INDIAN FOREST SERVICE (MAIN)EXAM- 2023

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.

Question Nos. **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.

Neat sketches may be drawn, wherever required.

Word limit in questions, wherever specified, should be adhered to.

Answers must be written in ENGLISH only.

SECTION—A

1. Answer the following within *150* words each : 8×5=40

(a) Discuss the evidences of continental drift.

(b) Enumerate the tectonic settings along which majority of earthquakes occur. Where are deep and shallow focus earthquakes located?

(c) Describe giving reason the difference between terrestrial and outer planets.

(d) Describe the working of Global Positioning System.

(e) Explain how the sense of shear in deformation zones can be determined from pressure shadows.

2. *(a)* Describe the remnant landforms that indicate occurrence of past glacial activity over a region. How are the records of moraines useful in interpreting past changes in climate? 15

(b) Describe mid-oceanic ridge. Illustrate your answer with suitable diagram. 10

(c) Describe dip isogon method of fold classification with suitable illustrations. 15

3. *(a)* Discuss the three major plastic deformation mechanisms affecting rocks and minerals. 15

(b) Describe the application of remote sensing in Geology. 10

(c) Describe weathering and its types. How does it influence climate and relief? 15

4. *(a)* Describe different types of volcanoes. How does composition of lava regulate the shape of landform built by them and the eruptive style of volcano? 15

(b) Discuss the utility of thematic maps in GIS. 10

(c) During fieldwork in the Southern Granulite Terrain, rectangular, lenticular and barrel-shaped boudins were encountered. Sketch these boudins and describe the conditions that lead to their formation. 15

SECTION—B

5. Answer the following within *150* words each : 8×5=40

(a) Differentiate between Pelecypoda and Brachiopoda.

(b) Define facial suture line and its types with neat diagrams.

(c) Discuss the lithology of the Blaini Formation and add notes on the age and depositional palaeoenvironment of the Formation.

(d) In an aquifer with hydraulic conductivity of 10 m/day and effective porosity of 0·10, determine the velocity of groundwater flow between two locations with elevation difference of 12 m, separated by 12000 m.

(e) Discuss the properties of laterite which make it useful as a building stone.

6. *(a)* Describe chronostratigraphic and time units. 15

(b) Differentiate between Schlumberger and Wenner electrical resistivity methods for groundwater exploration. Illustrate the answer with suitable diagrams of electrode positioning. 10

(c) Why do we study palaeontology in Geology? 15

7. *(a)* Discuss in brief the evolutionary trends in Equidae. 15

(b) Describe the lithostratigraphic succession of the Sausar Group and add notes on its structural setup and economic importance. 10

(c) Describe the Hill-Piper diagram for representation of groundwater chemistry data and illustrate the answer with diagrams, labelled with different hydrogeochemical facies. 15

8. *(a)* Discuss the factors that ensure safety, stability and cost-effectiveness of dam projects. 15

(b) Differentiate between regular and irregular echinoids. 10

(c) Discuss the palaeozoic sequence of Spiti Valley of Himachal Pradesh and its fossil contents. 15

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