Ref. No.: Ex/CE/PC/B/Geol/T/213/2024(S)

B. E CIVIL ENGINEERING SECOND YEAR FIRST SEMESTER SUPPLEMENTARY EXAM - 2024

Subject: ENGINEERING GEOLOGY

(50 Marks for each Part)

Time: 3 hours Use separate answer script for each Part **Full Marks: 100**

PART-I (50 Marks)

Use a separate Answer-Script for each part (50 marks for each part)

Answer 1 and any five from the rest

1. Write short notes on (any three) **5x3 =15**

   a. Geological Time Scale

   b. Primary sedimentary structures

   c. Mud cracks

   d. Bowen's Reaction series

   e. Difference between clastic and chemical sedimentary rocks

2. Discuss on textural and compositional maturity of sedimentary rock with proper diagrams. **7**
3. Create a labelled diagram of the chemical and mechanical layers of the Earth's interior. Define the term "plate". **7**
4. Discuss the application of Geology in the field of civil engineering. **7**
5. Distinguish between normal, reverse and strike-slip faults. Under what stress conditions do they develop? Explain with sketches. **4+3=7**
6. Illustrate rock cycles with a proper explanation. **7**
7. Write about the types of metamorphism. What are the factors that influence metamorphism? **4+3=7**
8. Define mineral. Discuss the rock property for engineers. **3+4=7**

[Turn over

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PART-II

Use a separate Answer-Script for each part (50 marks for each part)

Answer 1 and any 5 from the rest

1.a) How do geophysical methods contribute to our understanding of subsurface geological structures? 5

b) Discuss the Richter scale and the Mercalli scale. How are they used to measure the intensity and magnitude of an earthquake? 2+3

c) What are clay minerals? How are they formed? 2.5+2.5

d) Discuss the hazards associated with pyroclastic flows during a volcanic eruption. How can these hazards be mitigated? 3+2

2. Discuss the process of subduction. How does it contribute to the movement of tectonic plates, the occurrence of earthquakes and volcanic activities? 3+4

3) Define and provide examples of hydrological hazards. How do these hazards differ from geologic and atmospheric hazards? 3+4

4) Explain the process of oxidation as a form of chemical weathering and how can it affect the structural integrity of buildings and other infrastructures? 3.5+3.5

5) What type of exploratory drilling is conducted in subsoil exploration? Discuss the method of subsoil study of shallow depth by pitting and trenching method and auger drilling method. 2+5

6) Draw a diagram and show the different parts of the earth's interior with respect to rock condition and thickness of different parts. State the variation of the earth's temperature with depth. 5+2

7) Describe the geological processes—erosion, deposition, and transportation—in relation to the formation of soil deposits. What are the other geological and natural agencies responsible for soil formation? 5+2