

**A-JGPT-M-HFP-B**

**GEOLOGY**

**PAPER—II**

**( CONVENTIONAL )**

Time Allowed : Three Hours

Maximum Marks : 200

**QUESTION PAPER SPECIFIC INSTRUCTIONS**

**Please read each of the following instructions carefully  
before attempting questions**

There are EIGHT questions in all out of which FIVE are to be attempted.

Question Nos. 1 and 5 are compulsory. Out of the remaining SIX questions, THREE are to be attempted selecting at least ONE question from each of the two Sections A and B.

Attempts of questions shall be counted in chronological order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Answers must be written in ENGLISH only.

Neat sketches may be drawn, wherever required.

**SECTION—A**

1. Answer the following : 8×5=40
- (a) Write briefly about the isometric system, and enlist *four* mineral examples with chemical composition for each. 8
  - (b) Discuss in short the Mohs scale of hardness, listing the designated minerals of the scale. Is diamond ten times harder than talc? Justify your answer. 8
  - (c) Write about the parameters affecting the specific gravity of minerals. Does specific gravity help mineral identification? Give examples. 8
  - (d) Enumerate any *two* types of twinning in minerals with neat sketches and examples. 8
  - (e) Explain the importance of X-ray diffraction in understanding crystal structures. 8
2. Discuss the following : 20×2=40
- (a) Classification of silicate mineral structures with neat diagrams 20
  - (b) Utility of ACF and AKF diagrams 20
3. (a) Give a tabular classification of non-clastic rocks. Add briefly about their depositional environment. 20
- (b) Give an account of garnet group of minerals, and their significance in understanding the grades of metamorphism. 20
4. Explain the following : 10×4=40
- (a) Skarn structure 10
  - (b) Piezoelectricity 10
  - (c) Twinkling 10
  - (d) Load casts 10

**SECTION—B**

5. Answer the following : 8×5=40
- (a) Distinguish between the following : 8
- (i) Ore and Gangue minerals
  - (ii) Pit and Trench
  - (iii) Peat and Bog
  - (iv) Magnetite and Pyrolusite
- (b) Explain the following processes : 8
- (i) Sublimation
  - (ii) Residual concentration
  - (iii) Saline incursion
  - (iv) Lateritisation

- (c) Give the geological and geographical distribution in India of the following deposits : 8
- (i) Magmatic iron ore
  - (ii) Manganese ore
  - (iii) Copper ore
  - (iv) Peat
- (d) Write very brief notes on the following : 8
- (i) Stony meteorites
  - (ii) Tenor of ore
  - (iii) Abrasive minerals
  - (iv) Nife
- (e) Discuss briefly the following : 8
- (i) P-waves
  - (ii) Tephra
  - (iii) Jaw crusher
  - (iv) REE
6. (a) Discuss the geobotanical method of prospecting, adding a note on the relevant technique of sampling. 25
- (b) Briefly describe the stratigraphic controls of hydrocarbon prospecting. 15
7. (a) Describe the various methods of reserve estimation of ore deposits. 25
- (b) Explain briefly the National Mineral Policy. 15
8. (a) Discuss what important structures would be encountered if one takes a journey from the earth surface to the periphery of its core. 20
- (b) Explain the hazards escalated due to excessive anthropological interference with the normal environmental stability. 20

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