



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH(CE)/SEM-3/CE-305/2010-11**

**2010-11**

**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) True Dip of a rock bed is along the line of

- a) quickest descent
- b) slowest descent
- c) none of these.

ii) True dip is ..... apparent dip.

- a) greater than                      b) smaller than
- c) equal to                          d) none of these.



- iii) Dip and strike of a bed are at an angle ..... to each other.
- a)  $90^\circ$                                       b)  $180^\circ$   
c)  $270^\circ$                                       d) none of these.
- iv) The softest mineral known as per Mohr's scale is
- a) quartz                                      b) orthoclase  
c) talc                                      d) calcite.
- v) The weight of a mineral in water is 25 gm and in air is 50 gm. The specific gravity of the mineral is
- a) 2                                      b) 2.5  
c) 1.5                                      d) none of these.
- vi) 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.
- vii) An isometric or cubic system has ..... planes of symmetry.
- a) 6                                      b) 9  
c) 3                                      d) none of these.



viii) 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.
- ix) Which of the following rocks is the most desirable at dam site ?
- a) Granites, syenites or diorites
  - b) Shales
  - c) Laterites
  - d) Schists.
- x) Of the various types of rock forming minerals, minerals that rank first are
- a) silicates
  - b) oxides
  - c) carbonates
  - d) sulphates.



- xi) The discontinuity between crust and mantle is called
- a) Conrad discontinuity
  - b) Mohorovicic discontinuity
  - c) Gutenberg discontinuity
  - d) Lehman discontinuity.
- xii) 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.
- xiii) 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 at great depths below the surface of the earth.



xiv) 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.

xv) Glaciers are downward moving bodies of

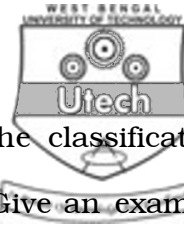
- a) pure snow
- b) mostly ice and may be some snow
- c) snow at the bottom and some ice at the top
- d) none of these.

### **GROUP – B**

#### **( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

- 2. What is cleavage ? Draw a neat sketch and give an example of cleavage.
- 3. What is fracture ? Draw a neat sketch.
- 4. What is mechanical weathering of rock ? Write about the main agent of mechanical weathering.



5. What is metamorphic rock ? Write about the classification ( based on foliation of metamorphic rock ). Give an example of metamorphic rock.
6. What is igneous rock ? What are sills ? Describe different types of sills with the help of neat sketch.

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. Define 'Crystal' & 'Mineral'. How would you systematically describe & identify minerals in hand specimen ? Cite common examples.
8. a) What do you mean by weathering & erosion of rocks ?  
b) What are soils ? Classify soils based on their origin.  
c) Write briefly on geological work of rivers.
9. a) What are the major causes of earthquakes ?  
b) How are earthquake waves useful in deciphering the interior of the earth ?  
c) Write briefly on the nature of precautions required in major constructions in earthquake-prone regions.



10. a) Write briefly on the principle of electrical receptivity method in geophysical investigation.
- b) Comment an interpretation on receptivity data.
- c) Write briefly on geological studies for selection of tunnel sites.

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