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(November)

GEOLOGY

(Honours)

(GELH–501)

(Igneous and Sedimentary and Metamorphic Petrology)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **four** questions, selecting **one** from each Unit

(GROUP—A : IGNEOUS PETROLOGY)

UNIT—I

(Introduction)

1. Describe the physical properties of magma on the basis of temperature and viscosity; and explain the role of volatiles in magmatic crystallization.   3½+3½+7=14

(Turn Over)

2. Explain the crystallization of albite-anorthite system with the help of the phase rule. Write a note on the petrogenetic significance of the system. 10+4=14

UNIT—II

(**Mineralogy and Petrogenesis**)

3. (a) Discuss the origin of porphyretic texture, 7

(b) Write the mineralogical and textural features of the following rocks (any *two*) :
3½×2=7

(i) Tonalite

(ii) Pyroxenite

(iii) Peridotite

4. Describe the petrogenesis of basalt. Add a note on its distribution in India. 12+2=14

(**GROUP—B : SEDIMENTARY AND METAMORPHIC PETROLOGY**)

UNIT—III

(**Sedimentary Petrology**)

5. Explain the term 'provenance' and describe how provenance is determined. 2+12=14

6. Write notes on any *four* of the following :
3½×4=14

(a) Fluvial environment

(b) Transportation of sediments by running water

(c) Skewness

(d) Litho- and bio-facies

(e) Significance of evaporites

(f) Vector properties of sediments

UNIT—IV

(**Metamorphic Petrology**)

7. What is pneumatolytic metamorphism? Explain the limits of metamorphism and write notes on recrystallization and neocrystallization. 3+7+4=14

8. Write notes on any *four* of the following :
3½×4=14

(a) Migmatite

(b) Metamorphic grade

(c) Greenschist facies

(d) Equilibrium and disequilibrium

(e) Metamorphic differentiation

(f) Phase rule and triple point in the Al_2SiO_5 system

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