Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH/CE(O)/SEM-3/CE-305/2012-13

2012

ENGINEERING GEOLOGY

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

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

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

   i) Conglomerate and breccia are
      a) igneous rock
      b) sedimentary rock
      c) metamorphic rock.

   ii) Dip of a vertical bed is
      a) 45°
      b) 90°
      c) 180°.

   iii) Olivine is a
      a) Nesosilicate
      b) Sorosilicate
      c) Tectosilicate.

iv) Cylindrical fold with inclined fold axis is known as
   a) Upright fold
   b) Inclined fold
   c) Plunging fold.

v) The strike direction of a bed dipping 43° → N35°E is
   a) 125°
   b) 135°
   c) 223°.

vi) Mica is an example of
   a) Sheet silicate
   b) Tectosilicate
   c) Nesosilicate.

vii) Regional metamorphism occurs due to
   a) Elevated pressure
   b) Elevated temperature
   c) Elevated pressure and temperature.

viii) Strength of the foundation rock is most important for
   a) Gravity dam
   b) Arch dam
   c) Embankment dam.

ix) Which one will suffer faster weathering ?
   a) Granite
   b) Basalt
   c) Limestone.

x) 'Trend' and "plunge" define the orientation of a
   a) Planar geological structure
   b) Linear geological structure
   c) All of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Give an account on classification of sedimentary rocks.
3. Illustrate normal, reverse and strike slip faults with neat sketches.
4. Explain with neat sketches true dip and apparent dip of a planar structural feature.
5. Briefly describe the principles of electrical resistivity survey.
6. Write a note on geological parameters considered for a tunnelling project.
7. What is a fold ? Give an account on classification of folds.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. a) What is seismic wave ? How would you classify them based on their mode of propagation ? 2 + 6

   b) Explain with neat sketches the internal structure of the earth. What is Mohorovicic discontinuity ? 6 + 1

9. a) Give an account of the classification of igneous rocks. Write a note on basalt and granite. 5 + 3 + 3

   b) Briefly explain physical and chemical weathering processes. 4

10. a) Define rock forming mineral. What is silica tetrahedron ? Briefly explain how they combine to form different silicate mineral groups. 2 + 2 + 7

    b) Write short notes on the following : 2 × 2

    i) Slate

    ii) Gneiss.

11. a) How structural geological and engineering properties of rock influence dam site selection ? 8

    b) Write a note on geological investigation for reservoir site selection. 7

12. a) What is mass movement ? What are the causes of mass movement ? Give an account of the landslide mitigation measures. 2 + 4 + 4

    b) Write a short note on the use of geo-materials in civil engineering construction. 5

13. Write short notes on the following : 5 × 3

    i) Porosity

    ii) Permeability

    iii) Aquifer

    iv) Aquitard

    v) Aquiclude.