

# IAS Mains Geology 2003

## Paper II

### Section A

1. In about 200 words each, explain any three of the following:
  - a. Double refraction and birefringence 20
  - b. Textures in volcanic rocks: Petrogenetic significance 20
  - c. Retrograde metamorphism: The assemblage minerals, textures and their significance 20
  - d. Ripples, Dunes and cross-breeding: Origin and significance of Phosphate group of minerals. 3. Write explanatory notes on the following: Characteristics. 30 indicators to identify different source rocks. 60
2. Define provenance and its importance in Sedimentology. Describe the provenance
  - a. Stratabound and stratiform deposits: Characteristics and examples. 20
  - b. Heavy media separation as ore-dressing process
  - c. Isomorphism and isomorphous mixture, examples.
  - d. Fertilizers/and their impact on groundwater pollution
3. Describe the chemical composition, physical properties and mode of occurrence
  - a. Carbonatites; their mode of occurrence, petrography and petrogenesis. 30
  - b. Granulite terrains of India: Their mineral assemblages and petrogenetic

### Section B

5. In about 200 words each, write notes on any three of the following:
6. Write notes on the following, in brief:
  - a. Pyrometasomatic deposits: Their genesis and general characteristics. 30
  - b. Placer deposits of thorium in India: Their geological setting and mode of
7. Describe the methods of geological prospecting giving their applications and limitations. Add a note on geobotanical prospecting methods.
8. Write notes on the following, in brief:
  - a. Goldschmidt's geochemical classification of the elements with examples.
  - b. Legislative measures for environmental protection in India.