

**2 0 1 5**

**GEOLOGY**

*Full Marks : 70*

*Time : 3 hours*

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

*General Instructions :*

- (i) Write all the answers in the Answer Script.
- (ii) Attempt Part—A (Objective Questions) serially.
- (iii) Attempt all parts of a question together at one place.

( PART : A—OBJECTIVE )

( Marks : 35 )

**1.** Choose and write the correct answer of the following : 1×5=5

- (a) If the mineral grains in a sedimentary rock are interlocking with each other, then the rock is a/an
- (i) rudaceous
  - (ii) clastic
  - (iii) argillaceous
  - (iv) non-clastic sedimentary rock

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- (b) (i) Brachiopods  
(ii) Lamellibranches  
(iii) Gastropods  
(iv) Cephalopods  
are helically coiled.
- (c) Nummulite is a fossil from  
(i) Spiti  
(ii) Meghalaya  
(iii) Sone Valley  
(iv) Dharwar
- (d) The term 'gossan' is associated with  
(i) magmatic ore deposits  
(ii) replacement deposits  
(iii) placer deposits  
(iv) oxidation and supergene enrichment deposits
- (e) The cause of landslides is mostly due to a combination of  
(i) shear stress and water  
(ii) normal stress and water  
(iii) water and plant growth  
(iv) shear stress and restricted grazing

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2. State whether the following statements are *True* or *False* : 1×5=5

- (a) Sulfur is released from coal mines.
- (b) Nickel, chromium or platinum are generally early magmatic deposits.
- (c) Chambers in gastropods are separated by suture lines.
- (d) Sun cracks are produced on sands.
- (e) The Khasi Group is of Cenozoic Age.

3. Fill in the blanks : 1×10=10

- (a) The transformation of loose sediments into lithified rocks is by the process called —.
- (b) Sedimentary rocks of — origin are called clastic sedimentary rocks.
- (c) The environment that supports the most abundant life forms is the — environment.
- (d) The removal of an organism by solution having a hollow in the rock forms a/an —.

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- (e) Establishing connection between rocks from two different areas is called —.
- (f) A fossil with a limited life span but having wide geographical distribution, and very useful for correlation, is called a/an — fossil.
- (g) The useless part of ore is called —.
- (h) Petroleum originates in some rocks which are called — rocks.
- (i) The ease through which fluid moves through a rock is called —.
- (j) Below the — all the pores of the rock are completely filled with groundwater.

4. Express each of the following in 1 word : 1×3=3

- (a) Tabular form of sedimentary deposit
- (b) A mixture of gangue and tenor
- (c) Percentage of voids or empty spaces in rock

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5. Match *Column—A* with *Column—B* and write the corresponding numbers : 1×6=6

<i>Column—A</i>	<i>Column—B</i>
(a) Correlation	(i) Paleozoic of Spiti
(b) AMD	(ii) Thin layer
(c) Meekoceras	(iii) Coal
(d) Limestone, sandstone	(iv) Thick layer
(e) Lamination	(v) Petroleum
(f) Afforestation	(vi) Fossils
	(vii) Landslides
	(viii) Cretaceous of Meghalaya

6. Write very briefly on any six of the following : 1×6=6

- (a) Lithification
- (b) Fluvial environment
- (c) Petrification
- (d) Charnockite
- (e) Primary mineral deposit
- (f) Reservoir rock
- (g) Definition of environment
- (h) Disintegration of rocks

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( PART : B—DESCRIPTIVE )

( Marks : 35 )

Answer **five** questions, selecting **one** from each Group

GROUP—A

( **Sedimentology** )

7. Write a note on the genetic classification of sedimentary rocks with suitable examples. 7
8. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Environments of deposition
  - (b) Current bedding
  - (c) Diagenesis

GROUP—B

( **Paleontology** )

9. Outline the morphology of a typical lamellibranch shell. Draw neat sketch(s). 6+1=7
10. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Glossopteris versus gangopteris
  - (b) Suture lines in cephalopods
  - (c) Differences between brachiopods and lamellibranchs

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GROUP—C

( **Stratigraphy** )

11. Write the stratigraphy of the Vindhyan Supergroup of the Sone Valley in tabular form with very brief petrographic notes of the lithologic units. 7
12. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Jaintia Group
  - (b) Correlation
  - (c) Fossils from the Paleozoic rocks of Spiti

GROUP—D

( **Mineral and Energy Resources** )

13. Explain briefly the magmatic processes of formation of mineral deposits with examples. 7
14. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Mode of occurrence of iron ores in India
  - (b) Primary and secondary mineral deposits
  - (c) Distribution of coal deposits in India

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GROUP—E

**( Engineering Geology, Groundwater, Environment  
and Disaster Studies )**

- 15.** Amplify the geological considerations in the construction of dams. 7
- 16.** Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Aquifer
  - (b) Landslides
  - (c) Hydrologic cycle

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