



**MAULANA ABUL KALAM AZAD UNIVERSITY OF  
TECHNOLOGY, WEST BENGAL**

**Paper Code : CE-504  
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 alternative for *any ten* of the following:

1×10=10

(i) Most important characteristic of a gemstone is its

(a) color

(b) streak

(c) shape

(d) cleavage

(ii) An interfacial angle is

(a) an external angle between a given face and the extension of the adjoining face.

(b) an internal angle between two adjoining faces.

(c) an angle between any twin faces on the same side of crystal.

(d) None of the above

(iii) Igneous rock is also known as:

(a) Primary rock

(b) Secondary rock

(c) Tertiary rock

(d) None of these

(iv) Mercalli scale is used for measuring:

(a) Magnitude of earthquake

(b) Intensity of earthquake

(c) Velocity of wave

(d) All of these

**Turn (**

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(vi) Fold with convex downward is known as:

- (a) Recumbent fold
- (c) Anticline fold

(b) Synclinatorium fold  
(d) Syncline fold

(vii) Landslides mostly occur during:

- (a) Pre-monsoon
- (c) Monsoon

(b) Post-monsoon  
(d) Summer

(viii) The expansion of SIMA is

- (a) Silicon and Manganese
- (c) Strontium and Manganese

(b) Silicon and Magnesium  
(d) Strontium and Magnesium

(ix) Which part of the seismometer does not shake during an earthquake?

- (a) Frame
- (c) Rotation drum

(b) Spring  
(d) Pendulum and pen

(x) The Brazilian Test is used to determine:

- (a) Compressive strength
- (c) Tensile strength

(b) Shear strength  
(d) None of these

(xi) Which of the following mineral has lowest hardness?

- (a) Fluorite
- (c) Topaz

(b) Quartz  
(d) Gypsum

(xii) Sub-surface geophysical method is:

- (a) Resistivity method
- (c) Magnetic method

(b) Electromagnetic method  
(d) Borehole logging

(xiii) The branch of geology which deals with various aspects of rocks is:

- (a) Petrology
- (c) Mineralogy

(b) Lithology  
(d) Seismology

**Group - B**

(Short Answer Type Questions)

Answer any three of the following.

5 × 3 = 15

- 2. Explain with diagrams the different erosional features generated by river actions. 5
- 3. What is igneous rock? Classify igneous rocks into various classes on the basis of mode of occurrence and give a brief description of each class. 1+4=5
- 4. Establish the relation between true dip and apparent dip. Find out true dip if apparent dip is 20°, angle between the strike direction of the plane and apparent dip direction is 35°. 5
- 5. Discuss the role of engineering geology in tunneling. 5
- 6. Differentiate between: 2.5+2.5=5
  - (a) P-wave and S-wave
  - (b) Porosity and Permeability

**Group - C**

(Long Answer Type Questions)

Answer any three of the following.

15 × 3 = 45

- 7. (a) Define axis of symmetry. Explain the six crystallographic axis system along with their axis diagrams. <http://www.makaut.com>
- (b) List the different optical properties of minerals studied under polarized and non-polarized light.
- (c) Explain the difference between colour and streak of a mineral. 8+3+4=1
- 8. (a) What is rock cycle? Explain with neat sketch.
- (b) Distinguish sedimentary rocks from igneous and metamorphic rocks.
- (c) State what happens when pure sandstone is subject to contact metamorphism. 5+6+4=
- 9. (a) What is rock deformation? Describe different types of fold with the help of neat sketches.
- (b) What is meant by seismic zoning? Explain the important factors to be considered for evolutionary aseismic designs in a seismic region. 5+5+
- (c) Describe the various effects of an earthquake. 5+5+

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10. (a) Discuss the role of rocks as construction materials for railway ballast, pavement layers, flooring and roofing.
- 2 (b) How do you measure compressive strength and abrasive resistance of rocks? 7+6+2=15
- (c) What is prospecting? 3+12=15
11. What is dam? What are the geological investigations necessary before construction of a dam? 3+12=15
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