

B. E. CIVIL ENGINEERING SECOND YEAR FIRST SEMESTER – 2025

Subject: ENGINEERING GEOLOGY

Time: 3 hours

(50 Marks for each Part)

Full Marks: 100

PART – I (50 Marks)

Use a separate Answer Script for each part

Answer Q.1 and any five (5) from the rest

1. (i) What is a 'granite'? Between Granite and a medium grained sandstone which one will be more suitable for civil engineering construction? Answer with reasons.

(ii) What do you mean by strength of a material? Discuss why the strength of an intact Rock measured in the laboratory is not the same as that of the Rock Mass measured insitu.

(iii) Write short notes on:

(a) RQD and its significance

(b) Rock head and its importance during engineering construction.

5 X 3

2. What is 'Petrology'? Briefly discuss the importance of this branch of geology in Civil Engineering.

Name one monomineralic metamorphic rock and identify its use in civil construction.

2 + 3 + 2

3. What do you mean by 'Extrusive' igneous rock? Comment on the suitability of such type of rock as pillar foundation of a bridge?

Name one volcanic igneous rock having intermediate silica content.

2 + 3 + 2

4. Name and discuss the importance of any two Rock properties that must be assessed before commencement of major Civil Engineering construction.

Name one rudaceous clastic sedimentary rock and comment on its engineering properties.

4 + 3

5. What is a 'Mica schist'? Why this type of rock materials exposed in hill slopes are very much prone to weathering and landslide hazards?

Discuss why earthquake is considered to be the most dangerous natural hazard for any civil construction projects in Himalayan areas.

2 + 3 + 2

6. Discuss the different stages of site investigation relevant for any major civil engineering construction.

Discuss the importance of 'discontinuity' studies of Rock mass in civil engineering.

4 + 3

7. Define 'Porosity' and 'Permeability' of a material. How these Rock Mass properties influence construction of a dam and reservoir? Answer with reason and sketches.

3 + 4

[Turn over

B.E. Civil Engineering Second Year First Semester Examination, 2025

Engineering Geology
(Part-II) (50 Marks)

Time : Three hours

Full Marks : 100

1. Answer any **three (3)** questions: 3x10=30
 - a) Discuss five major factors that interact to form different types of soil. 10
 - b) What would happen if rocks of shallow and deep crust are subjected to the differential stress? Explain with appropriate sketches. 10
 - c) Provide three instances of failure of civil engineering construction due to the geological flaws. 10
 - d) What are the effects of weathering from the civil engineering point of view? What are the physical properties of weathered rock? 5+5=10
 - e) Define joint. Classify joint based on the geometry and origin. 2+8=10
2. Short notes (any 4): 5X4=20
 - (a) Pillow lava
 - (b) Plumose structure
 - (c) Cross stratification
 - (d) Soil consistency
 - (e) Joint aperture