Total No. of Printed Pages—8

HS/XII/Sc/Gl/21

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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) Sedimentary particles ranging in size between $\frac{1}{16}$ mm to 2 mm are called

(i) clay

(ii) silt

(iii) sand

(iv) gravel

(b) Fossils are found in

(i) igneous rocks

(ii) sedimentary rocks

(iii) metamorphic rocks

(iv) All of the above

(c) The correct sequence from older to younger in the Tertiary rocks 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) Coal deposits of Meghalaya are associated with the

(i) Tipam group

(ii) Barail group

(iii) Jaintia group

(iv) Surma group

(e) Brachiopods attach themselves to the substratum with the help of

(i) beak

(ii) pedicle

(iii) teeth

(iv) ligament

(f) Ideally, an aquifer should possess

(i) high porosity

(ii) high permeability

(iii) high porosity and high permeability

(iv) low porosity and low permeability

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

(a) Sandstone is a clastic rock.

(b) The valves of a lamellibranch shell are equal in size.

(c) Closepet granite is associated with the Vindhyan supergroup.

(d) Hematite is an ore of aluminium.

(e) Ground subsidence occurs due to landslides.

(f) Glossopteris is a plant fossil found in the Lower Gondwana.

3. Fill in the blanks : 1×5=5

(a) In a graded bed, the particle size _____ upwards.

(b) Organisms with _____ parts are better preserved as fossils.

(c) The Vindhyan supergroup is _____ in age than the Dharwar supergroup.

(d) The metal content of an ore is called _____.

(e) _____ is the ease with which water or fluids move through a rock or soil.

4. Express each of the following in *1* (one) word : 1×6=6

(a) Beds with extreme thickness of less than 1 cm

(b) The oldest Tertiary rocks in Upper Assam

(c) A process where the hard parts of an organism converts into minerals or rock

(d) A number of individual beds with more or less similar characteristics

(e) A liquid hydrocarbon

(f) A structure constructed to impound water, used for various purposes

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

Column—A	*Column—B*
(a) Littoral zone	*(i)* Vindhyan supergroup
(b) Productus	*(ii)* Magmatic process
(c) Diamond bearing conglomerates	*(iii)* Marine environment
(d) Placer deposits	*(iv)* Porosity
(e) Hydrothermal deposit	*(v)* Brachiopod
(f) Percentage of voids/ empty spaces in rocks	*(vi)* Dharwar supergroup
	(vii) Mechanical concentration
	(viii) Mixed environment
	(ix) Permeability
	(x) Lamellibranch

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

(a) Clastic sedimentary rocks

(b) Conditions for preservation of fossils

(c) Gangamopteris

(d) Uses of mica

(e) Confined aquifer

(f) Economic importance of Tertiary rocks of Upper Assam

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

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

GROUP—A

(**Sedimentology**)

7. Name some common sedimentary structures and write briefly on any two structures. 1+3+3=7

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

(a) Transitional environment

(b) Non-clastic texture

(c) Neritic zone

GROUP—B

(**Paleontology**)

9. Describe the morphology of a typical brachiopod shell with the help of neat labelled sketches. 5+2=7

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

(a) Index fossils

(b) Dentitions in lamellibranch

(c) Important uses of fossils

GROUP—C

(**Stratigraphy**)

11. Write the stratigraphy of the Dharwar supergroup (after Rama Rao) in a tabular form. Add brief petrographic notes on each unit. 3+4=7

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

(a) Jaintia group

(b) Haimanta group

(c) Semri group

GROUP—D

(**Mineral and Energy Resources**)

13. List the different magmatic processes of formation of mineral deposits. Write briefly on any two of the processes. 1+3+3=7

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

(a) Origin of coal

(b) Placer deposits

(c) Chromite deposits in India

GROUP—E

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

15. Give an account on the geological consideration in the construction of dams. 7

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

(a) Hydrologic cycle

(b) Remedial measures to control landslides

(c) Impact of underground mining on the environment

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