

CSM – 35/17

Geology

Paper – II

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** of the following in about **200** words each : 20×3 = 60
 - (a) What is X-ray Crystallography ? Describe spherical and stereographic projections. Add a note on twinning.
 - (b) Describe the structures and textures of igneous rocks.

- (c) What are Metamorphic grades and zones ?
Explain the types and agents of Metamorphism.
- (d) Give an account on the classification of sedimentary rocks.
2. (a) What is double refraction ? Describe the various optical properties of minerals.
10+20 = 30
- (b) Explain the physical and optical characters of the Feldspar group of minerals.
15+15 = 30
3. (a) Describe the Diopside-Albite-Anorthite system of crystallisation. 30
- (b) Explain the Petrography and Petrogenesis of Anorthosites. 15+15 = 30
4. (a) Describe the structures and textures of metamorphic rocks. 15+15 = 30
- (b) What is Sedimentary facies and provenance ? Explain the various sedimentary environments. 5+5+20 = 30

SECTION – B

5. Answer any **three** of the following : 20×3 = 60
- (a) Give an account on the processes of formation of mineral deposits.

(b) Explain the various methods of prospecting.

(c) What is geochemical cycle ? Describe the geochemical classification of elements.

(d) Give an account on the various natural hazards. Add a note on their mitigation.

6. (a) Explain the petroliferous basins of India.

30

(b) Describe the occurrence and origin of the copper deposits of India. $15+15 = 30$

7. (a) What are the techniques of sampling ? Explain the estimation of reserves of ore.

$10+20 = 30$

(b) What is mineral beneficiation and ore dressing ? Describe the methods of exploration and mining of marine mineral resources. $5+5+10+10 = 30$

8. (a) What is open cast mining ? Explain the industrial and radioactive waste disposal, use of fertilisers and dumping of mine waste and fly-ash. $10+20 = 30$

- (b) What is marine pollution ? Explain ground and surface water pollution. Add a note on environmental protection legislative measures in India. $5+15+10 = 30$

