Total No. of Printed Pages—8

**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

*(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

*(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.

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

| *Column—A* | *Column—B* |
|---|---|
| *(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)* Ptillophylum

## ( 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 : 3½×2=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 : 3½×2=7

*(a)* Lower Gondwana flora

*(b)* Differences between brachiopod and lamellibranch shells

*(c)* Any three modes of preservation of fossils

## 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 : 3½×2=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 : 3½×2=7

*(a)* Types of coal

*(b)* Distribution of chromite deposits in India

*(c)* Metasomatic ore deposits

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 : 3½×2=7

*(a)* Aquifer and its types

*(b)* Landslides

*(c)* Favorable geological condition for a dam site

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