

CSM – 34/21

Geology

Paper – I

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

*Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and any **three** of the remaining questions, selecting at least **one** from each Section.*

SECTION – A

1. Answer any **three** questions of the following :

20×3 = 60

- (a) Write an essay on the origin of the earth. Discuss the interior of the earth and its discontinuities with a neat diagram.
- (b) What are Island arcs ? Discuss the evolution of primary active arcs.
- (c) Describe and differentiate shear joints and tension joints, with a note on the foliation and orientation of foliation within strain ellipsoid.

- (d) What is Geographic Information System (GIS) ? Enumerate, in detail, the various applications of Geographic Information System.

2. (a) Write notes on the following : 15+15 = 30

- (i) Give an account on the applications of geomorphology in mineral prospecting, civil engineering and environmental studies.
- (ii) Define weathering. Explain the different types of weathering and their products.

(b) Describe the causes and mitigative measures of volcanism. Add a note on the volcanic products. 30

3. (a) Write an essay on the classification and mechanism of folds and faults with neat diagrams. 30

(b) What is an Unconformity ? Describe the different types of unconformities with neat diagrams. Add a note on the method of recognizing the unconformities in the field.

30

4. (a) Describe the causes and effects of earthquakes. Differentiate between Seismograms and Seismographs. 30
- (b) What are the basic concepts of geomorphology ? Explain, in detail, the geomorphological subdivisions of Indian subcontinent. 30

SECTION – B

5. Answer any **three** of the following : $20 \times 3 = 60$
- (a) Describe the morphology, geological history and the evolution of Cephalopoda with neat sketches.
- (b) Define Aquifer, Aquitard, Aquiclude and Aquifuge with examples. Give the classification of Aquifers.
- (c) Discuss, in detail, on the geological investigations required for the design and construction of Tunnels and Bridges.
- (d) Describe elaborately the Standard Stratigraphic Time Scale.
6. (a) Write an essay on the modes of preservation

- of fossils. Add a note on stratigraphic importance of Trilobita. 30
- (b) Give a detailed account on the Geology and mineral wealth of Odisha. 30
7. (a) Write an essay on quality of groundwater. Add a note on the salt water intrusion. 30
- (b) What is meant by stratigraphic boundary problem ? Explain the Cambrian/Pre-Cambrian and Cretaceous/Tertiary boundary problems. 30
8. (a) What are Pre-Cambrian Rocks ? Describe the Cuddapah and Vindhyan Supergroup of rocks and their economic importance. 30
- (b) What are the engineering properties of rocks ? Describe the various types of Landslides, their causes, preventive and rehabilitation steps to be taken. 30

