Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech/CE(N)/SEM-5/CE-504/2012-13

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 any *ten* of the following : 10 × 1 = 10

i) Which one of the following is the igneous rock ?

a) Shale b) Marble

c) Granite d) Dolomite.

ii) Which one of the following is economically important mineral ?

a) Quartz b) Feldspar

c) Galena d) Amphibole.

iii) The hardest oxide mineral in the Mohs' scale of hardness is

a) corundum b) topaz

c) quartz d) diamond.

iv) Which factor affects recrystallization most ?

a) Pressure

b) Temperature

c) Liquid with chemical fluid.

v) The simplest of all the silicate structure is that of
   a) orthosilicate b) sorosilicate
   c) metasilicate d) inosilicate.

vi) The most dominant element in the whole Earth is
   a) Silicon b) Nickel
   c) Oxygen d) Iron.

vii) Fold with upward closing or convex upward is known as
   a) antiform b) synform
   c) neutral fold d) recumbent fold.

viii) Which attitude of the foundation rocks offer best resistance to the resultant forces in a dam ?
   a) Horizontal layers
   b) Downstream dipping layers
   c) Upstream dipping layers
   d) Vertical layers.

ix) Isoseismal lines are lines joining points of
   a) same earthquake intensity
   b) same depth of foci
   c) same earthquake magnitude
   d) none of these.

x) An aquifer is a rock formation which is
   a) porous and not necessarily permeable
   b) highly porous and impermeable
   c) porous and essentially permeable
   d) none of these.

xi) Dyke is
   a) plutonic b) hypabyssal
   c) metamorphic d) sedimentary.

xii) To be classified as laminae the thickness of each layer should be
   a) < 1 cm b) > 1 cm
   c) < 2 cm d) > 2 cm.

GROUP – B
(Short Answer Type Questions)

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

2. Match the following : 5 × 1

	A		***B***
a)	Evaporite	i)	Sheet structure
b)	Sima	ii)	Sedimentary structure
c)	Mica	iii)	Salt deposit
d)	Granite	iv)	Oceanic crust
e)	Current ripple	v)	Igneous rock.

3. Distinguish between joint and fault ? What do you mean by Fracture ? Explain with a neat sketch. 2 + 1 + 2

4. Write short notes on the following : $2\frac{1}{2} + 2\frac{1}{2}$

   a) Ring Dyke

   b) Moh's scale of hardness.

5. Write a note on symmetry elements of crystals.

6. Define strike and dip. What do you mean by 'attitude of a bed is N30E ; 50SE'. 3 + 2

GROUP – C
(Long Answer Type Questions)

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

7. a) Define weathering. Describe different types of weathering and their resultant landform.

   b) Discuss the different modes of transportation by river. 2 + 5 + 8

8. a) How structural, geological and engineering properties of rock influence the selection of dam sites ?

   b) What is a reservoir ? What are the geological factors that are consider for selection of sites for construction of reservoir ?

   c) What do you mean by rock tunneling and soil ground tunneling ? 5 + 6 + 4

9. a) Describe the general importance of the following geological investigation for any larger civil engineering project :

      i) Topography

      ii) Lithology

      iii) Structure

      iv) Ground water condition

      v) Seismicity of the area.

   b) What are folded and faulted strata in mapping ? Explain with diagram. 10 + 5

10. Discuss various properties that need through investigation for selection of stones for use in building construction. 15

11. Define focus and epicenter of earthquake. Describe the various methods for determining earthquake epicenter. Discuss different parameters for construction of quake resistant dam. 2 + 5 + 8