

Sl. No. 3383

B-JGT-K-HFB

**GEOLOGY****Paper—II**

Time Allowed : Three Hours

Maximum Marks : 200

**INSTRUCTIONS**

Candidates should attempt Question Nos. 1 and 5 which are compulsory, and any **THREE** of the remaining questions, selecting at least **ONE** question from each Section.

The number of marks carried by each question or its part is indicated against each.

Answers must be written in **ENGLISH** only.

Neat sketches may be drawn, wherever required.

**Section—A**

1. In about 150 words each, answer any *four* of the following : 10×4=40
- (a) Describe application of XRD technique in understanding crystal structure.
- (b) Distinguish between Carlsbad twins and Polysynthetic twins in feldspars.
- (c) Describe, with neat sketches, nine types of perthites.

- (d) Explain Grade concept in regional metamorphism and their P-T conditions.
- (e) Enumerate the modern classification of sandstones.
2. Describe the carbonate group of minerals with respect to variation in their mineralogical and chemical composition, and diagnostic physical properties. Add notes on their paragenesis and alteration. 40
3. (a) Describe textures related to equilibrium and fractional crystallization process in Anorthite-Albite system. 20
- (b) What are granulites? Discuss P-T- $X_f$  conditions of granulite genesis. 20
4. Write explanatory notes on the following :  
10×4=40
- (a) Types of unconformity and their stratigraphic significance
- (b) Forearc and foreland sedimentary deposits
- (c) Origin of evaporites of Western Indian desert
- (d) Various primary sedimentary structures used in paleo-current determination in an undisturbed sedimentary sequence

## Section—B

5. Write critical notes on any *four* of the following in about 150 words each : 10×4=40
- (a) Unconformity type uranium mineralization with examples
  - (b) Essential compositional requirements of the minerals used in cement industry
  - (c) Description of the most suitable mining method followed for hydrothermal mineral deposits
  - (d) Role of trace elements in the petrogenesis of basalts
  - (e) Your views on the perceived weaknesses in existing laws for the prevention of atmospheric and groundwater pollution
6. (a) Describe mode of occurrence, composition and origin of chromite deposits associated with three types of ultramafic rocks. 20
- (b) Explain the geological setting and origin of the petroleum-bearing reservoir rocks in Bombay High. 20
7. Describe geological and geochemical prospecting methods for exploration of gold deposits in greenstone belts of India. 40

8. (a) Describe the structure and composition of the Lithosphere and the Asthenosphere. 20
- (b) What causes Tsunamis? Explain various mitigation and management measures undertaken in response to December 26 Tsunami that struck the East Indian coast. 20

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