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HS/XII/Sc/G1/20

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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 :

1×6=6

(a) Fine grained sediments of mechanical origin are called

- (i) rudaceous
- (ii) arenaceous
- (iii) argillaceous
- (iv) non-clastic materials

(2)

(b) Pick the odd one out from the following.

(i) Brachiopod

(ii) Lamellibranch

(iii) Gastropod

(iv) Cephalopod

(c) Daonella shales belong to

(i) Vindhyan supergroup

(ii) Paleozoic rocks of spiti

(iii) Tertiary rocks of Upper Assam

(iv) Cretaceous rocks of Meghalaya

(d) The Khetri Belt in Rajasthan is famous for the occurrence of economic deposits of

(i) iron

(ii) copper

(iii) chromite

(iv) mica

(3)

(e) The main or primary cause of landslide is

- (i) nature of material
- (ii) water
- (iii) deforestation
- (iv) earthquake

(f) Ore deposits that form after the formation of the enclosing rocks are

- (i) syngenetic
- (ii) epigenetic
- (iii) exogenetic
- (iv) endogenetic

2. State whether the following sentences are 'True' or 'False' : 1×6=6

- (a) Limestone is a non-clastic rock.
- (b) Lamellibranchs are bivalved and the two valves are called the ventral and dorsal valves.
- (c) Gondwana rocks are also observed in Meghalaya.
- (d) Oxidation and supergene enrichment leads to the formation of sulphide ore deposits.
- (e) Unconformity is a structural trap for petroleum.
- (f) Dolomites and marbles are good foundation rocks for dams.

(4)

3. Fill in the blanks :

1×6=6

- (a) In stratigraphic studies, fossils are of great help in ____.
- (b) Secondary beds at an angle to the main bedding planes are called ____ beds.
- (c) Nickel, chromium and platinum are ____ magmatic deposits.
- (d) Salt domes are ____ traps for petroleum.
- (e) Solution of fossils leaves a ____ in the rock.
- (f) Acidic water from coal mines with high concentration of metals is defined as ____.

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

1×5=5

- (a) A natural phenomenon that leads to the loss of property and death of humans
- (b) A solid stratified rock composed mainly of carbonized plants
- (c) Swimming organism on the top layer of oceans
- (d) A cloud of gases, dusts and icy particles in space
- (e) Description of stratified rocks on the basis of rock characters

(5)

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

<i>Column—A</i>	<i>Column—B</i>
(a) Residual deposits	(i) late magmatic deposits
(b) Haimanta	(ii) landslides
(c) Residual magma	(iii) petroleum
(d) Shear stress	(iv) sedimentary processes
(e) Organic life	(v) Dharwar
(f) Permeability	(vi) ease of flow
	(vii) dams
	(viii) late magmatic bodies
	(ix) Paleozoic of spiti

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

- (a) Bedding
- (b) Correlation
- (c) Ore and tenor
- (d) Water table
- (e) Bauxite
- (f) Ptillophyllum

(6)

(PART : B—DESCRIPTIVE)

(Marks : 35)

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

GROUP—A

(**Sedimentology**)

7. Highlight the sub-environments of the marine environment. 7
8. Write notes on any *two* of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Non-clastic sedimentary rocks
 - (b) Transportation and deposition of sediments
 - (c) Size and shape of sediments

GROUP—B

(**Paleontology**)

9. Outline the morphology of a typical cephalopod shell. Draw neat sketches. 7
10. Write notes on any *two* of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Lower Gondwana flora
 - (b) Differences between brachiopod and lamellibranch shells
 - (c) Any three modes of preservation of fossils

(7)

GROUP—C

(**Stratigraphy**)

- 11.** Write the stratigraphy of the Vindhyan supergroup in tabular form with brief petrographic notes on each rock unit. 7
- 12.** Write notes on any *two* of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Barail group
 - (b) Khasi group
 - (c) Igneous intrusives into the Dharwar supergroup

GROUP—D

(**Mineral and Energy Resources**)

- 13.** Outline the origin and migration of petroleum. Write briefly on the types of structural traps for petroleum with sketches. $2 + 5 = 7$
- 14.** Write notes on any *two* of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Types of coal
 - (b) Distribution of chromite deposits in India
 - (c) Metasomatic ore deposits

(8)

GROUP—E

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

- 15.** Write an essay on the impact of mining on the environment. 7
- 16.** Write notes on any *two* of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Aquifer and its types
 - (b) Landslides
 - (c) Favorable geological condition for a dam site

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