



**QDB – 32**

**GEOLOGY**

Time : 3 Hours]

[Total Marks : 200

**Instructions :** 1) The question paper has been divided into **three** parts, “**A**”, “**B**” and “**C**”. The number of questions to be attempted and their marks are indicated in **each** part.

2) Medium of question paper is “**English**”. Please write in **English language only**.

3) Answer to all questions of each part should be written continuously in the script and should not be mixed with those of other parts. In the event of candidate writing answers to questions in a part different to the one which the question belongs, the question shall not be assessed by the examiner.

4) The candidate should write the answer within the limit of words prescribed in the parts “**A**”, “**B**” and “**C**”.

PART – A

Marks : 40

**Instructions :** 1) Question No. **1 to 20**.

2) Attempt **all 20** questions.

3) **Each** question carries **2** marks.

4) Answer should be given approximately in **20 to 30** words.

1. List the major elements of the Earth’s crust in the order of their abundance.
2. Define isotopes and list two isotopic systematics which are useful in estimation of geological time.
3. Name the various agents of weathering and erosion.
4. What do you understand by Karst topography ?
5. What causes the formation of a strike-slip fault ?
6. What do you mean by the term Tectosilicates ?

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7. Define the term amorphous in minerals.
8. Define a Basal Pinacoid.
9. What do you mean by ophitic texture in igneous rocks ?
10. List two typical minerals each of basalt and granite.
11. What is polymorphism ? List the polymorphs of aluminosilicates ( $\text{Al}_2\text{SiO}_5$ ).
12. State the Principle of Uniformitarianism.
13. What are cross-bedding structures ?
14. Differentiate between unconformity and hiatus.
15. How are evaporites formed ? Give suitable examples.
16. What is an index fossil ?
17. What do you mean by syngenetic and epigenetic ore deposits ?
18. What do you mean by the term 'Adit' in mining ?
19. Define Froth Flotation.
20. Define aquifer. What is a perched aquifer ?

## PART – B

Marks : 60

- Instructions :** 1) Question No. 21 to 32.  
2) Attempt **all 12** questions.  
3) **Each** question carries **5** marks.  
4) Answer should be given approximately in **50 to 60** words.

21. Distinguish between dendritic and trellis drainage pattern.
22. What do you understand by the term 'Gossan' ? What are the typical features which help in identifying a gossan ?
23. Describe major vertebrate fauna reported from the Siwalik rocks and discuss their stratigraphic significance.
24. What is eutectic point ? Considering a binary melt as a chemical system, state degree of freedom of the system at eutectic point.



25. What do you understand by Miller indices ? Write Miller indices for a plane given that the plane intersects a-axis at 1/3 of axial length and b- and c-axes at 1/2 the axial lengths. All the intersections are towards the positive end of the crystallographic axes.
26. How would one differentiate between a normal and a reverse fault ?
27. Describe the major mineral occurrences in Gujarat.
28. What are the various stages of human evolution ?
29. Describe the significance of foraminifers in biostratigraphy.
30. What are the major criteria for selecting a site for a concrete dam ?
31. Describe the salient features of oceanic crust.
32. Discuss the application of remote sensing in ground-water exploration.

PART – C

Marks : 100

**Instructions :** 1) Question No. **33 to 39**.

2) Attempt **any 5** out of **7** questions.

3) **Each** question carries **20** marks.

4) Answer should be given approximately in **200** words.

33. Describe Udden-Wentworth grain size classification scheme. What are the size-related terms commonly used for chemically precipitated carbonate rocks ?
  34. What are ammonites ? Describe types of sutures present in these and their utility in stratigraphy.
  35. Describe the lateral divisions of the Himalayas including the nature of bounding surfaces of each unit. What are the significant characters of each of these units ?
  36. Discuss the Barovian zones of metamorphism.
  37. Define pure and simple shear. Describe prolate and oblate strain ellipsoid and its significance in understanding deformation of rocks.
  38. Discuss the human impact on climate, land and water resources.
  39. Discuss Cambay-rift system and its economic significance.
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