dynamic processes that rely on emotional and cognitive components, and both are shaped by the social context of the organization. Based on this integrative conceptualization, we propose a construct we call 'compassionate organizational justice', in which compassion becomes an integral element of an organization's justice requirements and members' fairness perceptions, and that those justice perceptions in turn inform future instances of organizational compassion.

02:

Khurram, S., Bajwa, S, U., Siddiqi, A. F I., Farhan, A., & Raza, S. A. (2016). Integrating knowledge management (KM) strategies and processes to enhance organizational creativity and performance. *Journal of Modeling in Management, 11*(1) 154 - 179. **(Khuram Shahzad (Management /SBE) Sami Ullah Bajwa, Ahmed Faisal Imtiaz Siddiqi, (Not Recognized By HEC))**

Abstract: This study aims to identify if an integration between knowledge strategy and knowledge management (KM) processes leads to organizational creativity and performance. **Design/methodology/approach:** Quantitative strategy and cross-sectional survey method were used to collect data. In all, 219 randomly selected respondents from 173 listed companies provided feedback through self-administered questionnaire. Factor analysis and multiple regression techniques were used to test multiple hypotheses. **Findings:** Results revealed the significant positive impact of system-oriented KM systems strategy on KM process capabilities, creativity and organizational performance. No significant impact has been found of human-oriented KM strategy on different KM processes and organizational performance. However, it interestingly has a significant negative relationship with organizational creativity. KM processes have significant impact on organizational creativity and performance. Organizational creativity has also been identified as having a strong significant impact on organizational performance. **Originality/value:** This paper fills the knowledge gap by undertaking a study which has not been conducted before.

Keywords: Knowledge management, Creativity, KM strategies, KM process capabilities, Organization performance

03:

Ahmed, F., **Shahzad, K., Aslam, H., Bajwa, S. U.,** & Bahoo, R. (2016). The role of collaborative culture in knowledge sharing and creativity among employees. *Pakistan Journal of Commerce and Social Sciences, 10*(2), 335-358. **(Khuram Shahzad (Management /SBE) Haris Aslam, Sami Ullah Bajwa, (Not Recognized By HEC))**

Abstract: Employees' knowledge sharing and creativity are two important zones of an organization's concern. While extant literature sheds some light on this area, there is paucity of research which looks into different facets of knowledge sharing and the mechanism through which it enhances employees' creativity. This study conceptualizes and empirically validates the role that collaborative culture can play in boosting

two processes of knowledge sharing i.e. knowledge donation and knowledge collection which eventually enhances employees' creativity in the organization. Quantitative research strategy and cross-sectional survey method were adopted for the collection of data. A self-administered questionnaire was used to collect data from 189 managers working in 87 business organizations listed in Lahore Stock Exchange of Pakistan. Confirmatory factor analysis and structural equation modeling found out a significant and positive impact of trust, teamwork, and empowerment (facets of collaborative culture) on both knowledge donation and knowledge collection (dimensions of knowledge sharing). Cultural diversity was found to have insignificant impact on both knowledge-sharing dimensions. However, both knowledge sharing dimensions were having significant positive impact on employees' creativity. Findings of this research substantiate the current body of knowledge by identifying the role of Collaborative Culture, Knowledge Sharing and Creativity among Employees 336 collaborative culture in enhancing organizational creativity through different knowledge sharing dimensions.

Keywords: knowledge sharing; collaborative culture; creativity; knowledge management;

04:

Basit, A. A., & Arshad, R. (2016). The role of needs-supplies fit and job satisfaction in predicting employee engagement. *Journal Pengurusan, 47*, 3-12. **(Ameer Abdul Basit (Management /SBE), (Not Recognized By HEC))**

Abstract: Employee engagement has become a key concern for organizations as it provides value for sustainable competitive advantage. Fully engaged workforce is not only important in helping organizations fourish in good times but also relevant in helping organizations persevere during tough times. However, the main challenge for employers is to motivate and keep their employee engaged. Recent organizational behaviour studies emphasize the importance of environmental influences in understanding employee attitudes and behaviours. Consistent with this development, the present study seeks to examine the role of needs-supplies fit and job satisfaction in predicting employee engagement. Drawing from the self-in-role view and social exchange theory, it was hypothesized that needs-supplies fit predicts employee engagement, and the relationship between the two constructs is mediated by job satisfaction. Using a self-administered survey, data were obtained from 161 employees of a large public university in Malaysia. The results fully supported the hypothesized relationships. Implications for theory and practice are discussed.

Keywords: Employee engagement, Person-job fit, Needs-supplies fit, Job satisfaction, Self-in-role view, Malaysi.

05:

Basit, A. A. (2016). Cognition-based and affect-based trust in supervisor and job engagement: Evidence from Malaysia. *Academy of Management Proceedings, 2016*(1). **(Ameer Abdul Basit (Management /SBE), (Not Recognized By HEC))**

Abstract: Job engagement is a motivational latent construct represented by cognitive, emotional, and physical energies employees choose to invest into jobs. Despite the importance of trust in supervisor and its positive outcomes, little attention has been paid to examine its effect on subordinates' job engagement, and even less is known about mechanisms that might exist in this relationship. The aim of this study, thus, was to examine the effects of cognition-based and affect-based trust in supervisor on job engagement. Further, drawing from the engagement model of Kahn (1990) and social exchange theory, the mediating roles of psychological safety and felt obligation in the trust-engagement relationship were also investigated. Although trust is a reciprocal and dynamic construct that continually evolves in relationships, this study captures a snapshot in time within this dynamic trust-engagement relationship by using self-report questionnaires to gather data from 415 nurses working in a large Malaysian public hospital. Structural

equation modeling results indicated that cognition-based trust in supervisor was both related directly and indirectly to job engagement. Affect-based trust in supervisor, however, was only indirectly related to job engagement. Moreover, only felt obligation, and not psychological safety, mediated the trust-engagement relationship. Implications for theory and practice are discussed.

06:

Hassan, A., Bashir, R., & Shakir, R. (2016). Analysis of factors causing merger and acquisition: Case study of banking sector in Pakistan. *Journal of Business Studies, 12*(1), 328-346. **(Atif Hassan (Management /SBE), (Not Recognized By HEC))**

Keywords: Banking Sector of Pakistan, Merger and Acquisition, Merger in Banking Sector, Acquisition in Banking Sector.

07:

Rehman, N., Hassan, A. (2016). Transforming into a learning organization through HR initiatives and managerial factors: A case of Avari Hotel, Lahore. *Journal of Management and Research, 3*(1), 1-24. **(Namra Rehman (Management /SBE) Atif Hassan, (UMT Journal))**

Abstract: This study explores the HR initiatives and managerial factors that contributed towards making Avari Hotel a learning organization and ensuring its continuous success and rapid expansion in the International world. In-depth interviews and analysis of existing organizational documents and secondary resources were referred in this case study. The main findings of the study attributed its success to the consistent hard work of the owners and senior management in meeting and maintaining the international standards of five star hotel properties while sustaining and developing its own unique selling elements distinguishing Avari chain from its competitors. HR initiatives for employee retention and the functional role of HR in areas as ensuring safe, healthy and happy workplace, employee care, communication, recognition, work environment and culture, recruitment training and development has played a major role in transforming it into a learning organization Although the strategic management at Avari Hotel, Lahore is in action to address the environment and competitive pressures, there is a strong need that management practices at Avari remain aligned with their business objectives in order to remain a force in hospitality industry and retain their market position for strong, unique and favorable brand associations.

Keywords: Hospitality Industry, Avari Hotel, Learning Organization, Success, Rapid Expansion

08:

Qadri, M. M., Ayub, U., & Mir, U. R. (2016). Globalization and regionalization: At a glance on debate in pursuit of guiding principles leading policy implications. *Journal of Management and Research, 3*(2), 88. **(Mubashar Majeed Qadri (Management /SBE), Umer Ayub, Usman Riaz Mir, (UMT Journal))**

Abstract: The debate of Globalization and Regionalization is becoming extensive and significant and in response to these observations, various standpoints, in favor or against are also emerging and fueled the debate and huge complexities are emerging to comprehend what is intended by both. The proponents of both are presenting contrasting, conflicting and debatable explanations and interpretations; however, a clear demarcation between these is still blurry. Due to broadness of both concepts, in this study, instead of making another attempt to provide the summary of different forms, definitions, contradictory or conflicting debate about globalization and regionalization, attention is given on those aspects which are contested by the proponents of regionalization. After rigorous examination and comparisons of various viewpoints of proponents of both, few guidelines are proposed for policy makers to develop some policies to ease the

challenge currently micro and macro players are facing about decision making about these two. The policy makers should understand that survival of countries resides in internally connected dynamic and pluralistic business blocs in which the member states not only trade freely but fairly and fearlessly.

Keywords: Globalization, Regionalization, Debate, Policy Implications

09:

Shahzad, K., Kitchlew, N., Bajwa, S. U., & Sair, S. A. (2016). The evolution of Nonaka's Thoughts on knowledge management: A review. *Science International, 28*(2), 1663-1668. **(Khuram Shahzad (Management /SBE), Naveda Kitchlew, Sami Ullah Bajwa,** **(HEC Y CAT)****)**

Abstract: The main objective of this conceptual paper is to capture the thought-development process of Ikujiro Nonaka on Knowledge Management based on his theoretical and conceptual contributions toward knowledge and its management in organizations. Our analysis reveals that the field of knowledge management after having decade's long debates on kinds and types of knowledge and distinction between information management and knowledge management has finally tended to delve into an amalgamation-based approach.

Conference Papers by Department of Management

01:

Ghaffar, A. (2016). *Impact of leadership style on effectiveness of human resource information system: The twist of HR practices implementation.* Paper presented at the 6th International Conference on Business Management, NUST Business School, Islamabad**. (Abdul Ghaffar, Ahmed Faisal Imtiaz Siddiqui(Management \SBE))**

02:

Ayub, U. (2016). *Study on people's attitude towards Islamic banking in Pakistan.* Paper presented at International Conference on Innovation and Emerging Trends in Business Management held in IQRA University, Karachi**. (Umer Ayub (Quality Management\SBE))**

Publications by Department of Marketing

01:

Hussain S., Rashid Y. (2016). Brand Extension Success Elements: A Conceptual Framework. *Journal of Business Administration and Education, 8*(1). **(Shafqat Hussain (Marketing /SBE), Yasir Rashid, (Not Recognized By HEC))**

Abstract: This paper identifies elements that are required to devise an effective brand extension strategy by a firm. Brand extensions are a known source of marketing new products. Firms spend a huge amount of budget on market research before extending their brand. A comprehensive literature review identifies six elements which are crucial to the success of brand extension. These elements are Parent Brand Image, Parent Brand Fit, Parent Brand Strength, Marketing Support, Quality of Parent Brand and Parent Brand Consumer Experience. A conceptual understanding of literature further suggests a direct relationship between brand extension success and elements presented in this paper. This relationship is presented in the form of conceptual framework. This framework provides guidelines for future research.

Keywords: Brand extension, Elements, Conceptual framework.

02:

Ehsan, U., Warraich K. M., & Sehribanoglu, S. (2016). Measuring Brand Loyalty in Cola Market: A Three Dimensional. *Abasyn Journal of social sciences, 9*(1). 153-168. **(Usman Ehsan (Marketing /SBE), (HEC X CAT))**

Abstract: Purpose of this study is to test the approach of tri-dimensional brand loyalty in context of products. Data was collected from the young consumers of cola drinks using questionnaire. Data analysis was done using SPSS and LISERL. Findings revealed that brand loyalty is a tridimensional measure in context of product loyalty. Tridimensional brand loyalty has been only tested in service context; this research has examined this concept in product context. Future research can examine the same model and measures to develop the reliability of tridimensional brand loyalty measure.

Keywords: Brand Loyalty, Attitudinal, Behavioral, Cognitive

Conference Papers by Department of Marketing

01:

Rashid, Y., & Sadiq, I. (2016). *Value co-creation in retail: A perspective integrating Consumer Culture Theory (CCT) and service dominant logic of marketing*. Paper presented at Australia and New Zealand Marketing Academy Conference (ANZMAC), New Zealand**. (Yasir Rashid (Marketing\SBE))**

02:

Zaheer, S., Hasan, A. I., Butt, D. I., & Rehman, M. U. (2016).*Al-Madni hotel (restaurant): Dealing with multiple consumer segments.* Paper presented at 8th South Asian International Conference (SAICON), Islamabad, Pakistan**. (Salman Zaheer (Marketing\SBE))**

Publications by Department of Operations & Supply Chain

01:

Ramish, A., & Aslam, H. (2016). Measuring supply chain knowledge management (SCKM) performance based on double/triple loop learning principle. *International Journal of Productivity and Performance Management, 65*(5), 18. **(Asher Ramish (Operation and Supply Chain/SBE), Haris Aslam, (SJR))**

Abstract: Purpose; The purpose of this paper is to propose performance measures for supply chain knowledge management (SCKM) performance.**Design/methodology/approach;** This is a conceptual study. State of performance measurement has been analyzed on the basis of a comprehensive review of literature in field of SCKM. Based on principles of double and triple loop learning, performance measures have been identified for measuring the success of KM practices in SCs. **Findings;** Principles of double and triple loop learning have been utilized to suggest KPI's for SCKM performance, i.e. supply chain identity and knowledge supply chain stratum. The relevance and justification of these KPI's is also discussed. **Research limitations/implications;** This study is limited to conceptualized measures for SCKM only. Further research is required to test the benefits of these performance measures based on industry applications. **Practical implications;** These proposed KPI's will facilitate the development of the new processes through re-engineering, i.e. problem identification and then rectification. Further, these KPI's will provide some essential insights as to how supply chains can develop their performance evaluation systems to become more effective and learning oriented. **Originality/value;** This study aims to not only identify the gaps present in the SCKM performance measurement literature but also aims to fill the knowledge gap by suggesting suitable performance metrics.

Keywords: Performance measurement, Supply chain, Key indicators, KPI, Inter-organizational learning, Knowledge management, Learning, Performance measures, Supply chain knowledge management, Double loop learning, Triple loop learning.

02:

Waseem, M., (2016), Deviant workplace behaviors in organizations in Pakistan. *The Lahore Journal of Business, 4*(2), 93–104. **(Maimoona Waseem (Operation and Supply Chain/SBE), (HEC Y CAT))**

Abstract: While employees bring their own set of values and attitudes to the workplace, companies that adopt a positive approach toward their employees are likely to be more productive. Employee misbehavior and workplace deviance can have a severe impact on overall organizational performance and productivity, with a corresponding increase in costs. The literature indicates that deviant behaviors include stress, violence, sexual harassment, employee hostility and organizational injustice. This study examines the extent of organizational and interpersonal deviance at a private sector firm in Pakistan, in which a sample of 50 employees were asked to rate deviant workplace behaviors. The independent variables include leader mistreatment, employee hostility, organizational sabotage, intention to quit, and political and production deviance. The study finds a significant relationship between workplace deviance and most of these variables.

Keywords: Workplace deviance, employee hostility, production deviance, job satisfaction, leader mistreatment.

Conference Papers by Department of Operations & Supply Chain

01:

Azhar, T., Rashid, K., & Wahla, A. U. R.(2016).*Achieving supply chain competitiveness through successfil buyer-supplier relationships.* Paper presented at the 18th International Conference on Supply Chain and Logistics Engineering, Madrid, Spain**. (Tashfeen Azhar, Kamran Rashid(Operations &Supply Chain\SBE))**

02:

Ghaffar, A., & Azhar, T. (2016).*The key to triumphant practices of technology in elections: It's time to reboot electoral process in Pakistan* Paper presented at the 1st International Conference on Disruptive Innovation, University of Science & Technology, Kuala Lampur, Malaysia**. (Abdul Ghaffar (Operations & Supply Chain\SBE), Tashfeen Azhar)**

03:

Aslam, H. (2016).*Performance implications of logistics capabilities of 3 PLs: Case of Paksitan.* Paper presented at 5th Asian Management Research and Case Conference (AMRC), University of Wollongong Dubai, UAE**. (Haris Aslam (Operations &Supply Chain\SBE))**

04:

Rashid, K., Azhar, T.M. , & Wahla, A. R. (2016). *Internationalizing Asian businesses.* Paper presented at 5th Asian Management Research and Case Conference (AMRC), University of Wollongong Dubai, UAE**. (Kamran Rashid (Operations &Supply Chain\SBE))**

Publications by Department of Quantitative Methods

01:

Perveen, Z., & **Munnir, M.** (2016). MM Double exponential distribution. *International Journal of Scientific & Engineering Research, 7*(8), 720-728. **(Mubbasher Munir (Quantitative Method /SBE),** **(Not Recognized By HEC))**

Abstract: The exponential distribution is one of the most significant and widely used distributions in statistical practices. In this paper, we introduce MM Double Exponential Distribution (MMDED) and find some properties with application to real life data. Maximum Likelihood Estimation (MLE) has been used to estimate the parameters of MMDED. Finally, we provide results of entropies and compareMMDED with other distributions for best fitted.

Keywords: Exponential distribution, moments, estimation and entropy.

02:

Raza, S. M. M., **Butt, M. M., Azad, M., & Siddiqi, A. F.** (2016). Shewhart control charts for rayleigh distribution in the presence of type 1 censored data. *Journal of ISOSS, 2016 Vol. 2(*2), 210-217. **(Muhammad Moeen Butt (Quantitative Method /SBE) Mueen-ud-Din-Azad, Ahmed Faisal Siddiqi,** **(Not Recognized By HEC))**

Abstract: This article explains shewhart control charts for monitoring the mean level of the Rayleigh lifetimes under the type I censored data. The control chart for the type I censored data is developed based on the conditional expected values (CEV). The results of CEV based control charts are compared with simple/traditional shewhart structures. The CEV control chart outperforms traditional control chart when the data is censored. The proposed method is illustrated by an example.

Keywords: Type I censored, CEV, Shewhart control charts.

03:

Perveen, Z., **Munir, M.,** Ahmed, Z., & Ahmad, M., (2016), On area-biased weighted weibull distribution. *Science Internaitonal (Lahore), 28*(4), 3669-3679. **(Mubbasher Munir (Quantitative Method /SBE),** **(HEC Y CAT))**

Conference Papers by Department of Quantitative Methods

01:

Azad, M., Siddiqi, A.F., Moeen, M. & Munir, M. (2016). *A study exploring Significant Risk Factors and Effect of New Treatment on Survival for Oropharyngeal Cancer.* Paper presented at 14th International Conference on Statistical Sciences, Jinnah Sindh Medical University Karachi**. (Muhammad Moeen Butt (Quantitative Methods\SBE))**

02:

Sultana, Z., Ali, A., Moeen, M., & Ahmad,M. (2016). *Extended Weibull-Geometric distribution.* Paper presented at 14th International Conference on Statistical Sciences, Jinnah Sindh Medical University Karachi. **(Muhammad Moeen Butt (Quantitative Methods \SBE))**

03:

Raza, S. M. M., Moeen, M., Azad, M., & Siddiqui, A. F. (2016).*Shewhart control charts for rayleigh distribution in the presence of type I censored data.* Paper presented at 14th International Conference on Statistical Sciences, Jinnah Sindh Medical University Karachi. **(Muhammad Moeen Butt (Quantitative Methods \SBE))**

Conference Papers by Department of Skills Development

01:

Rashid, U. (2016) *Problems with the legal education in Pakistan: Are Pakistan bar council legal education rules 2015 enough?* Paper presented at a conference on Redefining Legal Education in Pakistan, organized by Courting the Law and School of Law at Avari Hotel**. (Umar Rashid (Skill Development\ SBE))**

School of Social Science & Humanities (SSSH)

Publications by Department of Education

01:

Gondal, K. M., Uzma Iqbal, U., **Arif, S.,** Ahmed, A., Khan, U. A. (2016). CPSP/HSE Postgraduate Overseas Rotational Programme: Residents' Perspective, *Journal of the College of Physicians and Surgeons Pakistan(JCPSP), 26*(4), 283-287. **(Seema Arif (Education /SSSH), JCR LISTED (IF:0:343))**

Abstract: Objective; To get direct upward feedback from the residents of first batch of CPSP/HSE Postgraduate Scholarship Programme. STUDY DESIGN; Mixed methods qualitative research study. PLACE AND DURATION OF STUDY; CPSP, Regional Office, Lahore, in June 2015. METHODOLOGY; It is a mixed-method study that was conducted in June, 2015. Data was collected through an email survey with 33 medical residents doing their rotation in Ireland; and focus group discussions were carried out with 8 residents, who had successfully completed their rotation. Data were collected through pre-designed questionnaires comprising of open- and close-ended questions. The data were entered into SPSS version 21 and analyzed. RESULTS; The mean age of residents was 29.9 ±1.1 years, 7 (21.2%) were females and 24 (72.7%) respondents were males. Residents agreed that HSE programme has improved their evidence-based decision making (mean score of 3.3 ±1.2) and enhanced professionalism (mean score of 3.6 ±1.1). They disagreed that training has polished their procedural skills (mean score 2.4 ±1.2). The identified strengths of the programme are: adopting a systematic approach towards patients, evidence-based decision making, better exposure and opportunities, financial stability and development of communication skills. The weaknesses are: less exposure to procedural skills, difficulty in synopsis and dissertation writing and difficulty in adjustment with rotational schedules. CONCLUSION; Residents of CPSP/HSE Programme believed that CPSP/HSE has improved their professionalism, communication skills and increased their future opportunities for career growth. Better communication between CPSP focal person and residents will help sort out many minor but important issues.

02:

Arif, S. (2016). Leadership for change: proposed organizational development by incorporating systems thinking and quality tools. *Business Process Management Journal, 22*(5), 5. **(Seema Arif (Education /SSSH), (Not Recognized By HEC))**

Abstract: Purpose; The purpose of this paper is to explore the scope of application of systems thinking and cybernetics for change management by presenting the case of a private university of Pakistan. Six Sigma has been tested as a possible solution to the problems faced by the institution. **Design/methodology/approach;** Stafford Beer's approach of running the system on trial at five levels has been used to estimate system's efficacy. The system analysis helped to identify lapses in the system as well as the leverage points for quality improvement. Six Sigma DMAIC tools have been applied for the possible improvement in the process of course management in a private university of Pakistan. **Findings;** Private universities in Pakistan are operated as a business and the business owners are busy to keep their system stable unmindful for the protocol for sustainability. What will make the system viable and sustainable is yet to be learnt by the private universities of Pakistan. There exists a sharp divide between bottom line approach of businessmen and the academia's confidence in the quality improvement. However, it has been learned that the organizational development is the job of every academic manager, and managing the process through creative innovation is the only solution. **Originality/value;** The case study is a unique contribution in theory and principles of quality management for checking the application of Six Sigma and lean techniques for organizational development of a private university.

Keywords: Quality improvement, Cybernetics, Quality management, Higher education, Private universities, Systems thinking.

03:

Khalil, U., Iqbal J., & Khan, A. (2016). Exploring Leadership Styles of School Administrators in Pakistan. *FWU Journal of social sciences, 10*(1). **(Usman Khalil (Education /SSSH), Javed Iqbal, Abida Khan, (HEC X CAT))**

Abstract: This research looked the leadership styles of 50 school head teachers of district Lahore, Pakistan. The researcher used quantitative survey research design in this research. A five point Likert scale questionnaire was used to collect the data. It was Multi-factor Leadership Questionnaire (MLQ) 5X made by Bass Avolio (1995). It was used to measure the transformational leadership, transactional leadership and lassies faire leadership. A few modifications were made in the terms of above mentioned questionnaire to validate it for the school heads of Pakistan. Descriptive and inferential statistical techniques were applied to analyze the data. The results showed that transactional leadership style is emerging as the most popular style of leadership among the school administrators as compared to the transformational and laissez faire leadership styles. It was also found that female administrators are more transactional leaders as compared to the male administrators

Keywords: Transformational leadership, Transactional leadership, Laissez faire leadership.

04:

Munir, F. & Khalil, U. (2016). Secondary school teachers' perception of their pricipals' leadership behaviors and their academic perfomance at secondary school level. *Bulleting of education and research, 38*(1), 41-55. **(Farhat Munir (Education /SSSH), Usman Khalil, (HEC Y CAT))**

Abstract: A number of factors contribute to the academic performance of the teachers and teachers' perceptions of their principals' leadership behaviors are one of them. To raise the academic performance of teachers, every progressive country invests expansive resources and huge budget on teachers' professional development programs all over the world. Nevertheless, the situation is yet not that improved as in UK where 90% of participant teachers in such programs consider these programs not very effective. Thus, it is suggested that the teachers' education programs should undergo a paradigm shift from the conventional framework merely focusing on the imparting skills to the issues perceived by the teachers. This was a quantitative study conducted to see the relationship between teachers' perceptions about their principals' leadership behaviors and their academic performance. A sample of 2350 teachers of public and private secondary schools was selected from 235 schools of three districts (Lahore, Kasoor, Sheikhupura) through stratified random sampling. Teachers' perceptions were identified through Multifactor Leadership Questionnaire – 5x Rater Form, developed by Bass and Avolio in 1995 and revised in 2004. Teachers' perceptions came out as one of the most important determining factor of their academic performance. Therefore the study suggests that the teachers' perceptions of leadership behaviors must be taken into account while designing any training program for their professional development to make them more effective.

Keywords: Teachers' perceptions, performance determinants, leadership behaviors

05:

Mohyuddin, R. G., & **Khalil, U.** (2016). Misconceptions of Students in Learning Mathematics at Primary Level. *Bulletin of education and research, 38*(1), 133-162**. (Usman Khalil (Education /SSSH), (HEC Y CAT))**

Abstract: The study was designed to identify the misconceptions of the students in learning mathematics at primary level. For this, curriculum of mathematics from class I to IV was used to develop a test inclusive of all the conceptual areas of mathematics from class I to Class IV. The curriculum of class V was left out because the sample students were planned to take into the study who were studying in class V. Twelve sample schools from Faisalabad district were selected randomly equal in number from all the three tehsils of Faisalabad. Test was conducted personally by the researchers. There were eight conceptual areas determined and included in the test viz. Numbers, Operations on Numbers, Fractions, Operations on Fractions, Decimals, Measurement, Information Handling and Geometry. The data collected from the all the students of class V of the selected sample schools, and 248 students took part in the exercise. Multi items were developed in each of the areas with different difficulties in order to have an idea of which of the selected eight areas was posing threat of misconceptions amongst the sample students. The data were analyzed using SPSS. Item-wise and gender-wise analyses was conducted to identify misconceptions and errors students committed and also to find out whether there was uniformity gender-wise or otherwise. The analyses disclosed that almost are the areas were having abandon of the errors and misconceptions and hence the achievement remained very low (mean score remained within 6.2 to 16.1 out of 51).

Keywords: Misconceptions, Mathematics, primary level

Conference Paper by Department of Education

01:

Arif, Seema., Shahzad, Ayesha. & Hayat,Mazhar. (2016). *Comparative Analysis of the vision of Quality Education of different Political Parties in Pakistan.* Paper presented at International Conference of Social Sciences on Emerging Problems of the Developing Countries: Indigenous Responses & Way Forward at Shaheed Benazir Bhutto Women University Peshawar, Pakistan**. (Seema Arif (Education\SSSH))**

02:

Masood, S., & Tatlah, I.A.(2016). *Stress causing experiences during teaching practicum among student teachers in Pakistan.* Paper presented at 4th International Conference, University of Education Lahore, Pakistan**. (Sajid Masood (Education\SSSH))**

03:

Arif, S., Shahzad, A., & Hayat, M. (2016).*Comparative analysis of the vision of quality education of different political parties in Pakistan.* Paper presented inInternational Conference of Social Sciences on Emerging Problems of the Developing Countries: Indigenous Responses & Way Forward, at Shaheed Benazir Bhutto Women University Peshawar, Pakistan**. (Seema Arif(Education\SSSH))**

04:

Arif, S. (2016). *Learning for peace and coexistence: Action research to improve student attitudes.* Paper presented at 4th International Conference on Research in Education "Combating Contemporary Challenges through Education", The University of Punjab, Lahore, Pakistan. **. (Seema Arif (Education\SSSH))**

Publications by Department of English Language and Literature

01:

Ali, N., Rafi, M. S., Khan, M. S. G., & Mahfooz, U. (2016). Rejuvenating lost communication through script training. *Journal of the Pakistan Medical Association, 66*(12), 1671-1671. **(Nadir Ali (English Language and Literarure /SSSH) Muhammad Shaban Rafi, JCR LISTED (IF:0:488))**

02:

Hanif, N., & Arshad, N. (2016). Relationship between school education and economic growth: SAARC countries. *International Journal of Economics and Financial Issues, 6*(1), 294-300. **(Nadia Hanif (English Language and Literarure /SSSH) Noman Arshad, (SJR))**

Abstract: For long increasing economic growth is the major objective of macroeconomic policy makers of the country. Many studies have tried to put forward a theory which can explain the pattern of gross domestic product growth, in this series Cobb-Douglass were most prominent in making a production function using physical capital and labor as inputs. But later studies highlighted that human capital is also a significant component of this production function. This study used three proxies for the human capital for the case of SAARC countries to see whether higher proxy has better marginal impact on the growth of the selected countries. The results for dynamic panel data models reveal that tertiary education enrollment has highest impact on growth as compare to primary and secondary education enrollment.

Keywords: Gross Domestic Product, Human Capital, Panel Cointegration

03:

Ali, N., Rafi, M. S., Khan, M. S. G., & Mahfooz, U. (2016). Rejuvenating lost communication through script training. *Journal of Pakistan Medical Association, 66*(12), 1671. **(Nadir Ali (English Language and Literarure /SSSH) Muhammad Shaban Rafi, (HEC Z CAT))**

04:

Rana, M., Sohail, R., & Naz, R. (2016). Correlation of Fossilized Errors and Failure of B.A Students through Error Analysis. *European Journal of Social Sciences, 51*(4), 461-470. **(Maimoona Rana (English Language and Literarure /SSSH) Rabia Sohail, Raheela Naz, (Not Recognized))**

Abstract: This study aims to enable B.A students to avoid making those impeding errors that causethem to lose maximum marks in English compulsory paper Aconducted by University ofthe Punjab. Since these candidates have been learning English from grade 1, their errorscannot be termed as their mistakes. Hence, the term coined as "fossilization" best suits thepurpose of this study. The data was collected from complete attempted EnglishCompulsory paper A by 20 students of B.A. The errors were analyzed in terms of the extentto which they cause students to lose marks and eventually fail. The errors were furtheranalyzed in such a way as to find out the recurrent errors, avoiding of which can preventfailure. Correlations between marks gained by students and Group 1 errors and Group 2errors were calculated separately using Microsoft Excel. The research was successful inpointing out fossilized errors and to suggest certain recommendations.Strong inverserelation was found in terms of negative value of correlation for the Group 1 errorswhereas;a weak negative value of correlation exists in the Group 2 errors. If the students avoiderrors of nouns and verbs, carefully avoid Present Indefinite tense in their writtencompositions and use Past Indefinite tense instead, they canscore good marks and evadefailure.

Keywords: Error analysis, Fossilization, Correlation, B.A students.

Conference Papers by Department of English Language

01:

Rafi, M. S., & **Anwar, N.** (2016). *Urdu as the official language of Pakistan: Challenges, implications and prospects*. Paper presented at the 2nd International conference of the association of Pakistan, Lahore, Pakistan. **(Muhammad Shaban Rafi (English Language and Literature \SSSH), Nadia Anwar)**

02:

Amjad, I.,& Rafi, M. S. (2016). *Social stratification of allophonic variation in Punjabi language*. Paper presented at the 2nd International conference of the association of Pakistan, Lahore, Pakistan. **(Iram Amjad (English Language and Literature \SSSH), Muhammad Shaban Rafi)**

03:

Tanvir, M. F. (2016). *Speaker-hearer metanarrative in classic whodunits: Analyzing Christie's Why didn't they ask Evans?* Paper presented at the 2nd International Conference of the Linguistic Association of Pakistan, Institute of Languages, University of the Punjab, Lahore**. (Muhammad Furqan Tanvir (English Language and Literature \SSSH))**

Publications by Department of Islamic Thought and Civilization

01:

Khan, S. A., & Amjad, M. (2016). Islami bankari ma sarmae aur mehnat ki bunyad per taqseem e nafa - aik tehqiqi jaeza. *Pakistan Journal of Islamic Research, 17*, 151-169. **(Sulman Ahmad Khan (ITC /SSSH), (HEC Y CAT))**

02:

Khan, M. K., & **Mustafa, M. T.** (2016). Kashf al Mahjoob ma mubahis e Seerat aur Syed Hijwair (R.A) munhaj o istadlal. *Al-Ehsan , 1*(5), 219-240. **(Mohammad Tahir Mustafa (ITC /SSSH), (HEC Z CAT))**

03:

Dhillu, I. K., & **Mustafa, M. T.** (2016). Royat-e-Risalat Ma'ab bazaban-e-Risalat MA'ab (PBUH). *Jihat-al-Islam, 9*(2), 81-106. **(Mohammad Tahir Mustafa (ITC /SSSH) (HEC Y CAT))**

04:

Ahmad, E., & **Mustafa, M. T.** (2016). Pakistani nizam e taleem per istashraq kai asraat. *Al-Qalam, 21*(S-1), 335-351. **(Mohammad Tahir Mustafa (ITC /SSSH) (HEC Y CAT))**

Publications of Department of Media & Mass Communication

01:

Mirza, Z. K. (2016). Male gender stereotypes in Pakistani advertisements. *International Journal of Social Sciences, 2*(1), 1716-1732. **(Zainab Kamran Mirza (Media and Communication /SSSH)**

Abstract: This paper deals with the study of how men are portrayed and perceived in television commercials in electronic media. After reviewing existing literature on gender stereotypes and in advertisements, a research gap has been identified in the field of gender stereotype studies in electronic media: male gender stereotypes and their utilization in advertisements. Hence, this research combines these aspects in an attempt to fill the aforementioned gap. Content analysis is chosen as a method to evaluate male gender stereotypes, if any. The analysis of the study is comprised 60 ads which were further coded for nine distinguished categories and subcategories. The outcome of this study supports the proposed hypothesis. Stereotypes of male gender roles exist today in our society and dominate the overall portrayal.

02:

Mirza, Z. K. (2016). Gender disparity in Pakistani media organizations in the digital age. *International Journal of Social Sciences, 2*(3)19-37. **(Zainab Kamran Mirza (Media and Communication /SSSH)**

Abstract: This study analyses gender inequality and glass ceiling, which are the greatest hindrances that are keeping away the Pakistani women from reaching high positions in the media organizations. Working women in Pakistan face much difficulty in climbing the professional ladder and are regularly discriminated from the leadership positions. The study at hand, investigates the over arching circumstance of discriminatory limitation impact from Pakistani working women's view point alongside limited career opportunities that are keeping them away from profession about which they are ambitious. The gender discrimination is accessed on five categories: Glass ceiling, Wage gap, opportunities, Competence, Social and cultural barriers. Survey questionnaire was given to 30working female reporters, journalists and RJ's. Findings offered insight about the prevalence of gender discrimination in media jobs targeted to females. Women can fantasize only however, might never achieve high stature positions in media organizations. It's certainly wrong to say that women are not competent enough and lack the skills and don't have the right capacities to be deserving of key posts in media.

Publications by Department of Political Sciences

01:

Pervez, M. S. (2016). Political culture, political science and identity politics: an uneasy alliance. *International Affairs, 92*(5), 1261-1262. (**Muhammad Shoaib Pervez (Political Science/SSSH), (JCR LISTED)**)

02:

Sajjad, F., & Javaid, U. (2016). The civilizational rift and the idea of the Turkish model: A case study (2002-2014). *Journal of Political Studies, 23*(1), 23. (**Fatima Sajjad (Political Science/SSSH), (HEC X CAT)**)

03:

Sajjad, F., & Javaid, U. (2016). AKP and the idea of the Turkish Model (2002-14): A longitudinal analysis. *IPRI Journal, XVI*(2), 70-88. (**Fatima Sajjad (Political Science/SSSH), (HEC X CAT)**)

Abstract: This article examines the evolution of the idea of the Turkish model as constructed by academics from the West, the Muslim world and Turkey during the three consecutive terms of the Justice and Development Party (AKP) rule in Turkey. It focuses on the changing political landscape of Turkey, the Middle East and the world at large during post 9/11 years and the emerging issues and debates around the idea of this model. Based on a careful selection and examination of 145 academic articles on the model published during the extended rule of AKP in Turkey (2002-14), the study illustrates that the term „Turkish model‟ has held disparate meanings and generated diverse debates overtime. The growing political unrest, suppression and violence in and around Turkey during the third phase of AKP rule (2012-14) has significantly undermined the idea which lately held great appeal in the West as well as the Muslim world.

Keywords: Turkish Model, Secularism, Islam, West, Middle East, AKP.

04:

Sajjad, F., & Javaid, U. (2016). Islam, West and Constantinopole a historical 'Turkish Model' in Pre-Modern age. *Hamdard Islamicus, XXXIX*(3), 75 - 100. (**Fatima Sajjad (Political Science/SSSH), (HEC Y CAT)**)

Conference Papers by Department of Political Sciences

01:

Waqi, F. S. (2016). *Kashmir and the challenges of countering extremism in Pakistan*. Paper presented at the Indian Atrocities in Kashmir: Regional and Global Implications, University of the Punjab, Lahore**. (Fatima Sajjad (Political Science\SSSH))**

02:

Sajjad, F. (2016). *Revising curriculum for tolerance: A view from practice*. Paper presented at the 4th International Conference on Research in Education, Punjab University, Lahore. **(Fatima Sajjad(Political Science\SSSH))**

03:

Rashid, A. (2016). *Pakistan, women rights and the clergy – A case study of the Punjab Protection of Women Against Violence Act 2016.* Paper presented at 13 th Annual Fulbright and Humphrey Alumni Conference, HEC, Islamabad, Pakistan**. (Amna Rashid (Political Science\SSSH))**

Publications by Department of Sociology

01:

Sohail. T., & Haq. I. (2016). Significance of Social Capital in Developing Religiosity among University Students. *Journal of Islamic thought and civilization, 6*(1). **(Tayyaba Sohail (Sociology /SSSH) Inam ul Haq, (Not Recognized By HEC))**

Publications by Department of Special Education

01:

Manzoor, A., Hameed A., & Nabeel. T. (2016). Voices of out of school children with disabilities in Pakistan. *Journal of Research in Special Educational Needs. 16*(S1), 1099-1103. **(Afaf Manzoor (Special Education /SSSH) Abdul Hameed, (Not Recognized By HEC))**

Abstract: In Pakistan, 96% children with disabilities are out of school and are unreached for any educational services. According to UNESCO (2010), the unreached are those children and youth who are of school age but not attending school for some reasons. Some of these children may have never been to school; others may have attended school but eventually were dropped out. Reaching out these marginalised children is imperative for the country like Pakistan that intends to meet the goals of Education for All (EFA) by 2015. A survey was conducted to identify the causes of being out of school in order to propose necessary measures for their inclusion. The researchers conveniently selected 433 unreached children with disabilities across all Tehsils of districts Sheikhupura and Kasur to document the voices of out of school children and their families. Children and their parents were contacted to collect the data through structured interviews. Both qualitative and quantitative analyses were performed to answer the questions. Descriptive and inferential statistics were used for the analysis of quantitative data. The study revealed that lack of school readiness, admission policy, poverty, child health conditions, distance from home to school and overprotection of children with disabilities are the main reasons (in rank order) for being out of school. It was also found that although existing special schools in both districts were providing their services through curriculum adaptation, adaptive assessment techniques, teacher trainings, students leisure and recreational activities, but still had no capacity to accommodate all the unreached children at Tehsil level with limited budget, staff, physical infrastructure and transport facility. The study recommended that unless the regular schools are not improved through inclusive approaches, the problem would remain as such.

Keywords: Unreached, Out of school, Children with disabilities, Marginalised, Inclusive education.

02:

Manzoor. A., & **Hameed. A.** (2016). Defeating inequalities in school access: A case of children with disabilities in Pakistan. *Journal of Research in Special Educational Needs. 16*(S1), 345-350. **(Abdul Hameed (Special Education /SSSH), (Not Recognized By HEC))**

Abstract: A recent study reveals that average distance from home to special school for children with disabilities in Punjab is about 11 km. A huge and free transport system is established to overcome the distance barrier. Moreover, the incentives such as free uniform, books, assistive devices and hostel facility along with subsistence allowance of Rs.800 per month have failed to increase enrolment beyond 4%. This situation clearly shows that special school is not an appropriate solution if 100% enrolment of children with disabilities is the target. The only way out left is then to improve the existing regular school available at the doorstep of all children through inclusive education. The public image of disability suitable for inclusion, however, has emerged as the most challenging barrier to inclusive education. There seems a consensus that only children with mild disabilities should be included in regular schools for inclusion, whereas the children with severe and profound disabilities should remain in special schools or out of school. There is need to investigate this pseudo consensus to bring about a conceptual clarity in the term inclusive education so that early efforts of inclusive education should take right direction.

Keywords: Inequalities, Inclusive education, Children with disabilities, Distance penalty, Pseudo consensus.

Conference Papers by Department of Special Education

01:

Manzoor, A., & Khan, W. (2016). *Comparing assessment practices In public and private schools as a lever for achievement gap.* Paper presented at XVI World Congress of Comparative Education Societies, Beijing, China**. (Afaf Manzoor (Special Education \SSSH), Waqas Khan)**

02:

Manzoor, A. & Khan, W. (2016).*The issue of adaptation of assessment procedures for the inclusion of children with special needs.* Paper presented at LMTF International Conference. Livingstone, Zambia**. (Afaf Manzoor (Special Education \SSSH), Waqas Khan)**

03:

Manzoor, A. & Khan, W. (2016). *Similar agenda, diverse strategies: Inclusive education reforms in Subcontinent.* Paper presented at 9th Biennial International conference of Comparative Education Society Asia. Manila**. (Afaf Manzoor (Special Education\SSSH), Waqas Khan)**

Conference Papers by Department of Psychology

01:

Farooqi, R., Ajmal, A., & Hasan, S. S. (2016). *Does fear of Allah prompt positive emotion and spirituality or Fear?* Paper presented at Islamic Tradition in Psychology. Lahore School of Management, University of Lahore. **(Rabia Farooqi (Psychology\SSSH))**

02:

Farooqi, R., Hasan, S. S., & Ajmal, A. (2016). *Is Gender the Predictor of Negative Emotions?* Paper presented at 1st International Conference of Gender Studies (ICG) Global Gender Perspective, Lahore College for Women University, Pakistan. **(Rabia Farooqi (Psychology\ SSSH))**

03:

Farooqi, R., Hasan, S. S., & Ajmal, A.(2016). *Does gender predict experience of fear?* Paper presented at 6th International Conference of National Institute of Psychology, Quaid e Azam University. Paksitan. **(Rabia Farooqi (Psychology\ SSSH))**

School Of Health Science (SHS)

Publications by School of Health Science

01:

Atif. AB., & **Afzal. M. N.** (2016). Quantitative Assessment of Cognitive Molecules Supplementary to Doping Test, Letter, *British Journal of Sports Medicine.* (**Mohammad Naveed Afzal (SHS)** **JCR LISTED (IF:6:72)**)

02:

Mazhar, A., Jamil, F., Bashir, Q., Ahmad, M. S., Masood, M., Tanvir, I., Rashid, N., Waheed, A., **Afzal, M. N.,** & Tariq, M. A. (2016). Genetic variants in FGFR2 and TNRC9 genes are associated with breast cancer risk in Pakistani women. *Molecular Medicine Reports*. (**Mohammad Naveed Afzal (SHS),** **JCR LISTED (IF:1:56)**)

Abstract: Single nucleotide polymorphisms (SNPs) lead to genetic differences in breast cancer (BC) susceptibility among women from different ethnicities. The present study aimed at investigating the involvement of SNPs of three genes, including fibroblast growth factor receptor 2 (FGFR2), trinucleotide-repeat-containing 9 (TNRC9) and mitogen-activated protein kinase kinase kinase 1 (MAP3K1), as risk factors for the development of BC. A case-control study (90-100 cases; 90-100 controls) was performed to evaluate five genetic variants of three genes, including FGFR2 (SNPs: rs1219648, rs2981582), TNRC9 (SNPs: rs8051542, rs3803662) and MAP3K1 (SNP: rs889312) as BC risk factors in Pakistani women. Significant associations were observed between BC risk and two SNPs of FGFR2 [rs2981582 (P=0.005), rs1219648 (P=9.08e-006)] and one SNP of TNRC9 [rs3803662) (P=0.012)] in Pakistani women. On examining the different interactions of these SNPs with various clinicopathological characteristics, all three associated genetic variants, rs2981582 rs1219648 and rs3803662, exhibited a greater predisposition to sporadic, in comparison to familial, BC. Furthermore, there was an increased effect of BC risk between haplotype combinations of the two SNPs of FGFR2 (rs2981582 and rs1219648) in Pakistani women. The results of the present study suggest that variants of FGFR2 and TNRC9 may contribute to the genetic susceptibility of BC in Pakistani women.

03:

Bacha, U., et al. (2016). Preparation and characterization of modified and functional starch (hexadecyl corboxymethyl starch) ether usingreactive extrusion. *Starch/Starke, 68*, 1-9. (**Umer Bacha (SHS),** **JCR LISTED (IF:1.52)**)

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, Hexadecy.

04:

Forouzanfar, M. H., Afshin, A., Alexander, L. T., Anderson, H. R., Bhutta, Z. A., Biryukov, S., Factors, G. B. D. R.--- ،**Bacha, U.** (2016). Global, regional, and national comparative risk assessment of 79

behavioural, environmental and occupational, and metabolic risks or clusters of risks,1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*(10053), 1659-1724. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

05:

Kassebaum, N. J., Arora, M., Barber, R. M., Bhutta, Z. A., Carter, A., Casey, D. C., Hale.,--- **Bacha, U.** (2016). Global, regional, and national disability-adjusted life-years (DALYs) for 315diseases and injuries and healthy life expectancy (HALE), 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*(10053), 1603-1658. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

06:

Kassebaum, N. J., Barber, R. M., Bhutta, Z. A., Dandona, L., Gething, P. W., Hay, S. I., Mortality, G. B. D. M.,--- **Bacha, U.** (2016). Global, regional, and national levels of maternal mortality, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*(10053), 1775-1812. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

07:

Lim, S. S., Allen, K., Bhutta, Z. A., Dandona, L., Forouzanfar, M. H., Fullman, N., Collaborators, G. S., --- **Bacha, U.** (2016). Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015.*Lancet, 388*(10053), 1813-1850. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

08:

Mokdad, A. H., Forouzanfar, M. H., Daoud, F., El Bcheraoui, C., Moradi-Lakeh, M., Khalil, I., Murray, C. J. L., --- **Bacha, U.** (2016). Health in times of uncertainty in the eastern Mediterranean region, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet Global Health, 4*(10), E704-E713. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

09:

Vos, T., Allen, C., Arora, M., Barber, R. M., Bhutta, Z. A., & Brown, A., Incidence, G. B. D. D.I., --- **Bacha, U.** (2016). Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*(10053), 1545-1602. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

10:

Wang, H. D., Naghavi, M., Allen, C., Barber, R. M., Bhutta, Z. A., Carter, A., Causes, D., --- **Bacha, U.** (2016). Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*(10053), 1459-1544. **(Umer Bacha (SHS), JCR LISTED (IF:44))**

11:

Wang, H. D., Wolock, T. M., Carter, A., Nguyen, G., Kyu, H. H., Gakidou, E., Collaborators, G. H., --- **Bacha, U.** (2016). Estimates of global, regional, and national incidence, prevalence, and mortality of HIV, 1980-2015: the Global Burden of Disease Study 2015. *Lancet Hiv, 3*(8), E361-E387. **(Umer Bacha (SHS), (JCR LISTED))**

Conference Papers by School of Health Science

01:

Tanweer, A., Imran, S., Kaleem, R., & Saeed, A. (2016). *Factor associated with the use of oral rehydration solution by children by during diarrheal episode in Lahore, Pakistan.* Paper presented at International Public Health Conference, 'Public Health Education and Research. Shaikh Zayed Hospital, Lahore**. (Afifa Tanweer (School of Health Science\SHS))**

02:

Tanweer, A., Imran, S., Kaleem, R**. (2016). *Erroneous milk feeding practices for children in Lahore, Pakistan.* Paper presented at International Public Health Conference, 'Public Health Education and Research' '. Shaikh Zayed Hospital, Lahore. **(Afifa Tanweer (School of Health Science\SHS))**

03:

Tanweer, A.** (2016). *Considering the epidemiological perspectives of malnutrition.* Paper presented at International Public Health Conference, 'Public Health Education and Researcz,Shaikh Zayed Hospital, Lahore. **(Afifa Tanweer (School of Health Science\SHS))**

School of Governance and Society (SGS)

Publications by School of Governance and Society

01:

Naveed, M. A. (2016). Exploring information seeking anxiety among research students in Pakistan. *Libri - International Journal of Libraries and Information Services, 66*(1). 73 - 82. 12**. (Muhammad Asif Naveed (SGS), JCR LISTED (IF:0:34))**

Abstract: This study explored information seeking anxiety among 31 Pakistani university research students using the critical incident technique. Face to face interviews were conducted for data collection by visiting the participants in their departments. The results indicated that information seeking anxiety among Pakistani research students manifested in eight dimensions, namely: (a) procedural anxiety, (b) information overload, (c) resource anxiety, (d) library anxiety, (e) competence anxiety, (f) ICT anxiety, (g) language anxiety, and (h) thematic anxiety. These participants also exhibited certain avoidance behaviours, search avoidance, task avoidance, and even research avoidance, along with inferiority complex. The results provided useful insights that could be used as a guide by information professionals, especially those engaged in managing information literacy instruction. In addition, this research would make a worthwhile contribution to the existing research on information behaviour in general and information seeking anxiety in particular.

Keywords: Information seeking anxiety, Postgraduate students, Research students.

02:

Feyyaz. M. (2016). Winning hearts and minds in Pakistan's tribal areas: A personal recollection of a peace-building effort with the taliban. *Perspectives on Terrorism, USA, 10(30).* **(Muhammad Feyyaz (SGS), (Not Recognizaed By HEC))**

Abstract: This biographical contribution describes experiences of a military commander gained during field employment in North Waziristan Agency – the most militancy riven region in tribal areas of Pakistan. The recollection outlines the transformation of part of this turbulent area into a zone of peace through a well-structured peacebuilding vision. Primarily, the approach entailed the idea of applying the concept of inclusive human security in order to turn all stakeholders and antagonists into a cohesive community, tolerant of each other's existence. Importantly, the strategy was evolved in a backdrop when security conditions in the Agency were characterized by a heightened phase of Taliban-led violence and fluid counter insurgency operations. Risk taking was vital to restore order but it indeed proved worth the effort.

Keywords: FATA; Pakistan,peace-building,human security, Taliban,hearts and minds

03:

Feyyaz, M., (2016). The discourse and study of terrorism in decolonized states: a case of Pakistan, *Critical Studies on Terrorism, UK.* **(Muhammad Feyyaz (SGS), (Not Recognizaed By HEC))**

Abstract: The existing literature in the terrorism field does not address the absence of terrorism scholarship in developing countries. This article focuses on this intellectual gap using the case of Pakistan. It argues that most decolonised states, including Pakistan, are yet to grasp the complexities of traditional approaches to the study of terrorism, let alone its critical dimensions. The article explores some of the prevailing conditions in developing countries, speci- fically decolonised states such as Pakistan, which prevent the development of a robust academic discourse on terrorism and the development of a strong field of study. It suggests that the main barriers that account for this shortfall include the state's legitimacy deficit, a flawed education system that nurtures fictions as truth and inhibits knowledge production, the institutionalised role of conspiracy theories in national politics and the multiplicity of terrorism discourses among government and sociopolitical entities. The conclusion highlights a number of reasons that might help to explain this persistent condition and offers a few policy recommendations.

Keywords: Critical terrorism studies, Decolonised states, Orthodox terrorism studies, Terrorism, Security
04:

Naveed, M. A., & Ameen, K. (2016). Information seeking anxiety among postgraduate students of university. *Journal of Behavioural Sciences, 26*(1), 13. **(Muhammad Asif Naveed (SGS), (HEC X CAT))**

Abstract: This paper aims to investigate information seeking anxiety in postgraduate students. Data were collected using questionnaire containing Information Seeking Anxiety Scale (Erfanmanesh, Abrizah & Karim, 2012) and demographic information. The sample comprised of 297 students from the Faculty of Science and Faculty of Behavioural Science of one university in Pakistan. Both descriptive and inferential statistics were applied for data analysis. The results indicated that a large majority of the postgraduate students experienced anxiety in the information seeking process. Moreover, no significant relationship was found in age, gender, faculty, publishing experience and information seeking anxiety in students. Conversely, there were significant differences in anxiety scores of students based on the program of study, stage of study, and computer proficiency. The results provide useful insights that could be used as a guide by the information professionals dealing with reference and research services, especially those engaged in designing information literacy curricula and managing information literacy instructions in Pakistan.

Keywords: Information seeking anxiety, ISAS, Postgraduate students.

05:

Naveed, M. A., & Ameen, K., (2016). A mixed-method investigation of information seeking anxiety in Pakistani research students. *Pakistan and information science journal, 47*(2), 10. **(Muhammad Asif Naveed (SGS), (HEC Y CAT))**

06:

Naveed, M. A., & Ameen, K. (2016). Measuring levels of students' anxiety in information seeking tasks. *Pakistan journal of Internation management & libraries, 17*, 56-68. **(Muhammad Asif Naveed (SGS), (HEC Y CAT))**

Abstract: This study measured information seeking anxiety among postgraduate students of the University of the Punjab, Lahore. Survey method using questionnaire was employed to conduct this investigation. The questionnaire consisting of an Information Seeking Anxiety Scale and demographic variables was administered in students, selected through convenient sampling procedure, for data collection. The results indicated that a large majority (n=207, 82.4%) of the respondents experienced more than low anxiety in the information seeking process. No significant relationship was found between age, gender, faculty and information seeing anxiety scores of these students. Conversely, there were significant differences in anxiety scores of students based on the program of study, stage of study, and computer proficiency. The results provide useful insights for guidance of information professionals dealing with reference and research services, especially those engaged in designing information literacy curricula and managing information literacy instructions.

Keywords: Information Seeking Anxiety, Information Behaviour, Information Literacy, Postgraduate Students; Pakistan

Conference Papers by School of Governance and Society

01:

M. Feyyaz. (2016). Deveoping and contents of a counter terrorism narrative. Paper presented at National conference CVE, NACTA Islamabad**. (Muhammad Feyyaz (School Governance and Society\SGS))**

02:

Feyyaz, M. (2016). *Statehood, violence, geopolitics and public space in Gilgit-Baltistan.* Paper presented at Institut d'etudes avancees de nantes, France. **(Muhammad Feyyaz (School Governance and Society\SGS))**

03:

Feyyaz, M. (2016). *Developing counter narrative – The role of Academia in national conference – Pakistan's policy of countering violent extremism; progress and challenges.* Paper presented at National Defense University, Islamabad. **(Muhammad Feyyaz (School Governance and Society\SGS))**

School of Architecture & Planning (SAP)

Publications by School of Architecture & Planning

01:

Gulzar, S., & Burg, J. P. (2016). Characterization of Shahdara Tomb's wall plasters from Lahore, Pakistan. *International Journal of Conservation Science, 7*(4), 981-994. **(Saima Gulzar (SAP), (Not Recognized By HEC))**

02:

Awan, M. Y. (2016). Lime motar in conservation for historic buildings of Pakistan. *Pakistan Journal of Science, 68*(4), 486-494. **(Muhammad Yousuf Awan (SAP), (HEC X CAT))**

03:

Gulzar, S., & Burg, J. P. (2016). Scientific examination of marble fretwork from Jahangir Tomb, Lahore, Pakistan. *Pakistan Journal of Science, 68*(3), 334-339. **(Saima Gulzar (SAP), (HEC X CAT))**

04:

Rashid, M., Ahmad, T**., Malik, A. M.,** & Ashraf, M. Z. (2016). Effects of orientation and glazing material on heat gain in semi-arid climate of Lahore. *Technical Journal University of Engineering Taxila, 21*(4). 9-13. **(Memoona Rashid (SAP) Ayesha Mehmood Malik, (HEC Y CAT))**

05:

Kamran, M., Awan, M. Y., & Gulzar, S. (2016). Histoty of conservation of Shish Mahal in Lahore, Pakistan. *International Journal of Research in Chemical, Metallurgical and Civil Engineering, 3*(1), 126-130. **(Mohammad Kamran (SAP), Muhammad Yousuf Awan, Saima Gulzar)**

Abstract: Lahore Fort is situated in north-west side of Lahore city. Lahore fort is an icon for national identity and symbol of both historical and legendry versions of the past. It preserves all styles of Mughal architecture. The fort has more than 20 large and small monuments, most of them are towards northern side. Shish Mahal is one of them and was built in 1631-1632 by Mughal Emperor Shah Jahan. Shish Mahal being most beautiful royal residence is also known as palace of mirrors. Shish Mahal has faced serious problems throughout the ages. Temperature changes, heavy rains, lightning and termite effect were the serious causes of decays for Shish Mahal. With the passage of time remedial works were proposed for Shish Mahal and were implemented accordingly. In 1991-92 serious cracks were observed in the ceiling. On the recommendations of experts the conservation of ceiling of Shish Mahal was carried out from 2003-2005. The paper will focus on history of conservation of Shish Mahal before partition and after independence. The paper will briefly discuss history of Shish Mahal, its architecture, conservation and detail of repair works. The paper draws conclusion for successful conservation to maintain the authenticity of historic monument as well as the failures in conservation works.

Keywords: Architecture, History of Conservation, Repair works, Shish Mahal

06:

Gulzar, S. (2016). Glazed tile ornamentation in Mughal Monumental Architecture. *International Journal of Research in Chemical, Metallurgical and Civil Engineering, 3*(1), 114-117. **(Saima Gulzar (SAP)**

Abstract: The rich and diversified architectural ornamentation in the Mughal monumental architecture is an intelligent interplay of geometry, proportions, colours, materials and techniques in the form of highly intricate and sophisticated unparalleled patterns derived from the multiplication of basic Islamic art forms. This colourful expression of glorious Mughal era reflects their artistic excellence and most refined architectural sense that glorified the barren/ deserted Indian subcontinent during their reign. Mughals

introduced different types of architectural ornamentations including glazed tiles, stone mosaic or inlay works, fresco/mural paintings, stucco etc. for the decoration of the interior and exterior surfaces. The extensive use of glazed tiles for ornamentation by the Mughals especially on exteriors is attributed to their weather durability and unique designs. The glazed tile variegated designs ranges from infinite complex permutations of lines and curves to flowing floral patterns and human, animal, plant life subjects to extremely graceful calligraphic forms. This research is the comprehensive and explorative study of the glazed tiles origin, their evolution and various influences during their development in the Mughal period (1526-1857 A.D.). In addition, the study not only explores the transformation phases essential for architectural conservations but also provides the reference for future analytical studies.

Keywords: Architecture, Glazed Tile, Monumental, Mughal

7:

Malik, A. M., & Rashid, M. (2016). Islamic ideology and the evolution of courtyard: a case study of a havili, old city Lahore. *Journal of Islamic Thought and Civilization, 6*(1), 77-84. **(Ayesha Mehmood Malik (SAP), Memoona Rashid, (UMT Journal))**

Abstract: A courtyard in buildings plays an important role in determining climatic setting, as well as physical and 1 psychological environment for the residents. This paper focuses on the evolution of courtyard houses in light of the teachings of Islam. Islamic planning, in terms of structures, spatial arrangement and form, determines the socio-cultural features of its community. In Islam, a house is represented as a shelter where families can enjoy their privacy and ease within the domain of Islamic values. For this, a detailed study of various courtyard housing has been carried out, probing their history, evolution, form and elements. A side reference of the Islamic ideology is also studied for a better understanding of an Islamic courtyard house. The analysis concludes that with only a few exceptions, the courtyards functions the same in both the contemporary and Islamic worlds-providing privacy and fully ventilated dwelling. This study provides appropriate architectural design strategies that could promote the use of Islamic values in modern yet contemporary courtyard houses worldwide.

Keywords: evolution, courtyard houses, Islamic architecture, Walled city, havilis, courtyard

Conference Papers by School of Architecture & Planning

01:

Gulzar, S. (2016). *Disaster risk reduction through flood resilient planning strategies in Flood-Prone Areas of rural Punjab.* Paper presented at 2nd International Conference on Architecture, Structure and Civil Engineering (ICASCE-16), London (UK). **(Saima Gulzar (School of Architecture and Planning\SAP))**

02:

Gulzar, S. (2016). *Glazed tile ornamentation in Mughal monumental architecture.* Paper presented at International Conference on Transportation, Civil and Architectural Engineering, London, Uk.(**Saima Gulzar (School of Architecture and Planning\SAP))**

03:

Kamran, M., Awan M.Y., & Gulzar, S. (2016). *History of conservation of Shish mahal in Lahore, Pakistan.* Paper Presented at International Conference on Transportation, Civil and Architectural Engineering(TCAE-16) London (UK). **(Muhammad Kamran (School of Architecture and Planning\SAP), Muhammad Yousuf Awan, Saima Gulzar)**

04:

Rashid, M., & Malik, A. M. (2016). *Effect of window wall ratio (wwr) on heat gain in commercial buildings in the climate of Lahore.* Paper presented at International Conference on Transportation, Civil and Architectural Engineering (TCAE-16), London, UK. **(Memoona Rashid (School of Architecture and Planning\SAP), Ayesha Mehmood Malik)**

05:

Malik, A. M., Rashid, M., & Awan, M. Y. (2016). A Study of the present condition and causes of decay of nawankot monument, Lahore. Paper presented at the 3rd International Conference on Civil, Environment and Waste Management, Holiday Inn, Dubai, U.A.E**. (Ayesha Mehmood Malik (School of Architecture and Planning\SAP), Memoona Rashid, Muhammad Yousuf Awan)**

06:

Malik, S., khilat, f., & Arifin, K. (2016). *NCIA-AMB Masuk Kampong Project- Opportunities and challenges for achieving sustainable rural development.* Paper presented at the International Conference on Energy for Economic & Environmental Sustainability (ICEEES 2016), Lahore, Pakistan. **(Sanal Malik (School of Architecture and Planning\SAP), Faiqa Khilat)**

07:

Malik, M. I. (2016). *Analytical study of urban street shopping in Lahore*. Paper presented at the 2nd International conference on emerging trends in engineering, management and sciecnces, City University, Peshawar, Pakistan. **(Muhammad Ilyas Malik (School of Architecture and Planning\SAP))**

08:

Mujahid, B., & Jamil, F. (2016). *Energy conservation potential of Building envelope: A simulation based comparative analysis for residential buildings.* Paper presented at the International Conference on

Energy for environmental and Economic Sustainability, University of Management and Technology, Lahore, Pakistan. **(Beenish Mujahid *(School of Architecture and Planning\SAP), Farah Jamil)**

09:

Mahmood, T., Awan, Y., & Gulzar, S. (2016). *Aitchison college, colonial built heritage in Lahore city, Pakistan - A case study*. Paper presented at the 2nd International Conference on Emerging Trends in Engineering, Management and Scineces, City University of Science and Information Technology, Peshawar, Pakistan**. (Tahir Mahmood *(School of Architecture and Planning\SAP), Muhammad Yousuf Awan, Saima Gulzar)**

10:

M. Rashid, Awan, M. Y., Malik, A. M., & Gulzar, S. (2016). *Reduction in energy consumption in building sector through efficient use of glazing*. Paper presented at the International Conference on energy for Environmental and Economic Sustainability, University of Management and Technology, Lahore, Pakistan. **(Memoona Rashid *(School of Architecture and Planning\SAP), Muhammad Yousuf Awan, Ayesha Mehmood Malik, Saima Gulzar)**

11:

Malik, A. M., Awan, M. Y., Rashid, M., & Jalil, A. (2016). *Street culture of the walled city Lahore - A walk down the memory lane.* Paper presented at 2nd International Conference on Emerging Trends in Engineering, Management and Sciences, City University of Science and Information Technology, Peshawar, Pakistan. **(Ayesha Mehmood Malik *(School of Architecture and Planning\SAP), Muhammad Yousuf Awan, Memoona Rashid, Adnan Jalil)**

12:

Khilat, F., Malik, S., Mujahid, B., & Awan, M. Y. (2016). *Architectural assessment of Cathedral Church of the resurrection, A 19th century monument located in Lahore*. Paper presented at Second International Conference on Emerging Trends in Engineering, Management and Science. Peshawar, Pakistan. **(Faiqa Khilat *(School of Architecture and Planning\SAP), Sana Malik, Beenish Mujahid, Muhammad Yousuf Awan)**

13:

Gulzar, S. (2016). *Walled city of Lahore: An analytical study of Islamic cities of Indian Subcontinent.* Paper presented at International Conference on Civil, Architectural and Structural Engineering (ICCASE-2016), Dubai, UAE**. (Saima Gulzar *(School of Architecture and Planning\SAP))**

14:

Khilat, F., Awan, D. Y., & Jamil, F. (2016). *Role of Geography in Formation of Character of Civilizations Case Studies (Egypt, Mesopotamia, Indus Valley).* Paper presented at 1st National Conference on Emerging Trends and Challenges in Social Sciences, Bahauddin Zakariya University, Multan**. (Faiqa Khilat *(School of Architecture and Planning\SAP))**

School of Food and Agricultural Science (SFAS)

Publications by School of Food and Agricultural Science

01:

Khan, F., Hashmi, M. U., **Khalid, N.,** Hayatf, M. Q., Ikram A., & Janjuaa. H. A. (2016). Controlled assembly of silver nano-fluid in heliotropium crispum extract: a potent anti-biofilm and bactericidal formulation, *Applied surface science, 387*, 317-331. **(Nauman Khalid (SFAS), JCR LISTED (IF:3:15))**

Abstract: The study describes the optimized method for silver nanoparticle (AgNPs) synthesis using *Heliotropium crispum* (HC) plant extract. Optimization of physicochemical parameters resulted in stable and rapidly assembled AgNPs. FTIR results suggest presence of plant phytochemicals that helped in the reduction, stabilization and capping of AgNPs. The assembled Ag nano-composites displayed the peak surface plasmon resonance (SPR) around 428 nm. The presence of uniquely assembled Ag-biomolecule composites, cap and stabilize nanoparticles in aqueous plant suspension. Spherical, uniform-shaped AgNPs with low poly-dispersion and average particle size of 42 nm and was determined through dynamic light scattering (DLS) and scanning election microscopy (SEM) which present robust interaction with microbes. The study also evaluates the antimicrobial and anti-biofilm properties of biologically synthesized AgNPs on clinical isolates of MRSA*, Pseudomonas aeruginosa* and *Acinetobacter baumannii*. Minimum inhibitory concentration ($0.5 \, mg \, mL^{-1}$) of nanoparticles that presented bactericidal effect was made through inhibition assays on bacterial strains. The concentration which presented potent bactericidal response was then evaluated through growth inhibition in liquid medium for anti-biofilm studies at $2.0 \, mg \, mL^{-1}$. HC-Ag nanoparticles mediated anti-biofilm effects on *Pseudomonas aeruginosa* was revealed through SEM. Complete breakdown of biofilm's extracellular polymeric substances resulted after incubation with AgNPs. Peptidoglycan cell wall destruction was also revealed on planktonic bacterial images after 24 h of incubation.

Keywords: Silver nanoparticles, Anti-biofilm agents, Heliotropium crispum, Synthesis, Bactericidal effect, Green synthesis

02:

Khalid, N., Kobayashi, I., Neves, M. A., Uemura, K.,Nakajima M., & Nabetani, H. (2016). Microchannel emulsification study on formulation and stability characterization of monodisperse oil-in-water emulsions encapsulating quercetin. *Food Chemistry, 212*, 27-34. **(Nauman Khalid (SFAS), JCR LISTED (IF:4:05))**

Abstract: The study used microchannel emulsification (MCE) to encapsulate quercetin in food grade oil-in-water (O/W) emulsions. A silicon microchannel plate (Model WMS 1-2) comprised of 10,300 discrete $10 \times 104 \, \mu m$ microslots was connected to a circular microhole with an inner diameter of 10 μm. 1% (w/w) Tween 20 was used as optimized emulsifier in Milli-Q water, while $0.4 \, mg \, ml^{-1}$ quercetin in different oils served as a dispersed phase. The MCE was carried by injecting the dispersed phase at $2 \, ml \, h^{-1}$. Successful emulsification was conducted below the critical dispersed phase flux, with a Sauter mean diameter of 29 μm and relative span factor below 0.25. The O/W emulsions remained stable in terms of droplet coalescence at 4 and 25 °C for 30 days. The encapsulation efficiency of quercetin in the O/W emulsions was 80% at 4 °C and 70% at 25 °C during the evaluated storage period.

Keywords: Quercetin, Microchannel emulsification, Oil-in- water emulsions, Emulsifiers, Stability, Droplet generation.

03:

Shu, G., **Khalid, N.,** Zhao, Y., Neves, M. A., Kobayashi, I., Nakajima, M., (2016), Formulation and stability assessment of ergocalciferol loaded oil-in-water nanoemulsions: insights of emulsifiers effect on

stabilization mechanism. *Food Research International, 90*, 320-327. (**Nauman Khalid (SFAS), JCR LISTED (IF:3:18)**)

Abstract: In the study, we investigated the effect of emulsifiers with different stabilizing mechanisms on the formulation and stability of ergocalciferol loaded oil-in-water (O/W) emulsions. O/W emulsion stabilized by modified lecithin (ML; electrostatic stabilization), sodium caseinate (SC; electrosteric stabilization) or decaglycerol monooleate (MO-7S; steric stabilization) were formulated using high-pressure homogenization. The Sauter mean diameter ($d_{3,2}$) of emulsions produced by ML, SC and MO-7S were 126 ± 1, 127 ± 4 and 138 ± 3 nm, respectively. The stability of resulting emulsions was evaluated when they exposed to different environmental stresses and during 30 days of storage at 25 and 55 °C. Results showed that the emulsions prepared by MO-7S or ML were stable against a wide range of pH (2–8), while SC-stabilized emulsions showed instability with extensive droplet aggregation at pH 4 or and 5. Only ML-stabilized emulsions showed droplet growth due to coalescence when treated at high NaCl concentration (300–500 mM). In the absence of glucose, SC-stabilized O/W emulsions showed better freeze-thaw stability, in comparison to those formed with ML or MO-7S emulsifiers. The emulsion produced by ML was found to be stable to droplet aggregation at heating temperatures (80–120 °C) for 1 h. All the O/W emulsions stored at 25 °C showed good physical and chemical stability. However, the chemical stability of ergocalciferol in emulsion system decreased in order of ML > MO-7S ≫ SC during storage at 55 °C for a period of 30 days. These findings provide valuable information for the development of nanoemulsion-based delivery system applied in food and beverage products.

Keywords: Ergocalciferol, Nanoemulsions, Freeze-thaw treatment, Ionic strength, Temperature, Storage stability

04:

Ikram, S. K. Qureshi, M., & **Khalid N.** (2016) Flowering and fruiting responses of strawberry to growth hormone and chilling grown under tunnel conditions. *Pakistan Journal of Agricultural Sciences, 53*, 911-916. (**Nauman Khalid (SFAS), JCR LISTED (IF:0:6)**)

Abstract: Strawberry (Fragaria ananasa) is a berry fruit belonging to the family Rosaceae and requires certain amount of cold temperature to initiate flowering. Present study was conducted with the objective to study flowering and fruiting responses of strawberry to growth hormone and chilling under tunnel conditions. The study comprised of six different treatments as; control, GA3 (gibberellic acid) 200 ppm, GA3 400 ppm, chilling at 4°C, chilling at 4°C + GA3 200 ppm and chilling at 4°C + GA3 400 ppm. Treatments were applied at vegetative stage before flowering. It was inferred from the study that strawberry plants responded much better to application of GA3 at 400 ppm for their growth, flower stimulation, their number, quality features while chilling at 4°C proved better for maximum fruit production and better quality under tunnel condition.

Keywords: Strawberry, gibberellic acid, chilling, flowering, fruiting, tunnel conditions

05:

Udomrati, S., **Khalid, N.,** Gohtani, S., Nakajima, M., Uemura, K., & Kobayashi, I. (2016). Formulation and characterization of esterified xylo-oligosaccharides-stabilized oil-in-water emulsions using microchannel emulsification. *Colloids and Surfaces B-Biointerfaces, 148*, 333-342. (**Nauman Khalid (SFAS), JCR LISTED (IF:3:9)**)

Abstract: Aseries of amphiphilically esterified xylo-oligosaccharides (xylo esters) with differentfatty acids residues – decanoic acid (C-10), lauric acid (C-12) and palmitic acid (C-16) – were enzymatically modified

at 60 ∘C for 4 h. These xylo esters were used as emulsifiers to formulate oil-in-water (O/W) emulsions by microchannel emulsification (MCE). Grooved and straight-through MCE was used to investigate the droplet generation and/or emulsion stability. Xylo ester-stabilized oil droplets were generated smoothly from microchannels arranged linearly or two dimensionally, while xylo ester-stabilized emulsions were less monodispersed owing to low surface activity of the xylo esters. The combined use of xylo esters (2.5% (w/w)) and Tween series (0.1% (w/w)) in the continuous phase can improve the monodispersity of the resultant oil. Successful droplet generation was achieved with the straight-through MCE using 2.5% (w/w) xylo laurate and 0.1% (w/w) Tween 20. The optimized combination of xylo laurate and Tween 20 inhibited coalescence and oiling off more efficiently than the droplets solely stabilized by Tween 20 during 30 days of storage.

Keywords: Oil-in-water emulsion, Xylo-oligosaccharide, Fatty acid ester, Microchannel emulsification, Stability.

06:

Ahmad, N., Ahmed, L., Iqbal, M., **Khalid N.**, Abbas, S., Mehboob, F., & Ahad, K. (2016). Biodegradation of phenol by Stenotrophomonas sp. and Staphylococcus sp. isolated from contaminated sites. *Applied Ecology and Enviromental Research, 14*(5), 107-120. **(Nauman Khalid (SFAS), JCR LISTED (IF: 0.68))**

07:

Ehsan, M., Ahmed, I., Hayat, R., Iqbal, M., Bibi, N., & **Khalid, N.** (2016). Molecular identification and characterization of phosphate solubilizing pseudomonas sp. Isolated from rhizosphere of mash bean (Vigna Mungo L.) for growth promotion in wheat. *Journal of Agricultural Science and Technology, 18*, 775-788. **(Nauman Khalid (SFAS), JCR LISTED (IF: 0.81))**

08:

Tsai, F. H., Chiang, P. Y., Kokawa, M., & Khalid, N. (2016). Preparation and physical property assessments of liquid-core hydrogel beads loaded with burdock leaf extract. *RSC Advances, 94.* **(Nauman Khalid (SFAS), JCR LISTED (IF: 3.11))**

School of Professional Advancement (SPA)

Conference Papers by School of Professional Advancement

01:

Zubair, T. (2016). *Metaphoric view of organizational resilience: Evidence from Pakistan textile industry.* Paper presented at 18th Eurasia Business and Economics Conference, American University of Sharjah, U.A.E. (**Talha Zubair** (School of Professional Advancement \SPA))

02:

Shuja, A. (2016). *The role of transformational leadership in organizational innovation through knowledge management practices intervention for increasing organizational resilience.*Paper presented at International Forum on Knowledge Asset Dynamics IFKAD.**(Aleena Shuja (School of Professional Advancement \SPA))**

03:

Khan, N. Z. A., Imran, A., & Anwar, A. (2016). *Impact of corporate governance and perceived CSR towards consumer loyality and corporate reputation: Do conusumers' trust matter?* Paper presented at 8th South Asian interncational conference-sustainability: A business imperative. Serena Hotel, Islamabad**. (Aizza Anwar (School of Professional Advancement \SPA))**

04:

Zubair, N., Khan, A., & Anwar, A. (2016). *An intermediary perspective of corporate governance with firm performance and economic growth: Do ownership structure initiates in reforming public sector?* Paper presented at the 7th International Conference on Management Research (ICMR), Superior University, Lahore. **(Aizza Anwar (School of Professional Advancement \SPA))**

05:

Shujja, A. H., Saleem, I., & Afghan,S. (2016). *Computation offloading: Is it practical and feasible?* Paper presented at International Conference on Innovative Computing (ICIC), University of Management and Technology, Lahore, Pakistan.(Abdul Haseeb Shujja, Imran Saleem, Sher Afghan**. (Aleena Shuja (School of Professional Advancement \SPA))**

Institute of Cultural and Communications Study (ICCS)

Publications of Institute of Cultural and Communication Studies

01:

Abid, F., Deen, A., Khurshid, F., Ashraf, S., **Niazi, A., & Ashfaq, N.** (2016). Phonological analysis of nick names in Punjabi. *Language In India, 16*(4), 37-48. **(Faiza Abid (ICCS), Aisha Niazi, Naheed Ashfaq (Not Recognized By HEC))**

Abstract: This paper relates to the study of nicknames in Punjabi language .it help us to understand about the transitions of syllable from name to nick names. The names are categorized depending upon the number of syllables in name and the characteristics of first syllable. In this paper only those nicknames are focused which have connection with the names, however passing a comment is also one of the convention of nicknames that directly have no connection with the names**.**

Keywords: Phonological, Transition, syllable, Nicknames

02:

Rasheed, S., & Abid, F. (2016). A Comparative Study of Lexical Cohesive Devices Used by L1 and L2 Urdu Speakers, *Language In India, 16*(4), 190-216. **(Faiza Abid, Saadia Rasheed (ICCS), (Not Recognized By HEC))**

Abstract: The study reports a comparative study of use of lexical cohesive devices by L1 (Urdu as a first language) and L2 (Urdu as a second language) speakers through detailed analysis of the quantitative and qualitative data. The data is obtained from 11 Urdu television programmes based on current affairs. The duration of the conversations is 120 minutes per conversation. The study reveals the differences between the use of cohesive devices in terms of type and degree by L1 and L2 speakers of the Urdu language. Results show that L1 speaker is a proficient user of cohesive devices such as, collocation and synonym to build up the conversation in an effective way while repetition is the most utilized category by L2 speaker.

Keywords: Cohesion, lexical cohesive devices, EFL/ESL learning.

03:

Bibi, A., & Abid, F. (2016). The Role of Positive and Negative Reinforcement in Motivating Student Learning. *Asian Journal of Multidisciplinary Studies, 4*(8), 7. **(Aasma Bibi (ICCS), Faiza Abid (Not Recognized By HEC))**

Abstract: This study aims to examine the impact of reinforcement in motivating student learning. Participants in the study were English teachers teaching at Garrison Boys High school Girja Chock Lahore Cantt and English teachers at Government Islamia Girls High School Baghbanpura Lahore in 2012 to 2013 academic year; a total of fourteen people. The study design uses a mixed method approach: semi-structured interviews and close-ended questionnaires were used for data collection. Findings of the study showed that reinforcement has a great and long lasting impact on learning of the students.

Keywords: Positive reinforcement, Negative reinforcement, Student learning, Motivation

04:

Riaz, S., R. Sarfraz. (2016). Clash between Romantics' Political Aspirations & Philosophy of Art and Aesthetics. *Research Journal of English Language and Literature. 4*(2). **(Sadia Riaz (ICCS), Rida Surfraz (Not Recognized By HEC))**

Abstract: The paper extensively studies the philosophy of art and aesthetics with reference to the Romantics' Poetry. The paper aims at exploring the English Romantics' rapturous refuge of imaginative experience for the creation of Plato's inspired ideal world and their flight away from stark reality. The paper unravels the ways in which Romantic poetry, especially, of William Blake, Wordsworth, Shelley, bears marks of prevalent socio-politico condition. The study scrutinizes the tug of war between the Romantic aesthetics of "art for art's sake" with its God-like dreamland of imagination and the Romantics' pragmatic political ethos which causes the split. Consequently, the gnawing gap is created in the Romantic soul where both the world of reality and the imagination battle to conquer. The paper aims to shed light on such Romantic fissure, it is divided into four portions: the first part deals with the Romantic aesthetics, the second section highlights their political ethos mirroring in the Romantics' poems, the third portion studies the underlying connection between the Romantic aesthetics and the Romantics' political aspirations and the fourth part brings out the inherent contradictions between the two. This is a qualitative study based upon hermeneutic theory of in depth artistic analysis. The paper concludes the two contradictory traits: one, their desire to remain intact with the current political situations that breed political aspiration thus forming a part of this world of reality. And secondly their desire for mystical experiences and flight into the world of imagination, which according to the Romantics is more real than this reality, through their poetry. These two traits become antagonistic because the world of imagination also constructs an ideal world where every individual is happy. In other words it creates a utopia that stands in sharp contrast with the political aspirations because it lacks pragmatism. The paper is contextualized in Romantics' Poetry for a better comprehension of the schema of art and aesthetics.

Keywords: Aesthetics and Philosophy of Art, English Romantics, Philosophy and Literature

Conference Papers by Institute of Cultural and Communication Studies

01:

Khan, A. (2016). *Differentiation in content and language integrated learning (CLIL) at secondary level education in Pakistan: Perceptions, Practices and Challenges.* Paper presented at 4th International Conference on Education in Pakistan: Connecting Research and Practice Across Contexts. held at University of Education Lahore. **(Anila Khan (Institute of Cultural and Communication studies\ICCS))**

Institute of Clinical Psychology (ICP)

Publications of Institute of Clinical Psychology

01:

Choliz, M., Pinto, L., Phansalkar, S. S., Corr, E., **Mujjahid, A.,** Flores, C., & Barrientos, P. E. (2016). Development of a brief multicultural version of the test of mobile phone dependence (tmdbrief) questionnaire. *Frontiers in Psychology, 7.* **(Ayman Mujahid (ICP), JCR LISTED (IF:2:46))**

Abstract: The Test of Mobile Phone Dependence (TMD) questionnaire (Chóliz, 2012) evaluates the main features of mobile phone dependence: tolerance, abstinence syndrome, impaired impulse control, associated problems, excessive use, etc.

Keywords: Mobile dependence, Technological addictions, Mobile phone use, Cross-cultural studies, Gender differences

02:

Rasheed, R., **Saleem, S., & Mahmood, Z.** (2016). Resilience in adolescents: A validation study of a resilience scale for adolescents. *FWU Journal of social sciences, 10*(1), 138-147. **(Sadia Saleem (ICP), Zahid Mahmood, (HEC X CAT))**

03:

Gulzar, S., Mahmood, Z., & Saleem, S. (2016). Intimate relationships in university students: A psychometric approach. *Gomal University Journal of Research, 32*(2), 170-182. **(Shazia Gulzar (ICP), Zahid Mahmood, Sadia Saleem, (HEC Y CAT))**

Abstract: The current research explored the expression of intimate relationship in university students in Pakistani cultural context. In the first phase of the study, 20 university students were interviewed individually to generate the item pool. It resulted in the generation of 71 items on intimate relationship as experienced and expressed by university students. After excluding the repetition and redundant items 35 finalized items were piloted on 30 university students as a self-report measure of 4 point rating scale (Intimate Relationship Scale). Finally a stratified sample of 223 university students (45.9% men and 54.1% women) was given the final list of 35 items scale and a demographic form. Principal component factor analysis revealed two factor solution namely intimacy in relationship and conflict in relationship. The Intimate Relationship Scale found to have acceptable psychometric properties. The results of the research are discussed in the light of cultural context and its implication for the university students.

Keywords: Intimate Relationship, University Students, cultural context

Conference Papers by Institute of Clinical Psychology

01:

Hamid, S., Jabeen, A., and Mahmood, Z. (2016). *The skills we need the most: social skills and coping strategies in Pakistani adolescents*. Paper presented at the 1st National Conference on Emerging Trends in Clinical Psychology, COMSATS Lahore**. (Sana Hamid (Institue of Clinical Psychology\ICP) , Ayesha Jabeen, Zahid Mahmood)**

02:

Naeem, M., and Jabeen, A. (2016). *A mini miracle*. Paper presented at the 1st National Conference on Emerging Trends in Clinical Psychology, Comsats Lahore**.(Mahreen Naeem, (Institue of Clinical Psychology\ICP), Ayesha Jabeen)**

03:

Aslam, S., Mahmood, Z., & Saleem S. (2016). *Impact of perceived gender discrimination on the mental health problems of university students.* Paper presnted at 6th International Conference on Psychology of Gender in Perspective: Issues and Challenges, Islamabad, Pakistan**.(Zahid Mahmood (Institue of Clinical Psychology\ICP), Sadia Saleem)**

04:

Saleem S., & Mahmood, Z. (2016). *Psychological Effects of Infertility: Risk and Protective Approach.* Paper presnted at 6th International Conference on Psychology of Gender in Perspective: Issues and Challenges, Islamabad, Pakistan. **(Zahid Mahmood (Institue of Clinical Psychology\ICP), Sadia Saleem)**

Institute of Islamic Banking (IIB)

Publications by Institute of Islamic Banking

01:

Gillani, S. H. B., Ijaz, F., & Khan, M. M. S. (2016). Role of Islamic financial institutions in promotion of Pakistan halal food industry. *Islamic Banking and Finance Review, 3*(1), 29-49. **(Syeda Hameeda Batool Gillani (IIB), Farrukh Ijaz, Muhammad Mahmood Shah Khan (Not Recognized By HEC))**

Abstract: Halal has become a universal sign for quality assurance and standard of living. The world market for halal goods and services is rising into influential energy in the pitch of world commerce and finance. Halal products industry have market share of over US$ 3 trillion annually, and rapid growth is expected in forthcoming years. The aim of this study is to survey the potential and expectations of Pakistani halal food producers, financial institutions, government, NGO‟s and advisory services anticipate in promoting Pakistan halal food industry as potential halal food hub. The study suggest that Pakistan have abundant opportunities to unlock new business potentials by catering to the financial assistance, government support and NGOs services to the halal economy stakeholders. This study also explores upon the growth determinants and prospects of the Pakistan halal industry that Islamic finance institutions, government and NGOs offer to hold up businesses in the world halal industry.

 Keywords: Islamic Finance, Halal Food, Government, NGOs, Pakistan

02:

Abbas, K., & Afzal, H. (2016). The patronage of Islamic banking: A case study of Comsats University, Pakistan. *International Journal of Islamic Finance (ISRA), 8*(2), 111-115. **(Kausar Abbas (IIB), (Not Recognized By HEC))**

03:

Ilyas, A., Arshed, N., & Hussain, T. (2016). Service quality and customer satisfaction: A study on Islamic banks of Pakistan. *Journal of Business Strategies, 10*(1), 73–88. **(Asad Ilyas (IIB), Noman Arshed, Talat Hussain, (HEC Z CAT))**

Abstract: Service quality in banking sector is becoming more significant as it is the basis of distinction between different types of services and provides an edge over other service providers. Islamic banking as a comparison with conventional banking requires better service quality to attain more customers with limited products. The main reason for present research was to find the association of "service quality" with "customer satisfaction" in Islamic Banks. Data was collected through questionnaire which was adopted from literature. Questionnaire had two parts i.e. 1) service quality and 2) customer satisfaction. Service quality was measured through 22 questions with five dimensions of service quality i.e. 1) Tangibles, 2) Reliability", 3) Responsiveness, 4) Assurance and 5) Empathy. Customer Satisfaction was measured through 4 questions. The results indicate that 'reliability', 'responsiveness', and 'assurance' have positive effect on 'customer satisfaction'. However, Tangibles" and "empathy" had no impact on "customer satisfaction. The outcome of this study will help Islamic Banks to to focus on important factors to improve service quality in order to gain competitive advantage in the Shariah based industry.

 Keywords: Service Quality, Islamic Banks, Customer Satisfaction, SERVQUAL.

Conference Papers by Institute of Islamic Banking

01:

Gillani, S. H. B. (2016). *Performance of Islamic Mutual Funds: A comparison with Conventional Mutual Funds.* Paper presented at The Islamic Finance, Banking & Business Ethics, global conference (IFBBE)**. (Syeda Hameeda Batool Gilani (Institute of Islamic Banking\IIB))**

02:

Gilani, S. H. B. (2016). *Perfomance of islamic and conventional mutual funds.* Paper presented at The International Conference on Islamic Business, ICIB)**. (Syeda Hameeda Batool Gilani (Institute of Islamic Banking/IIB))**

03:

Gilani, S. H. B. (2016). *Financial and non-financial instituitions fole in promotion of Pakistan Halal food industry.* Paper presented at The Global Forum Islamic Economic, Finance and Banking. **(Syeda Hameeda Batool Gilani (Institute of Islamic Banking\IIB))**

04:

Gilani, S. H. B. (2016). *Competitive intelligence practices in islamic banking sector of Pakistan.* Paper presented at The 1st International Conference on Management and Applied Sciences (MASCON 2016), Imperial College of Business Studies, Lahore. **(Syeda Hameeda Batool Gilani (Institute of Islamic Banking\IIB))**

05:

Khan, M. M. S., Ijaz, F., Batool, S. H., & Shahzad, A. (2016). *Role of long term financing of islamic banks in agriculture sector of Pakistan.* Paper presented at the 1st International Conference on "Towards Financial Inclusion: Developments in Islamic Economics, Banking and Finance", Institute of Management Sciences (IMSciences), Peshawar, Pakistan. **(Syeda Hameeda Batool Gilani (Institute of Islamic Banking\IIB))**

School of Textile Design (STD)

Publications by School of Textile Design

01:

Hussain, Z., Tusief, M. Q., Abid, S., Khawer, M. T., **Amin, N., & Abbas, M.** (2016). Effect of Different Processing Stages on the Crystallinity % and Tensile Strength of 100% Cotton Fabric. *Pakistan Journal of Science and Industrial Research, 59*(2), 114-117. **(Nabeel Amin (STD), Mudassar Abbas**Error! Bookmark not defined.**, (HEC Y CAT))**

02:

Zahra, Q., Fraz, A., Anwar, A., Awais, M., & Abbas, M. (2016). A mini review on the synthesis of Ag-Nanoparticles by chemical reduction method and their biomedical applications. *NUST Journal of Engineering Sciences, 9*(1), 1-7. **(Qurbat Zahra (STD), Ahmad Fraz, Almas Anwar, Muhammad Awais, Mudassar Abbas, (HEC Y CAT))**

Abstract: This mini-review provides an adequate amount of information about the synthesis of silver nanoparticles through various routes. Among the competitors, Sodium-, borohydride and citrate, water, polyvinyl pyrrolidone and sodium citrate and silver nitrate are the most commonly employed reducing agents, solvent, capping agents and silver salt precursor. The particles thus formed when incorporated to form blended materials can be used in advanced applications, especially in medical devices, preventing the adhesion of microorganisms over them. Herein, the similar function of silver, either distributed over the polymeric material surfaces as a polished layer or equally dispersed therein, will be presented. The marked examples include incorporation of silver nanoparticles into fluff pulp through sonochemical impregnation and blending the silver nanoparticles synthesized through solventfree, greener routes into poly (dicyclopentadiene).

Keywords: Antimicrobial properties, Blended materials, Green synthesis, Silver nanoparticles

03:

Abbas, M., Tusief, M. Q., **Amin, N.,** & Hussain, Z. (2016). The Comfort of Knitted Fabric as Affected by its Structure. Pakistan journal of science and industrial research, 59(1), 52-55. **(Nabeel Amin (STD),** Error! Bookmark not defined. **(HEC Y CAT))**

Abstract: was carried to investigate the effect of various knitted fabric structure on its comfort related properties. It was observed that, all comfort properties of knitted fabric have direct relation to its structure. The plain knitted fabric was found best for optimum comfort

School of Advanced Studies

Publications by School of Advanced Studies

01:

Zameer, M., Zahid, H., Tabassum, B., Ali, Q., Nasir, I. A., Saleem M., & **Butt. S. J.** (2016). PGPR potentially improve growth of tomato plants in salt-stressed environment, *Turkish Journal of Agriculture - Food Science and Technology, 4*(6), 455-463. (**Shahid Javed Butt (SAS),** (Not Recognized By HEC))

Abstract: Özet Plant growth promoting rhizobacteria are colonized bacterial species that has the capability to improve plant growth by certain direct and indirect means. Environmental factors including both biotic and abiotic stresses are among the major constraints to crop production. In the current study, the effectiveness of microbial inoculation (Bacillus megaterium) for enhancing growth of tomato plants under salt stress conditions has been investigated. Significant improvement in shoot length, root length, leaf surface area, number of leaves, total weight of the shoot and root was observed in tomato plants inoculated with zm7 strain post 15 and 30 days of its application. Zm3, Zm4 and Zm6 strains improved the morphological parameters as compared to the control. Chlorophyll content a, chlorophyll content b, anthocyanin and carotenoid content was increased in tomato plants subjected to Zm7, Zm6 and Zm4 strains. Stress responsive genes; metallothionein and glutothion gene were found highly expressed in Zm7 treated tomato plants as compared to control, untreated plants. Significant correlation of anthocyanin was reported for carotenoids, chlorophyll-b, shoot weight and total weight of seedling while carotenoids was significantly correlated with leaf surface area, root length, chlorophyll-b and anthocyanin. Overall, Zm7 strain proved best for improvement in salt sressed plant's morphological parameters and biochemical parameters as compared to control, untreated plants.

Keywords: Rhizobacteria, PGPR, Bacillus megaterium, Gene expression, Glutathione reductase, Metallothionein.

Conference Papers by School of Advanced Studies

01:

Rubab, I. (2016). *Women's right of inheritance: Choices and challenges in the Punjab*. Paper presented at 1st National Conference on Emerging Trends and Challenges in Social Sciences, Bahauddin Zakariya University Multan, Pakistan**. (Irum Rasheed(School of Advance Sciences\SAS))**

02:

SalahuddiN , A. (2016). *Women Writing Culture: Sources of Traditional Symbols in Pakistani Women Fiction Writers.* Paper presented at 1st National Conference on Emerging Trends and Challenges in Social Sciences (ETCSS), Bahauddin Zakariya University Multan, Pakistan**. (Ambreen Salahuddin (School of Advance Sciences\SAS))**

03:

Aslam, M., & Rasool, S. (2016). *Exploring the determinants of environmental degradation: An empirical evidence from rural households of district Jhang, Punjab, Pakistan.* Paper Presented at 1st National Conference on Environmental Engineering & Management, held at Mehran University of Engineering & Technology (MUET), Jamshoro, Sindh**. (Manan Aslam (School of Advance Sciences\SAS))**

School of Commerce and Accountancy (SCA)

Publications by School of Commerce and Accountancy

01:

Yasser, F. (2016). Investigating the leverage composition of Pakistani firms through their determinants. *Journal of Management and research, 3*(1), 18-32. **(Farah Yasser (SCA), (HEC Z CAT))**

Abstract: To have an ideal mix of debt and equity in a balance sheet of an entity is till to date a very complicated issue for managers as there is no such rule to predict an optimal capital structure. An in-depth understanding is required for the corporate culture, the degree of the development of the capital market and the economy in which the firms operate. This study seeks to investigate the leverage composition of Pakistani corporations through their determinants. Fixed effect regression is used to show the relationship of determinants of capital structure on leverage corporations listed on Karachi Stock Exchange (KSE) for the period of 2006 to 2013. The results suggest that agency cost, growth, age, and size are significantly and negatively associated with the capital structure of Pakistan firms, however, collateral value of asset is significantly but positively associated with the capital structure of the firm. On the other hand, free cash flows, non debt tax shield, profitability, business risk and bankruptcy cost are not significantly associated with leverage composition of the firms and are against the signaling theory and peaking order theory. The key importance of this study is that no prior research was done for determinants like agency cost, free cash flows, bankruptcy cost and age as determinants of capital structure for Pakistani firms among other determinants. Further, this study does not confine to a particular sector rather it covers all companies listed by Karachi Stock Exchange.

Keywords: Leverage, Determinants of Capital Structure, Agency cost, Collateral value of assets, Bankruptcy cost.

Conference Papers by School of Commerce and Accountancy

01:

Sadiq, R., Yasser, F., & Hussain, T. (2016). *The Impact of Risk on Profitability of Islamic Banks: Empirical Evidence from Pakistan. Islamic Economics, Finance and Banking (IEFB), Global Forum 2016. (***Farah Yasser (School of Commerce and Accountancy\SCA))**

02:

Yasser, F., & Safdar, S. (2016). *Determinants of Loan Repayment Performance among Borrowers of Micro Finance Institutions: A Case Study of Pakistan.* Paper presented at Islamic Economics, Finance and Banking (IEFB), Global Forum. (**Farah Yasser(School of Commerce and Accountancy\SCA))**

03:

Yasser, F. (2016). *Exploratory study of car ijarah practices in Islamic banks of Pakistan.* Paper presented at International Conference on Innovation and Emerging Trends in Business Management. Iqra University, Karachi, Pakistan. (**Farah Yasser(School of Commerce and Accountancy\SCA))**

04:

Yasser, F. (2016). *Consumer behavior in Islamic perspective: An empirical analysis.* Paper presented at International Conference on Innovation and Emerging Trends in Business Management. Iqra University , Karachi, Pakistan.(**Farah Yasser (School of Commerce and Accountancy\SCA))**

05:

Gulzar, M. (2016). *Does Islamic banking matter for economic growth: Evidence from Pakistan.* Paper presented at the Islamic Economics, Finance and Banking Global Forum, Pearl Continental (PC) Hotel, Lahore, Pakistan. (**Mohammad Gulzar (School of Commerce and Accountancy\SCA))**

06:

Yasser, F. (2016). *Determinants of capital structure of MNCs and DCs – Evidence from Pakistan.* Paper presented at the 1st Conference on Banking, Insurance and Business Management, Hailey College of Banking and Finance, Lahore, Pakistan. (**Farah Yasser (School of Commerce and Accountancy\SCA))**

07:

Yasser, F., Rafay, A., & Khalid, Z. (2016). *Revaluation of Non-Current Assets under IAS-16: Possibility of any Managerial Inducement – Evidence from Pakistan.* Paper presented at the 1st Conference on Banking, Insurance and Business Management, Hailey College of Banking and Finance, Lahore, Pakistan. (**Farah Yasser (School of Commerce and Accountancy\SCA), Abdul Rafay)**

08:

Shakeel, A., Gulzar, M., Rasheed, B., Fraz, T., & Malik, Z. F. (2016). *Relationship between firm's pattern of shareholding and distribution to shareholders evidence from non-financial sector of Pakistan*. Paper presented at International Conference on Management Research (ICMR), Superior University Campus Lahore, Pakistan. (**Amer Shakeel (School of Commerce and Accountancy \ SCA), Muhammad Gulzar, Burhan Rasheed, Taha Fraz and Zohair Farooq Malik)**

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School of Science & Technology (SST)

Department of Computer Sciences	11	9		20		6	2		3
Department of Informatics and System	7	4		11		2		3	2
Sub Total	*18*	*13*	*0*	*31*	*0*	*8*	*2*	*3*	*5*

School of Sciences (SSC)

Department of Physics	13	3		16		11		1	1
Department of Mathematics	52	2		54		31	3	12	6
Department of Chemistry	22	22		44	1	17			4
Sub Total	*87*	*27*	*0*	*114*	*1*	*59*	*3*	*13*	*11*

Institute of Clinical Psychology (ICP)

Department of Clinical Psychology	3	4		7		1	1	1	
Sub Total	*3*	*4*	*0*	*7*	*0*	*1*	*1*	*1*	*0*

School of Social Sciences & Humanities (SSSH)

Department of Special Education	2	3		5					2
Department of Education	5	4		9		1	1	2	1
Department of Psychology		3		3					
Department of Political Science	4	3		7		1	2	1	
Department of International Relations and Media Studies				0					
Department of Social Science				0					
Department of Sociology	1			1					1

Department of Islamic Thought & Civilization	4			4				3	1
Department of English Language and Literature	4	3		7	2	1			1
Department of Media and Communication	2			2					2
Sub Total	*22*	*16*	*0*	*36*	*2*	*3*	*3*	*6*	*8*

School of Governance & Society (SGS)

School of Governance & Society	6	3		9		1	1	2	2
Sub Total	*6*	*3*	*0*	*9*	*0*	*1*	*1*	*2*	*2*

School of Textile & Design (STD)

School of Textile & Design	3			3			1	2	
Sub Total	*3*	*0*	*0*	*3*	*0*	*0*	*1*	*2*	*0*

School of Commerce and Accountancy (SCA)

School of Commerce and Accountancy	1	8		9					1
Sub Total	*1*	*8*	*0*	*9*	*0*	*0*	*0*	*0*	*1*

Institute of Communication and Cultural Study (ICCS)

Department of Communication and Cultural Study	4	1	1	6				1	4
Sub Total	*4*	*1*	*1*	*6*	*0*	*0*	*0*	*1*	*4*

Learning Resource Center (LRC)

Learning Resource Center (LRC)									
Sub Total	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

School of Architecture & Planning(SAP)

Department of Architecture & Planning	7	14	1	22			2	1	3
Sub Total	*7*	*14*	*1*	*22*	*0*	*0*	*2*	*1*	*3*

Institute of Islamic Banking(IIB)

Institute of Applied Science	3	5		8					3

Sub Total	*3*	*5*	*0*	*8*	*0*	*0*	*0*	*0*	*3*

School of Health Sciences (SHS)

Department of Health sciences	11	3		14		11			
Sub Total	*11*	*3*	*0*	*14*	*0*	*11*	*0*	*0*	*0*

School of Advacne Studies

Department of Advance Studies	1	3		4					1
Sub Total	*1*	*3*	*0*	*4*	*0*	*0*	*0*	*0*	*1*

School of Food and Agricultutral Sciences (SFAS)

Department of Food and Agricultural sciences	8			8		8			
Sub Total	*8*	*0*	*0*	*8*	*0*	*8*	*0*	*0*	*0*
Total	**237**	**131**	**2**	**370**	**5**	**101**	**23**	**42**	**66**

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