

**ENGINEERING GEOLOGY
(CIVL 2104)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

***Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.***

Candidates are required to give answer in their own words as far as practicable.

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) True dip is _____ apparent dip.
 - (a) greater than
 - (b) smaller than
 - (c) equal to
 - (d) none of these.
 - (ii) Glaciers are downward moving bodies of
 - (a) pure snow
 - (b) mostly ice and may be some snow
 - (c) snow at the bottom and some ice at the top
 - (d) none of these.
 - (iii) Plutonic rocks are always formed from the cooling of
 - (a) the lava under water
 - (b) magma just below the surface of the earth
 - (c) lava over the surface of the earth
 - (d) magma below the surface of the earth at great depths.
 - (iv) Soil profile indicates
 - (a) the slope of an area as measured on the surface
 - (b) the composition of the top layer of soil in an area
 - (c) the character of weathering as reflected by the type of weathered products up to a certain depth
 - (d) none of these.
 - (v) Which of the following characteristics belongs to the tetragonal crystal system?
 - (a) Two horizontal axes are equal
 - (b) The axes are mutually interchangeable
 - (c) Two horizontal axes are equal, mutually interchangeable and vertical axis may be longer or shorter than the other axes
 - (d) All of these.

- (vi) The discontinuity between crust and mantle is called
(a) Conrad discontinuity (b) Mohorovicic discontinuity
(c) Gutenberg discontinuity (d) Lehman discontinuity.
- (vii) Of the various types of rock forming minerals, minerals that rank first are
(a) silicates (b) oxides (c) carbonates (d) sulphates.
- (viii) Which of the following rocks is the most desirable at dam site?
(a) Granites, syenites or diorites (b) Shales
(c) Laterites (d) Schists.
- (ix) Which of the following formations are the most suitable for the foundation of dam?
(a) Horizontal beds
(b) Gently inclined beds in the u/s direction
(c) Steeply inclined beds in the d/s direction
(d) Vertical beds.
- (x) Crystals belonging to orthorhombic system are referred to
(a) 3 mutually perpendicular crystallographic axes
(b) 2 mutually perpendicular crystallographic axes
(c) 4 mutually perpendicular crystallographic axes
(d) none of these.

Group – B

2. (a) What is mechanical weathering of rock? Write about its main agent.
(b) What is metamorphic rock? Write about its classification
5 + 7 = 12
3. (a) What is igneous rock? What are sills?
(b) Describe different forms of sills describe with neat sketch.
5 + 7 = 12

Group – C

4. (a) What is a cleavage? Draw a neat sketch and give an example.
(b) What are minerals? What are their physical properties?
5. (a) What is unconformity? What are the different types of unconformity?
(b) What is graded bedding? What is its use in geological reconstruction?
6 + 6 = 12

Group – D

6. Describe the general importance of the following geological investigation for any large Civil Engineering Project: Topography, Lithology, Structure, Groundwater conditions and Seismicity of the area.

7. What do you mean by electrical resistivity method? What are the geological factors which influence the electrical resistivity? What are the main applications of Profiling, Sounding and Potential method? What do you mean by symmetrical and asymmetrical electrode configurations?

(1 + 3 + 3 + 5) = 12

Group – E

8. What are the parameters of an earthquake? What do you mean by the term intensity and magnitude of an earthquake? Describe the intensity scale of an earthquake. Explain the terms in the formula for magnitude of an earthquake. Describe a method of determining earthquake epicenter.

(3 + 3 + 6) = 12

9. What are the different zones of groundwater? What is cone of depression in groundwater? How is this property of groundwater useful in civil engineering construction in an area that lies below the groundwater table? Illustrate with neat sketches.

(3 + 3 + 6) = 12

Department & Section	Submission Link
CE	https://classroom.google.com/u/1/w/Mjc0NzlxODYzMTA5/t/all