

2023
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 4 by choosing the correct one from the four alternatives given as A, B, C and D and rewrite.

1. The exact spot underneath the Earth's surface at which an earthquake originates is called _____ . 1
 - (A) Epicentre
 - (B) Focus
 - (C) Isoseismal
 - (D) Hyposeismal

2. Among the following minerals which is the hardest – 1
 - (A) Topaz
 - (B) Calcite
 - (C) Orthoclase
 - (D) Apatite

P.T.O.

3. In Brachiopoda, the two valves are opened or closed by _____ . 1
- (A) Ligament
(B) Umbo
(C) Muscles
(D) Foramen
4. An example of simple ore is _____ . 1
- (A) Chalcopyrite
(B) Chromite
(C) Baunite
(D) Pyrite

Answer Question Nos. 5 to 14 in one word or one sentence each.

5. Define Earthquake. 1
6. What is the state (medium) of the outer core ? 1
7. What is an interfacial angle of a crystal ? 1
8. Why is muscovite used in electrical industry ? 1
9. Define fossils. 1
10. Indicate the geological range of spirifer. 1
11. Write the definition of an ore. 1
12. What are the gangue minerals ? 1
13. Give any two examples of ore mineral formed under placer deposits. 1
14. Pick out the iron ore from the following ore minerals : 1
- Galena, Magnetite, Baunite and Haematite.

Answer Question Nos. 15 to 24 in about 30 – 40 words each.

15. Differentiate between constructive and destructive plate margins. 2
16. Predict the interior of the Earth with the help of seismic waves. 2
17. Define mineral and write a chemical composition of a mineral. 2
18. Distinguish between crystalline and amorphous minerals with example. 2
19. What may happen in the study of minerals if Mohs did not prepare the hardness scale ? 2
20. What are the factors for the preservation of organisms as fossils ? 2
21. Distinguish between class Inarticulata and Articulata of Phylum Brachiopoda. 2
22. If the organisms were not preserved as fossils, then what are the likely difficulties to be faced by Geologists. 2
23. Classify the mineral deposits according to Bateman, 1942. 2
24. High grade bauxite deposits of Himalayan ranges are not considered as ore minerals. Why ? Give reason. 2

Answer Question Nos. 25 to 31 in about 40 to 50 words each.

25. Engineering Geology is a branch of Geology that is so important now-a-days. Why ? Give reasons. 3
26. Explain the physical properties and chemical composition of mineral Quartz and Corundum. 3
27. The tenor of ore varies from time to time, from place to place and from ore to ore. Why? Give reasons. 3
28. Differentiate between lamellibranchs (pelecypods) and brachiopods. 3
29. Draw and label a neat diagram of gastropod shell. 3

30. Distinguish between Early magmatic deposits and Late magmatic deposits. 3
31. Gossan is indicator of occurrence of ore deposits. Why ? Give reasons. 3

Answer to Question Nos. 32 to 34 in about 150 – 200 words.

32. Explain the Nebular hypothesis for the origin of Earth. 5

OR

Explain the causes of Earthquakes.

33. Describe the morphological characters of lamellibranchs. 5

OR

Describe the morphological characters of gastropods.

34. Describe the arrangement of crystallographic axes of Normal class of Hexagonal system and give two minerals crystallizing in this system. 5

OR

Describe the arrangement of crystallographic axes of Normal class of cubic system and give any 2 minerals crystallizing in the cubic system.