

# IAS Mains Geology 2007

## Paper II

### Section A

1. Explain any three of the following in 200 words each: ( $20 \times 3 = 60$ )
  - a. Application of Projection Diagrams in Studying Crystal Symmetry.
  - b. Twinning in Feldspars
  - c. Describe sequence of Crystallization in Diopside-Anorthite binary system. Give the resultant characteristic textures of the rocks.
  - d. Clastic-Sediments and their depositional environments.
2. Write an account of structural classification of Silicates. Discuss in detail physical properties and give chemical composition of five common rock forming minerals belonging to Amphibole Group. Add a note on their mode of occurrence (60).
3. Write explanatory notes on the following:
  - a. Petrography and Petrogenesis of Alkaline rocks. Give suitable Indian examples (30).
  - b. Migmatites: Their types, petrographic characters and petrogenesis (30).
4. Enlist five Heavy minerals reflecting their specific gravities. Explain in detail their significance in deciphering the nature of provenance involved in the formation of sedimentary rocks with suitable examples (60).

### Section B

5. Write explanatory notes (200 words each) on any three of the followings: ( $20 \times 3 = 60$ )
  - a. Structural controls of ore localization.
  - b. Room and Pillar, and Long wall methods of Mining
  - c. Geobotanical method of Ore Prospecting, Add suitable Indian examples.
  - d. Earthquakes: Their predictions, and remedial measures for mitigation
6. Attempt the following:
  - a. Explain with suitable illustrations, various Textures and Structures of ores (five each) (30).
  - b. Write an account on Geology of Chromite deposits of SUKINDA, Orissa State. Add a note on their paragenesis (30),
7. Describe different types of 'Ore Reserves' Write in detail two of most common methods of Estimation of Ore Reserves. Add a note on their advantages and disadvantages (60).
8. Write an account on the following:
  - a. Describe the abundance of elements in Sun and in the Earth. Add a detailed note on the general characters and chemical composition of Jupiter and Mars (30)

b. What are Natural Hazards? Describe any four of them with their impact on the Environment.

Also add a note on the Mitigative measures of any two of them (30)