

Sl. No. 3560

A-HFP-J-HA

**GEOLOGY**

**Paper—I**

Time Allowed : Three Hours

Maximum Marks : 200

**INSTRUCTIONS**

Candidates should attempt **SIX** questions in all including Question No. 1, which is compulsory, from **PART—I** and attempt **ONE** question each from Sections A, B, C, D and E from **PART—II**.

The number of marks carried by each question is indicated against each.

Answers must be written only in **ENGLISH**.

Symbols and abbreviations are as usual.

Neat sketches may be drawn to illustrate answers, wherever required.

**PART—I**

1. Write short notes on any *ten* of the following :

5×10=50

- (a) S-waves
- (b) Bifurcation ratio
- (c) Digital image processing
- (d) Inlier
- (e) Isotropic fabric

- (f) Foliation and lineation
- (g) Neppes
- (h) Hiatus
- (i) Exotic blocks of Johar
- (j) Operculum
- (k) Plankton
- (l) Sequence stratigraphy

## **PART—II**

### **Section—A**

- 2. Write an essay on morphometric analysis of a drainage basin. 30
- 3. Write notes on the following :
  - (a) Origin of karst topography 10
  - (b) Application of geomorphology in dam construction 10
  - (c) Landsat imagery in geological mapping 10

### **Section—B**

- 4. Explain and differentiate between :
  - (a) Stratigraphic separation and Vertical separation 10
  - (b) Shear joints and Tension joints 10
  - (c) Pure shear and Simple shear 10

5. Write notes on the following :
- |  |    |
|--|----|
| (a) Prolate strain ellipsoid   | 10 |
| (b) Mylonites and pseudotachylites                                   | 10 |
| (c) Significance of stereographic projections in structural analysis | 10 |

**Section—C**

6. Discuss the genesis of mid-oceanic ridges. Also give a cross-section of the mid-Atlantic ridge. 20+10=30
7. Write notes on the following :
- |                         |    |
|-------------------------|----|
| (a) Stony meteorites    | 10 |
| (b) Main boundary fault | 10 |
| (c) Magnetic anomaly    | 10 |

**Section—D**

8. Discuss the principles of radiometric dating using U-Pb isotopes. 30
9. Write notes on the following :
- |                    |    |
|--------------------|----|
| (a) Sargur Group   | 10 |
| (b) Panjal Traps   | 10 |
| (c) Palaeoclimates | 10 |

**Section—E**

- 10.** Discuss the evolutionary changes in the pattern of suture lines in ammonoids. 30
- 11.** (a) Describe the ornamentation on the surface of gastropod shells. 15
- (b) Write on the role of Foraminifers in biostratigraphic correlation. 10
- (c) Briefly give the systematic classification, morphology and age of Terebratula. 5

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