

14. What do you understand by essential, strategic and critical minerals? In this regard, discuss briefly the National Mineral Policy. 15

15. Write notes on the following : 15

- (a) Chromite ore mineralization in South India
- (b) Gossans and their significance
- (c) Cut-off grade and average grade ores

16. What are the different seismic methods? Briefly describe their applications in the petroleum exploration. 15

17. What is atmospheric window in electro-magnetic radiation? Describe its role in remote sensing. 15

18. "Indian remote sensing satellite programmes have made major strides." Discuss in light of this statement. 15

19. How does an aerial photograph differ from the satellite imageries? Elaborate various interpretation elements observed in deformed terrain in both images. 15

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Y13—400/12

7R5-2812

GEOLOGY, PRIMARY KNOWLEDGE OF REMOTE SENSING/PHOTO GEOLOGY (01)

Full Marks : 200 Time : 2 hours

Candidates are required to answer **thirteen** questions in all including Question No. 1 which is compulsory and answer **six** questions from Group—A and **six** questions from Group—B

The number of marks carried by each question is indicated at the end of the question.

1. Write short notes on any *ten* of the following : 5×10=50

- (a) Influent and effluent streams
- (b) Airborne magnetometer and their uses
- (c) Secondary minerals and their significance
- (d) Importance of primary structures of igneous rocks
- (e) Barrovian type of metamorphism
- (f) Pleochroism of a mineral
- (g) Aquifer, aquiclude and aquitard
- (h) Twinning in feldspar

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(Turn Over)

(2)

- (i) Tenor and grade of an ore
- (j) Hinge line and plunge of a fold
- (k) Advantage and limitations of remote sensing technology
- (l) Geological timescale
- (m) Mica in Kodarma mica belt, Jharkhand
- (n) Economic importance of iron ore deposit of Noamundi
- (o) Importance of fossils in dating geological events

GROUP—A

- 2. Describe the significance of isotopes in geological studies. 10
- 3. What do you understand by the term 'seismicity'? Explain why most earthquakes occur along or near the boundaries of the tectonic plates. 10
- 4. Describe the crystal structures of pyroxene and amphibole groups. 10
- 5. What are accessory plates? Describe the uses of Gypsum plate in optical studies. 10
- 6. Describe different radiometric methods in Geochronology. 10

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(3)

- 7. Explain how remote sensing is applicable in water resources. 10
- 8. Describe Gondwana coal deposits. Describe the stratigraphy of Gondwanas with emphasis on the coal deposits. 10
- 9. With the help of a neat sketch, describe Pelecypoda shell. 10
- 10. Describe the various types of mineralization in Singhbhum shear zone. 10

GROUP—B

- 11. Briefly describe the different types of primary sedimentary structures. Add a note on their significance. 15
- 12. What type of metamorphism occurs when an igneous body intrudes limestone rock? Discuss the various changes which take place during this metamorphism. 15
- 13. Name a few important dams which exist in Northern India. Discuss the ideal geological conditions which are essential in selecting site of a dam. 15

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(Turn Over)