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

(a) Recent large magnitude earthquakes in India

(b) Relation between heat flow and topographic relief of the sea-floor

(c) Soil types and soil conservation in India

(d) Sun energy interaction with atmosphere

(e) “Mirror-image” type fold interference pattern
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: 8x5=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