



# UMT

University of Management and Technology, Lahore

School of Engineering (SEN)

Civil Engineering Department

## Ph.D. (Civil Engineering) Entry Test

(180mins)

### Instructions

- Exam comprises of three parts
- Part (a) contains 60 percent weightage
- Part (b & c) contains 20 percentage each
- Answer to the questions briefly and concisely
- There is no Negative marking

### Part (a)

<b>Q.01</b>	What does the "Time of concentration" mean in hydrology?
<b>Q.02</b>	What is the purpose and role of the construction of dykes or leaves?
<b>Q.03</b>	Describe waterlogging and salinity?
<b>Q.04</b>	Shortly explain the difference between Aqueduct and syphon aqueduct?
<b>Q.05</b>	Where in the world does precipitation the most and Which one is the name of station with maximum precipitation in Pakistan?
<b>Q.06</b>	What is difference between Transpiration and Evapotranspiration?
<b>Q.07</b>	Explain briefly about the hydrograph?
<b>Q.08</b>	What are principal objectives of silt excluders/ejectors?
<b>Q.09</b>	What is the role of the coffer dam?
<b>Q.10</b>	Differentiate among the Perennial stream, non-Perennial stream?

<b>Q.11</b>	The uplift pressure on a dam can be controlled by what parameters?
<b>Q.12</b>	What is meant by interception in hydrology?
<b>Q.13</b>	Explain the terms Wetted perimeter and regime channel?
<b>Q.14</b>	Enlist/describe various types of outlets for discharge measurements?
<b>Q.15</b>	Describe the main cause of meandering in river channels?
<b>Q.16</b>	What data/information is required to determine the discharge at a section in a stream from its rating curve?
<b>Q.17</b>	What is the major resisting force in a gravity dam and why?
<b>Q.18</b>	Enlist the major components of the hydroelectric scheme?
<b>Q.19</b>	Elaborate the phenomenon of hydraulic jump and its significance in the design of various water-related structures?
<b>Q.20</b>	What are the major causes of silting up a channel?
<b>Q.21</b>	Knowledge of water resources is necessary for civil engineers for what purposes?
<b>Q.22</b>	What are the major losses in irrigation channels?
<b>Q.23</b>	Ground water table is reducing in Lahore. What are anticipated reasons for lowering of ground water table?
<b>Q.24</b>	What does snow water equivalent implies?
<b>Q.25</b>	Liquid water becomes atmospheric water vapor by which general method?
<b>Q.26</b>	Identify factors influencing infiltration?
<b>Q.27</b>	Describe natural and artificial recharge methods?
<b>Q.28</b>	What is meant by Conveyance in irrigation?
<b>Q.29</b>	What is difference between open channel flow and pipe flow?
<b>Q.30</b>	Manning's equation is mainly used for?

**Part (b)**

<b>Q.01</b>	What do you understand by index properties of soil?
<b>Q.02</b>	What are two methods to determine permeability of soil in Laboratory?
<b>Q.03</b>	Major difference between falling head and constant head test of permeability?
<b>Q.04</b>	What is meant by permeability?
<b>Q.05</b>	Define the consolidation process?
<b>Q.06</b>	How the size of fines is determined?
<b>Q.07</b>	How the size of gravel is determined?
<b>Q.08</b>	What do you mean by poorly graded soil?
<b>Q.09</b>	What is the difference between uniformly grade and poorly graded soil?
<b>Q.10</b>	What is the effect of temperature on specific gravity of soil?
<b>Q.11</b>	What is the plasticity of sand?
<b>Q.12</b>	Why undisturbed soil sample are needed?
<b>Q.13</b>	What are shear strength parameters and how these are determined?
<b>Q.14</b>	What is the difference between compaction and consolidation of soil?
<b>Q.15</b>	What is homogeneous and heterogeneous behavior of soil?
<b>Q.16</b>	What do you understand from SPT?
<b>Q.17</b>	What is meant by boundary conditions?
<b>Q.18</b>	What are the initial conditions and why they are important?
<b>Q.19</b>	What are possible reasons for foundation failure?
<b>Q.20</b>	What are most popular/common geotechnical investigations carried out?

### Part (c)

<b>Q.01</b>	What is meant by dead load and live load?
<b>Q.02</b>	What are the factors that reduce the durability of structures?
<b>Q.03</b>	Define durability of the concrete structures?
<b>Q.04</b>	What are imposed loads on a structural member?
<b>Q.05</b>	What are load combinations? Why are these used for design of structures?
<b>Q.06</b>	What is meant by fatigue in steel and concrete structures?
<b>Q.07</b>	Differentiate between shear stress and tensile stress?
<b>Q.08</b>	What is the function of key in retaining walls?
<b>Q.09</b>	Explain the reason to prefer overhang in the bridge?
<b>Q.10</b>	What is unsymmetrical bending?
<b>Q.11</b>	What is usefulness of prestressed girders?
<b>Q.12</b>	RCC design techniques refers to what type of structures?
<b>Q.13</b>	Explain laps and splices in RCC design?
<b>Q.14</b>	What is meant by FEM?
<b>Q.15</b>	What is the purpose of isolated footings?
<b>Q.16</b>	What is role of admixtures in concrete?
<b>Q.17</b>	Where the quick setting concrete should be used?
<b>Q.18</b>	What is significance of shear wall in structures?
<b>Q.19</b>	Why ballast is provided along the railway tracks?
<b>Q.20</b>	What is meant by determinate structures?