Total No. of Printed Pages—8

HS/XII/Sc/Gl/14

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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) Pick the odd one out.

(i) Beds

(ii) Ripple marks

(iii) Current beds

(iv) Nodules

(b) A free-swimming organism is called

(i) benthonic

(ii) nektonic

(iii) planktonic

(iv) sessile

(c) The Barail group overlies the

(i) Jaintia group

(ii) Surma group

(iii) Tipam group

(iv) Dihing group

(d) The ore of copper is

(i) siderite

(ii) gibbsite

(iii) phlogopite

(iv) chalcopyrite

(e) The term intimately associated with groundwater is

(i) infiltration

(ii) overland flow

(iii) evaporation

(iv) evapotranspiration

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

(a) The sedimentary structure associated with scouring action by water currents is load casts.

(b) The environment that supported abundant life forms in the earth has always been the continental environment.

(c) The Lower Vindhyans are calcareous of fluvial origin while the Upper Vindhyans are mainly arenaceous of marine origin.

(d) Exogenetic processes of formation of mineral deposits are illustrated by sedimentary processes.

(e) Earth's potable water occurs mostly as groundwater rather than surface water.

3. Fill in the blanks : 1×10=10

(a) Loose sediments get lithified by a process called ——.

(b) —— is defined as the sharpness of edges and corners of a sediment.

(c) Brachiopods differ from lamellibranchs in that it has —— valves.

(d) The dissolving of a fossil and leaving a hollow in the rock is called ——.

(e) The Chengapara formation belongs to the —— group.

(f) The upper part of the Kuling group in Spiti is made up of —— shales.

(g) Makum is an example of a/an —— field from Upper Assam.

(h) Limestones serve as a —— foundation for dams.

(i) A formation that can store large quantities of water and yield water freely to wells is called a/an ——.

(j) Petroleum and coal are examples of —— minerals.

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

(a) Beds lesser than 1 cm

(b) Establishment of time relations between rocks from different sections

(c) Shallow marine environment

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

Column—A	*Column—B*
(a) Argillaceous	*(i)* Clay
(b) Sylhet trap	*(ii)* Ore
(c) Sulphur	*(iii)* Internal processes
(d) Glossopteris	*(iv)* Paleozoic
(e) Metal	*(v)* Gangue
(f) Endogenetic	*(vi)* Coal
	(vii) Sand
	(viii) Mesozoic

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

(a) Lithification

(b) Ptillophyllum

(c) Environmental geology

(d) Mylliem granite

(e) Ore and tenor

(f) Acid mine drainage (AMD)

(g) Tsunami

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

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

GROUP—A

(Sedimentology)

7. Explain the processes of disintegration and decomposition of rocks. How do loose sediments get transformed to sedimentary rocks? 4+3=7

8. Write notes on any *two* of the following : 3½×2=7

(a) Classification of sedimentary environments

(b) Clastic and non-clastic sedimentary rocks

(c) Symmetrical ripples versus asymmetrical ripples

GROUP—B

(Paleontology)

9. Outline the morphological features of a cephalopod shell with neat sketches. 7

10. Write notes on any *two* of the following : 3½×2=7

(a) Paleontologic correlation

(b) Habits and habitats of organisms

(c) Common Gondwana flora

GROUP—C

(Stratigraphy)

11. Write the stratigraphy of the Dharwar supergroup in tabular form (after Rama Rao) with very brief petrographic notes. Add notes on the structures and associated igneous intrusions. 4+(1+2)=7

12. Write notes on any *two* of the following : 3½×2=7

(a) Fossils from the Paleozoic of Spiti

(b) Jaintia Group

(c) Correlation

GROUP—D

(Mineral and Energy Resources)

13. Mention all the different processes of formation of mineral deposits. Write any one such process in detail. 2+5=7

14. Write notes on any *two* of the following : 3½×2=7

(a) Oil traps

(b) Origin of coal

(c) Radioactive mineral deposits in India

GROUP—E

(Engineering Geology, Groundwater, Environment and Disaster Studies)

15. Mention in detail how different rock types and structures affect the stability and safety of a dam. 7

16. Write notes on any *two* of the following : 3½×2=7

(a) Causes of landslides

(b) Impact of surface and underground mining on the environment

(c) Aquifer

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