

2024

**GEOLOGY**

**(Theory)**

**Full Marks: 70**

**Pass Marks: 21**

**Time: Three hours**

*All the questions are compulsory.*

*The figures in the right margin indicate full marks for the questions.*

**Answer question Nos. 1 to 7 by choosing the correct one from the four alternatives given as A, B, C and D and rewrite.**

1. The imaginary line in between mantle and core is known as – 1
  - (A) Mohorovicic discontinuity
  - (B) Conrad discontinuity
  - (C) Guttenberg discontinuity
  - (D) Inge Lehmann discontinuity
  
2. Streak of the mineral is defined as – 1
  - (A) colour of the mineral
  - (B) colour of the power of the mineral
  - (C) tendency to break down of mineral
  - (D) capable of reflecting light

P.T.O.

3. Which of the following have a particular relationship with internal atomic structure of the crystal ? 1
- (A) Symmetry elements of the crystal
  - (B) Faces of the crystal
  - (C) Edges of the crystal
  - (D) Solid angle of the crystal
4. Remains of plants and animals preserved by nature within the rocks are known as \_\_\_\_\_ . 1
- (A) minerals
  - (B) organic materials
  - (C) fossils
  - (D) inorganic materials
5. Select lamellibranch fossil from the following : 1
- (A) Spirifer
  - (B) Pecten
  - (C) Productus
  - (D) Atrypa
6. In India, gold is found more in – 1
- (A) Rajasthan
  - (B) Uttar Pradesh
  - (C) Jharkhand
  - (D) Karnataka

7. An example of complex ore is – 1
- (A) Magnetite
  - (B) Chalcopyrite
  - (C) Bauxite
  - (D) Haematite

**Answer Question Nos. 8 to 17 in one word or one sentence each.**

8. Why is the path of seismic wave curved in the interior of the earth? 1
9. How do you know how old the Earth is? 1
10. What is the fracture of a mineral? 1
11. Arrange the following minerals in ascending order of hardness. 1  
corundum, calcite, topaz and apatite.
12. Why does mineral quartz occur in shades of different colours? 1
13. How will you determine the hardness of a mineral? 1
14. What is the function of ligament in lamellibranch shell? 1
15. Why are index fossils very useful to geologist? 1
16. Differentiate pallial sinus from the simple pallial line. 1
17. Why are coal and petroleum known as “mineral fuel”? 1

*Answer Question Nos. 18 to 27 in about 30-40 words each.*

18. Define volcanoes. 2
19. Distinguish between constructive and destructive plate margin. 2
20. Define mineral. 2
21. Compare the similarity and contrast between normal class of Tetragonal and Hexagonal systems. 2
22. Convert the following Weiss symbol into Miller indices : 2
  - (a)  $\infty, \infty b, \infty c$
  - (b)  $a, 2b, \infty c$
23. What are the favourable geologic conditions for preservation of fossils ? 2
24. What may happen if jelly-fish is buried within the sedimentary rocks of aquatic environment ? 2
25. Differentiate between simple and complex ore with example. 2
26. Define gangue minerals with example. 2
27. The high grade bauxite deposits in high Himalayas are not considered as ore mineral at present. Why ? Give reason. 2

*Answer Question Nos. 28 to 33 in about 40-50 words each.*

28. Explain briefly the characteristics of crust. 3

**OR**

Explain briefly the concept of Plate tectonics.

29. Why is calcite mineral used in construction of Nicol Prism ? 3

**OR**

How is calcite differentiated from Quartz on the basis of their physical, chemical and optical properties ?

30. How do fossils help in the discovery of new deposits of coal and petroleum ? 3

**OR**

Explain the reason why soft bodies of organisms are not generally preserved as fossils.

31. Describe briefly the Early magmatic deposits of mineral. 3

**OR**

Describe briefly the Late magmatic deposits of mineral.

32. How does tenor of an ore depend on the price of the metal ? Explain with example. 3

**OR**

'Gossan' is the indicator of occurrence of ore mineral deposits. Why ? Give reason.

33. Draw and label neat and clean diagram of both outer and inner views of lamellibranch shell. 3

**OR**

Draw and label neat and clean diagram of Gastropod shell.

*Answer Question Nos. 34 to 36 in about 150-200 words each.*

34. Explain the Plantesimal hypothesis for the origin of Earth. 5

**OR**

Explain the causes of Earthquake.

35. Describe the symmetry elements of Normal class of Tetragonal system and give two minerals crystallizing in this system. 5

**OR**

Describe the symmetry elements of Normal class of Isometric system and give two minerals crystallizing in this system.

36. Describe the morphological characters of Brachiopoda. 5

**OR**

Describe the morphological character of Gastropoda.