

**2 0 1 8**

**GEOLOGY**

**( Theory )**

*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) An arenaceous rock is
- (i) coarse grained
  - (ii) medium grained
  - (iii) fine grained
  - (iv) very fine grained

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- (b) Silicified wood is an example of
- (i) petrification
  - (ii) carbonization
  - (iii) mould
  - (iv) cast
- (c) The proper rock sequence from older to younger in the stratigraphy of upper Assam is
- (i) Barail, Tipam, Surma, Dupitila
  - (ii) Dihing, Dupitila, Tipam, Surma
  - (iii) Barail, Dupitila, Surma, Tipam
  - (iv) Barail, Surma, Tipam, Dupitila
- (d) Choose the odd one :
- (i) Magmatic concentration deposit
  - (ii) Pegmatitic deposit
  - (iii) Fissure vein
  - (iv) Placer deposit
- (e) The component(s) of environment is/are
- (i) lithosphere
  - (ii) lithosphere and biosphere
  - (iii) lithosphere, biosphere and atmosphere
  - (iv) lithosphere, biosphere, atmosphere and hydrosphere

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

- (a) The direct effect of underground mining is ground subsidence.
- (b) Graded bedding is associated with decrease in stream power.
- (c) The ammonite suture is the most developed suture type.
- (d) The Muth quartzites occur between Haimanta and Kanawar groups.
- (e) Deposits that form later than the enclosing rocks are syngenetic mineral deposits.

3. Fill in the blanks : 1×10=10

- (a) Next to the continental shelf seaward is the \_\_\_\_\_ environment.
- (b) Very thin beds are called \_\_\_\_\_.
- (c) Benthonic organisms are \_\_\_\_\_ organisms.
- (d) Coal is an example of \_\_\_\_\_ mode of preservation of fossils.

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- (e) An example of an igneous intrusion into the Dharwars is \_\_\_\_\_.
- (f) The Lakadong limestones belong to the \_\_\_\_\_ group.
- (g) Petroleum originates from \_\_\_\_\_.
- (h) Low temperature mineral deposits are called \_\_\_\_\_ deposits.
- (i) The uppermost level of groundwater is defined by the \_\_\_\_\_.
- (j) Rocks dipping upstream are \_\_\_\_\_ in the construction of dams.

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

- (a) A geomorphological unit in which sediments are laid down
- (b) Establishment of relationship between rocks of two different areas
- (c) The action of reducing the severity of a natural event

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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) Argillaceous	(i) Ultrabasic rock
(b) Suture	(ii) Hypersthene
(c) Palial sinus	(iii) Sandstone
(d) Petroleum reservoir	(iv) Cephalopod
(e) Chromite	(v) Lamellibranch
(f) Charnockite	(vi) Shale
	(vii) Conglomerate

6. Write 1 (one) or 2 (two) line(s) on any six of the following : 1×6=6

- (a) Bed
- (b) Habitat
- (c) Correlation
- (d) Secondary mineral deposit
- (e) Dams
- (f) Conglomerate
- (g) Gangue and tenor

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( PART : B—DESCRIPTIVE )

( Marks : 35 )

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

GROUP—A

( **Sedimentology** )

7. List eight sedimentary structures. Write on any three of them. Draw sketches. 2+5=7
8. Write notes on any *two* of the following : 3½×2=7
- (a) Diagenesis
  - (b) Non-clastic sedimentary rocks
  - (c) Environment of deposition

GROUP—B

( **Paleontology** )

9. Outline the morphology of a typical cephalopod shell. Draw a neat labelled sketch. 6+1=7
10. Write notes on any *two* of the following : 3½×2=7
- (a) Gondwana flora
  - (b) Differences between brachiopod and lamellibranch shells
  - (c) Paleontology and paleo environment

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GROUP—C

( **Stratigraphy** )

11. Write the stratigraphy of the Dharwar supergroup (after Rama Rao) in tabular form with very brief petrographic note. 7
12. Write notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Khasi group
  - (b) Lithostratigraphy
  - (c) Lithostratigraphy of the Vindhyan supergroup

GROUP—D

( **Mineral and Energy Resources** )

13. Write brief notes on the origin, mode of occurrence and distribution of hematite deposits in India. 7
14. Write notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Origin of coal
  - (b) Placer deposits
  - (c) Accumulation of petroleum

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GROUP—E

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

- 15.** How does structure of rocks affect the stability of dams? Supplement your answer with neat sketches. 7
- 16.** Write notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Causes of landslides
  - (b) Hydrologic cycle
  - (c) Impact of open-cast mining on the environment

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