

GELH—101 (Syllabus-2015)

2015

(October)

GEOLOGY

St. Anthony's College
Central Library
Shillong-793001.

(ELECTIVE/HONOURS)

FIRST PAPER

**(General Geology and Crystallography
and Mineralogy)**

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) Discuss the composition of the earth's crust. Describe the interior of the earth based on seismic records with the help of suitable diagrams. 3+6=9
- (b) Explain the rock cycle. 5

(2)

2. (a) Describe the geological work of running water. Use suitable illustrations to support your answer. 8
- (b) Write the Geological Time Scale in tabular form. 6

UNIT—II

(Crystallography)

3. (a) Mention the symmetry elements and forms of the normal class of tetragonal system. $2+4=6$
- (b) Define Unit Cell. Name the unit cell parameters. How are Miller indices calculated? Add a note on crystal defects. $1+2+2+3=8$
4. (a) What is space lattice? Name the various types of space lattice. $1+4=5$
- (b) Differentiate between any *three* of the following : $3 \times 3 = 9$
- (i) Twin plane and Composition plane
- (ii) Closed forms and Open forms
- (iii) Ionic bonds and Covalent bonds
- (iv) Axis of symmetry and Plane of symmetry

(3)

UNIT—III

(Mineral Optics)

5. (a) Define minerals. Discuss the various properties for identification of mineral hand specimens. $1+7=8$
- (b) Explain Isomorphism and Polymorphism with suitable examples. 6
6. (a) Name the fundamental unit in the building of silicate minerals. Describe the various types of silicate structures. $2+6=8$
- (b) Write short notes on any *two* of the following : $3 \times 2 = 6$
- (i) Isotropic and anisotropic minerals
- (ii) Pleochroism and interference colour
- (iii) Uniaxial and biaxial minerals

UNIT—IV

(Descriptive Mineralogy)

7. (a) List the minerals of the Feldspar Group. Describe the physical and optical properties of the Feldspar Group. $2+6=8$

- (b) Write a general note on the Alumino-silicate minerals. 6
8. (a) Name the minerals belonging to the Amphibole Group. Describe their physical and optical properties. 2+6=8
- (b) Mention the physical and optical properties of the following minerals (any two) : 3×2=6
- (i) Nepheline
 - (ii) Augite
 - (iii) Biotite
 - (iv) Quartz

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