BACHELOR OF ENGINEERING IN CIVIL ENGINEERING
EXAMINATION, 2018
(2nd Year, 1st Semester)
ENGINEERING GEOLOGY

Time: Three hours   **Full Marks: 100**

(50 marks for each group)

Use a separate Answer-Script for each group

GROUP - A

1. Answer any six (06) questions from the following   **(6×6 = 36)**

i. What are the major stages of a civil engineering project? In which stage the implications of engineering geology is more important and how? – discuss in brief.   **(2+4 = 6)**

ii. What is 'Hydrologic Cycle'? –present trough a flow chart. How does 'artesian well' form in nature – discuss with relevant sketch.   **(3+3 = 6)**

iii. How porosity of a soil stratum differs from its permeability? What is 'absolute permeability'? - Derive its unit by dimensional analysis.   **(2+2+2 = 6)**

iv. What is the difference between 'void ratio' and 'percentage of air voids' of a soil sample? Prove that $S = \dfrac{W_C \times G_S}{e}$, where S = Degree of saturation, W_C = water content, e = void ratio, G_S = specific gravity of the solid mass of the soil or rock.   **(3+3 = 6)**

v. List down the natural causative factors of landslide. Why in most of the cases rainfall acts as a triggering factor of landslide? What is 'solifuction'?   **(2+2+2 = 6)**

vi. A sample of rock has a porosity of 46%. The specific gravity of the solid grains is 2.65. Calculate (a) void ratio, (b) dry density, (c) unit weight of the rock, - if that is 50% saturated.   **(2+2+2 = 6)**

vii. Distinguish between a dam and a barrage. What are the major components of a dam and represent those by a schematic drawing.   **(2+2+2 = 6)**

viii. What are the prime causes of an earthquake? What is 'Love wave'? Distinguish between magnitude and intensity of earthquake.   **(3+1+2 = 6)**

2. Find the odd one out from the given set and justify your answer by one or two sentences:

(5×2 = 10)

i.	(a) Permeability	(b) Tenacity	(c) Viscosity	(d) Porosity
ii.	(a) Deforestation	(b) Retaining wall	(c) Rock bolting	(d) Berm
iii.	(a) Storage	(b) Flood control	(c) Distribution	(d) Runoff
iv.	(a) Arsenic	(b) Fluoride	(c) Iron	(d) Bromide
v.	(a) Aquifer	(b) Aqueduct	(c) Aquiclude	(d) Aquifuge

3. Write down the following statements are True or False

(8×0.5 = 4)

i. Gravity dam in normally erected for those rivers those are having a short width.

ii. According to ISSCS the size range of sand size particles is 4.75mm to 0.075mm.

iii. Sandstone is the rock type normally used as 'railway ballast'.

iv. Capillary fringe always lies at the top of the 'Vadose Zone'

v. The Earthquake zonation of Kolkata is IV.

vi. 'Creep' generally denotes extremely slow downward movement of surfacial dry soil.

vii. Sites having folded and faulted rock strata underneath is preferable to construct a dam.

viii. Porosity is property which permits the ease of flow of liquid through the rock.

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B.CIVIL ENGG. 2^(ND) YEAR 1^(ST) SEM. Examination, 2018

Subject: Engineering Geology **Time: 3 Hours** **Full Marks: 100**

Group-B

(Use Separate Answer scripts for each Group)

Answer any 5 (five) questions from Group-B: 10x5=50

1. Describe with diagram the Internal Structure of the Earth using Depth vs. Velocity diagram of seismic waves. 10

2. Discuss about the characters of differentseismic waves. What is earth quake? 8+2=10

3. What is mineral? Briefly describe the physical properties of minerals. 2+8=10

4. Define Dam. What are the Geological controlsthat should be taken care of during construction of a stable and safe dam? Explain with diagram. 2+8=10

5. Discuss with neat sketches about the orientation of basement rocksfor a suitable Dam. 10

6. What is Symmetry? Discuss briefly about the Elements of Symmetry in crystal. 2+8=10

7. Define Rock. Discuss about the genesis of any Sedimentary rock. 2+8=10

8. Discuss the problem of construction of a Road along Hill-slope. How will you protect the Hill-cut Road which is constructed on fractured or sheared zone? 5+5=10

9. What is Euler Pole? Describe the characters of different plate boundaries. 2+8=10