

# GEOLOGY

## Paper – I

Time Allowed : Three Hours

Maximum Marks : 200

### Question Paper Specific Instructions

**Please read each of the following instructions carefully before attempting questions :**

There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.

Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

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

Neat sketches may be drawn, wherever required.

### SECTION A

- Q1. Write critical notes, within 150 words each, on the following : 8×5=40**
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|-----|--|---|
| (a) | Recent large magnitude earthquakes in India                        | 8 |
| (b) | Relation between heat flow and topographic relief of the sea-floor | 8 |
| (c) | Soil types and soil conservation in India                          | 8 |
| (d) | Sun energy interaction with atmosphere                             | 8 |
| (e) | “Mirror-image” type fold interference pattern                      | 8 |

**Q2. Answer the following questions in about 250 words each :**

- (a) Describe the morpho-structural and physical characters of continental rift system. 15
- (b) Explain the concept of "spectral reflectance" and add a note on the spectral reflectance pattern of vegetation and water bodies. 15
- (c) Discuss the strain significance of different tectonites. 10

**Q3. Answer the following questions in about 250 words each :**

- (a) Discuss the characteristic morpho-structural features and radioactive mineral characters of the sites of large meteorite impact. 15
- (b) Mention different drainage anomalies and comment on their significance. 10
- (c) Explain the mechanism and development of disharmonic folds. 15

**Q4. Answer the following questions in about 250 words each :**

- (a) Critically analyse the role of different forces associated with the lithospheric plates. 10
- (b) Critically analyse the patterns of deltas associated with major river systems in the east coast of India. 15
- (c) Discuss the criteria to determine the sense of shearing in ductile and brittle shear zones with neat sketches. 15

## SECTION B

**Q5. Write critical notes, within 150 words each, on the following : 8×5=40**

- (a) Septa and Sutures in Cephalopods with neat sketches 8
- (b) Musculatures among Brachiopods with neat sketches 8
- (c) Precambrian-Cambrian boundary sections in India through Geological ages 8
- (d) Phanerozoic volcanic activities in the Kashmir basin and their impact on palaeoclimate 8
- (e) Salt water intrusion in coastal aquifers 8

**Q6. Answer the following questions in about 250 words each :**

- (a) Discuss the method of separation of microfossils from shaly rocks. 15
- (b) Discuss the Precambrian rocks of Dharwar supergroup. 15
- (c) Describe the earthquake-resistant structures. 10

**Q7. Answer the following questions in about 250 words each :**

- (a) Write brief notes on the dental formula and molar dentition among Hominids with neat sketches. 15
- (b) Critically analyse the nomenclature in biostratigraphic classification. 10
- (c) Critically discuss the geological factors for selection of a dam site. 15

**Q8. Answer the following questions in about 250 words each :**

- (a) Give a critical comment on “dimorphism among foraminifers”. 10
- (b) Describe the Proterozoic sedimentary basins of India and their economic significance. 15
- (c) Discuss the major fracture systems and different groundwater provinces of India. 15

