(vi) The least stable mineral to weathering is
(a) Feldspar (b) Olivine
(c) Quartz (d) Haematite.

(vii) Which of the following list of rocks is written in order of increasing grain size?
(a) Sandstone, siltstone, conglomerate.
(b) Sandstone, conglomerate, siltstone.
(c) Conglomerate, sandstone, siltstone.
(d) Siltstone, sandstone, conglomerate.

(viii) The discordant structure in igneous rocks is
(a) Sill (b) Dyke (c) Phacolith (d) Lopolith.

(ix) An important foundation rock is
(a) Shale (b) Amphibolites
(c) Basalt (d) Sandstone.

(x) Clinometer is used for
(a) measuring humidity
(b) measuring hardness of minerals
(c) measuring attitude of beds
(d) none of these.

Group - B

2. (a) What is hardness of a mineral? How is it measured? What is Mohs scale of hardnes?

(b) What is "Lustre" of a mineral? Describe briefly the different lustres in minerals with examples.

(2 + 2 + 2) + (2 + 4) = 12

3. (a) What are intrusive and extrusive igneous rocks? Describe their salient features.

(b) Give short notes on any two: (i) Laccolith (ii) Phacolith (iii) Nonclastic sedimentary rocks (iv) Schist rocks.

(3 + 3) + (2 × 3) = 12

Group - C

4. (a) What is physical weathering? Give short notes on any two types of physical weathering.

(b) What are pitch and plunge of a line on an inclined surface? Explain with diagram.

(2 + 4) + (4 + 2) = 12

5. (a) What is Synformal anticline? Classify folds on the basis of inclination of axial surface of folds.

(b) What is the difference between a fault and a joint? Show the different parts of a fault with a diagram.

(2 + 4) + (2 + 4) = 12

Group - D

6. (a) How the epicentre of an earthquake is determined? What is magnitude of an earthquake?

(b) Distinguish between P-wave and S-wave. Give a short description on seismic zones in India.

(4 + 2) + (2 + 4) = 12

7. (a) What do you mean by abrasive resistance of a rock? Explain how the compressive strength of a rock sample is measured?

(b) Mention the qualities which are important for rocks to be considered as good building stones.

(2 + 4) + 6 = 12

Group - E

8. (a) What is resistivity sounding? Give the Schlumberger electrode configuration and explain briefly how the resistivity data are represented.

(b) Give a neat sketch to show the components of a dam. What are the geological studies needed for the selection of a dam site?

(2 + 4) + (3 + 3) = 12

9. (a) Give the principle of seismic refraction method. Explain briefly the limitations of seismic refraction method.

(b) Mention the geological parameters to be considered before selecting the site of tunneling. How folds affect in excavating tunnels.

(3 + 3) + (2 + 4) = 12

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) Hardest silicate-mineral in the Moh's scale of hardness is
(a) Diamond. (b) Feldspar.
(c) Corundum. (d) Topaz.

(ii) Streak of a mineral is
(a) tendency to split along certain direction yielding smooth surfaces.
(b) appearance on a broken surface of a mineral.
(c) colour of the powder of a mineral.
(d) colour of the mineral.

(iii) Other things being same, tunnel alignments are safe in a sound layered rock when these run
(a) parallel to the dip direction.
(b) parallel to the strike direction.
(c) oblique to the strike direction.
(d) none of these.

(iv) If an S-wave were to pass from a solid to liquid stratum, what would happen to its velocity?
(a) Remains the same. (b) Increases.
(c) Decrease to zero. (d) Cannot be ascertained.

(v) Oil and gas can be explored by
(a) magnetic method. (b) ground penetrating radar.
(c) seismic method. (d) resistivity method.