

1st copy

1/EH-26 (i) (Syllabus-2015)

2016

(October)

GEOLOGY

(Elective/Honours)

(General Geology, Crystallography and Mineralogy)

(GELH-101)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer four questions, selecting one from each Unit

UNIT—I

(General Geology)

1. (a) Describe any two recent hypotheses of the origin of the earth. 4+4=8
- (b) Write notes on any two of the following : 3×2=6
- (i) Sand dunes
 - (ii) Oxbow lake
 - (iii) Moraines

(2)

2. (a) Mention the causes of earthquakes. Write in brief the nature of the earthquake waves. $2+6=8$
- (b) Discuss the various types of plate boundary. 6

UNIT—II

(Crystallography)

3. (a) Define a crystal. What are the different crystal systems? Describe with neat sketches the axial elements of these systems. $1+2+6=9$
- (b) Give the symmetry elements of the normal class of the hexagonal system and mention the forms developed. $2+3=5$
4. (a) What is ionic bonding? Describe the factors that control the bond strength in ionic crystals. $1+4=5$
- (b) Distinguish between any three of the following : $3+3=9$
- (i) Axis of symmetry and Crystallographic axis
 - (ii) Solid angle and Interfacial angle
 - (iii) Parallel growth and Twinning
 - (iv) Frenkel defect and Schottky defect

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(Continued)

(3)

UNIT—III

(Mineral Optics)

5. (a) What is polarized light? Describe the various optical properties of minerals that are observed in polarized light. $2+6=8$
- (b) Define birefringence. What are the factors that control the birefringence of a mineral in thin section? $2+4=6$
6. (a) What do you understand by the term 'extinction'? Discuss the different types of extinction seen in minerals. $2+6=8$
- (b) Write notes on any two of the following : $3+2=6$
- (i) Cleavage and fracture of a mineral
 - (ii) Isotropic and anisotropic minerals
 - (iii) Phyllosilicates and tectosilicates

UNIT—IV

(Descriptive Mineralogy)

7. (a) On what basis is the mica group of minerals classified? Describe the physical and optical properties of muscovite and biotite. $2+6=8$
- (b) Write a general note on the silica group of minerals. 6

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(Turn Over)

8. (a) List the minerals of the pyroxene group.
Mention the physical and optical
properties of the orthopyroxenes. $3+5=8$
- (b) Enumerate the physical and optical
properties of any *two* of the following
minerals : $3 \times 2 = 6$
- (i) Microcline
 - (ii) Hornblende
 - (iii) Nepheline
