

2 0 1 2

GEOLOGY

(Major)

Paper : 2.2

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

*Candidates **eligible** for Internal Assessment shall
answer from PART—I only (Marks : 65)*

*Candidates **not eligible** for Internal Assessment shall
answer both from PART—I and PART—II (Marks : 75)*

PART—I

(Marks : 65)

Answer Question Nos. **1, 4, 7** and **one**
from each Group

Group—A

(**Crystal Chemistry**)

1. Write short notes on any *three* of the
following : 4×3=12
- (a) Structure of diamond
 - (b) Ionic diffusion

(2)

(c) Polymorphism

(d) Covalent bond

2. What is stable isotope geothermometry?
Explain temperature control on stable isotope fractionation and its application in isotopic thermometry. $2+8=10$

3. Write explanatory notes on any *two* : $5 \times 2 = 10$

(a) Solid solution

(b) Crystal defects

(c) Coordination number

Group—B

(Geochemistry)

4. Write explanatory notes on any *two* : $7\frac{1}{2} \times 2 = 15$

(a) Geochemical fence

(b) Types of meteorite and their composition

(c) Distribution of major elements during magmatic crystallisation

(d) Composition of the earth's crust

5. Explain the exponential decay law and its use in geochronology. 11
6. What are stable isotopes? How the fractionation of 'O' and 'H' isotopes takes place? Explain the usefulness of stable isotopes in geology. 2+3+6=11

Group—C

(Remote Sensing)

7. Write detail notes on any *two* : 5×2=10
- (a) Active remote sensing
 - (b) Sensor and platform
 - (c) Electromagnetic radiation
8. Explain using neat sketches the basic principles of aerial photography. 7
9. What are the factors considered for interpretation of satellite images? With suitable examples, explain application of remote sensing in geology. 7

(4)

PART—II

(Marks : 10)

(In lieu of Internal Assessment)

10. Write short notes on any *four* : $2\frac{1}{2} \times 4 = 10$
- (a) Cosmic abundance of elements
 - (b) Coordination polyhedra
 - (c) Primary geochemical differentiation of elements
 - (d) Trace elements in igneous rocks
 - (e) Scale factor in aerial photograph
