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**HS/XII/Sc/G1/26**

**2 0 2 6**

**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 any six of the following : 1×6=6

(a) Rudaceous rocks are rocks

- (i) of the size of boulders and pebbles
- (ii) of the size of common sand
- (iii) that are finer than common sand but coarser than clay

- (b) In lamellibranchs with taxodont type of dentition,
  - (i) two distinct types of teeth can be recognized
  - (ii) the hinge line on either side of the valves exhibits a number of more or less similar teeth and sockets
  - (iii) the teeth are simple
- (c) The Barail series comprises of
  - (i) Therria Stage, Sylhet Stage, Kopili Stage
  - (ii) Laisong Stage, Jenam Stage, Renji Stage
  - (iii) Bhuban Stage, Boka Bil Stage
- (d) Marine organic animals give rise to
  - (i) coal
  - (ii) water
  - (iii) petroleum
- (e) Organisms capable of swimming against a current are said to be
  - (i) planktonic
  - (ii) nektonic
  - (iii) benthonic

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(f) Haematite is an ore of

(i) aluminium

(ii) iron

(iii) lead

(g) Acid rain is mainly caused due to

(i) open-cast mining

(ii) underground mining

(iii) Neither (i) nor (ii)

(h) Cavity filling falls under

(i) magmatic concentration

(ii) evaporation

(iii) hydrothermal processes

**2.** State whether the following statements are True or False

(any six) :

1×6=6

(a) The term 'fluvial' is associated with river.

(b) Physical weathering is associated with decomposition.

(c) Rudaceous rocks are non-clastic rocks.

(d) Moulds are hollows left within the rock beds.

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- (e) Jaintia Series comprises of three stages.
- (f) The diamond pipes of South Africa is formed due to magmatic dissemination, segregation and injection respectively.
- (g) Coal deposits of good quality are obtained in India from the sedimentary formations of Lower Gondwana age.
- (h) A reservoir may fail as a result of rapid accumulation of silt in it.

**3.** Fill in the blanks (any six) :

1×6=6

- (a) Vibrations, both feeble and strong, set up on the earth's surface are described as \_\_\_\_.
- (b) Gastropods show \_\_\_\_ coiling of the shell.
- (c) Coal is a \_\_\_\_ deposit.
- (d) The rocks of sedimentary origin occur in the form of \_\_\_\_ or beds.
- (e) The exact spot underneath the earth's surface at which an earthquake originates is known as its \_\_\_\_.
- (f) In India, the Lower Gondwana rocks of the Permo-Carboniferous age are characterized by the presence of \_\_\_\_ flora.

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(g) \_\_\_\_\_ is the matching of rock layers based on their physical characteristics.

(h) An \_\_\_\_\_ is an underground geological formation that can store and transmit groundwater.

4. Express each of the following in 1 (one) word (any *five*) : 1×5=5

(a) The process of matching up of rock layers from different locations to determine if they are of the same age or have a similar stratigraphic position.

(b) Organisms that are very useful in establishing the correct age of the rock beds in which they occur.

(c) The line along which the fringes of a septum of a cephalopod meet the inner side of the shell.

(d) The univalved shell that commonly consists of a spirally coiled, elongated, tubular body looking more or less like a screw.

(e) Texture that is formed from the accumulation of rock fragments.

(f) Metamorphic processes form new minerals by transforming existing rocks under high temperature and pressure.

(g) The minute spaces or holes through which liquid may pass.

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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) Bed load	(i) Gondwana
(b) Placer	(ii) Spiti
(c) Muth Quartzite	(iii) Assam
(d) <i>Glossopteris</i>	(iv) Deposition
(e) Conglomerate	(v) Wet soil
(f) Landslides	(vi) Mechanical concentration
	(vii) Rudaceous
	(viii) Transportation

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

- (a) Pyrometasomatism
- (b) Lamination
- (c) Bituminous coal
- (d) Gossan
- (e) Radioactive mineral
- (f) Permeability
- (g) Non-clastic sediments
- (h) Water table

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( PART : B—DESCRIPTIVE )

( Marks : 35 )

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

GROUP—A

( **Sedimentology** )

7. Differentiate between disintegration and decomposition.  
Write an explanatory note on lithification.  $4+3=7$
8. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Argillaceous rocks
- (b) Concretions
- (c) Size of grains
9. Into how many categories the sedimentary environments are classified? Write notes on any two of the marine environment.  $3+2+2=7$

GROUP—B

( **Palaeontology** )

10. Outline the morphology of a typical gastropod shell with a neat labelled sketch.  $6+1=7$
11. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Types of suture in cephalopods
- (b) *Glossopteris*
- (c) Morphology of a brachiopod

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12. Define fossil. Explain briefly the different modes of preservation of fossil. 1+6=7

GROUP—C

( **Stratigraphy** )

13. Outline the lithostratigraphy of Palaeozoic of Spiti in tabular form. 7
14. Write short notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Upper Vindhyan
  - (b) Tipam Group
  - (c) Jaintia Group
15. Write briefly on the Pre-Cambrian of Dharwar Supergroup of Karnataka. 7

GROUP—D

( **Energy and Mineral Resources** )

16. Explain the formation of economic minerals by magmatic processes. 7
17. Write notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Mode of occurrence of petroleum
  - (b) Distribution of radioactive minerals in India
  - (c) Different types of coal
18. Give an account on the origin and distribution of bauxite in India. 7



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GROUP—E

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

- 19.** Describe the geological considerations required for the construction of dams. 7
- 20.** Write notes on any *two* of the following :  $3\frac{1}{2}\times 2=7$
- (a) Occurrence of groundwater/aquifer
  - (b) Mitigation of landslides
  - (c) Effects of an earthquake
- 21.** What is an opencast mining? Describe its impact on the environment.  $1+6=7$

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