

GROUP – D

(Igneous Petrology)

- 13.** Write brief notes on the common igneous textures related specifically to mutual relation between grains. Draw neat sketches. 7

Or

- 14.** Answer **any two** of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Write on Extrusive Igneous rocks and their distinctive textures and/or structures.
 - (b) Distinguish discontinuous and continuous reaction series.
 - (c) Write a note on the concept of magmatic differentiation. List the processes of magmatic differentiation.

GROUP – E

(Metamorphic Petrology)

- 15.** Explain in words any two types of metamorphism. $3\frac{1}{2} + 3\frac{1}{2} = 7$
- Or
- 16.** Answer **any two** of the following : $3\frac{1}{2} \times 2 = 7$
- (a) Metamorphic grades
 - (b) Write notes on any two metamorphic textures.
 - (c) Distinguish schistosity from gneissosity.

★★★

2020**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 : $1 \times 6 = 6$
- (a) The geological period immediately following Devonian is
 - (i) Cambrian
 - (ii) Carboniferous

(6)

- (c) Anticline
- (d) Felsic minerals
- (e) Gneissic structure
- (f) Dyke

(PART : B-DESCRIPTIVE)

(Marks : 35)

Answer five questions selecting one from each Group

GROUP – A

(General Geology)

7. Define weathering and denudation. How does running water bring about weathering? 2 + 5 = 7

Or

8. Answer any two of the following : $3\frac{1}{2} \times 2 = 7$

- (a) River meander and associated features.
- (b) Draw a neat labelled sketch of the earth's interior.
- (c) Tectonic causes of earthquakes.

(3)

- (e) A medium grade metamorphism is indicated by the presence of the mineral

- (i) chlorite
- (ii) garnet
- (iii) kyanite
- (iv) sillimanite

- (f) The average density of the earth is

- (i) 2.60
- (ii) 3.20
- (iii) 5.52
- (iv) 8.20

2. State 'True' or 'False' : $1 \times 6 = 6$

- (a) The mildest of volcanic eruptions is the Hawaiian type.
- (b) Isotropic minerals exhibit double refraction but anisotropic minerals do not.
- (c) The color of a mineral between positions of extinction is called interference color.
- (d) Sills are discordant bodies in country rocks.

(4)

- (e) Quartz crystallizes early from a basaltic magma.
- (f) Two or more parallel joints make up a joint system.

3. Fill in the blanks : 1 × 6 = 6

- (a) The transverse profile of a river valley is _____.
- (b) The term 'resinous' is associated with the property of _____ of a mineral.
- (c) When smaller crystals are embedded within larger crystals, the texture is called _____.
- (d) The temperature at which two minerals crystallize simultaneously is called the _____ point.
- (e) At great depths, the deformation of rocks is likely to be _____ type of deformation.
- (f) The metamorphic structure produced under very high temperature and pressure conditions is the _____ structure.

4. Express in one word : 1 × 5 = 5

- (a) Outer rigid part of the earth.
- (b) Fine grained minerals around larger crystals in igneous rocks.

(5)

- (c) A very large division of geological time.
- (d) Mixing of magma and country rocks.
- (e) Minerals appearing dark under crossed-Nicols in a microscope.

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

Column A	Column B
(a) Wall	(i) vesicular
(b) Mafic	(ii) banded
(c) Schistose	(iii) meander
(d) Volcanics	(iv) fold
(e) Plunge	(v) nebula
(f) Earth	(vi) pyroxene, biotite
	(vii) fault
	(viii) quartz, feldspar
	(ix) foliated platy.

6. Answer in one or two lines : 1 × 6 = 6

- (a) Point bar
- (b) Dip and plunge

(2)

(iii) Cretaceous

(iv) Cenozoic

(b) The vibration of light along one definite plane is called

(i) polarization

(ii) pleochroism

(iii) double refraction

(iv) anisotropism

(c) The actual movement along faults is called

(i) fault plane

(ii) heave

(iii) throw

(iv) slip

(d) Fragments of country rocks within magmas are called

(i) pillow structure

(ii) flow structure

(iii) xenolith

(iv) protolith

(7)

GROUP – B

(Crystallography and Mineralogy)

9. List the symmetry elements of the Normal class of the Isometric System. Draw a clinographic sketch of the Isometric System. List the forms developed. Name a mineral crystallizing in the Isometric System.

Or $1\frac{1}{2} + 1 + 4 + \frac{1}{2} = 7$

10. Write a note on **any two** of the following : $3\frac{1}{2} \times 2 = 7$

(a) Symmetry elements of crystals.

(b) Anisotropism.

(c) Double refraction.

GROUP – C

(Structural Geology and Geotectonics)

11. Define slip along faults. Write a note on the classification of faults based on slip, with sketches.

Or $1 + 6 = 7$

12. Answer **any two** of the following : $3\frac{1}{2} \times 2 = 7$

(a) Distinguish between symmetrical and asymmetrical folds and plunging and non-plunging folds.

(b) Write a note on joints.

(c) What are plate motion and plate boundaries.