2017

(October)

GEOLOGY

(Honours)

(Igneous and Sedimentary and Metamorphic Petrology)

(GELH-501)

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. *(a)* What are the various physical properties of magma? Write briefly on any two of them. 2+6=8

   (b) Explain the salient features controlling movement of magma. 6

(Turn Over)

2. *(a)* State phase rule. What do you mean by *(i)* bivariant field and *(ii)* liquidus and solidus? 1+2+2=5

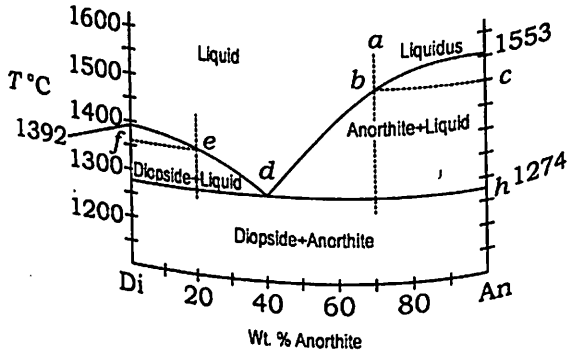
(b) Write on/Answer the following questions from the given *T-X* phase diagram :

(i) Temperature for the melting of pure diopside and anorthite

(ii) Eutectic temperature

(iii) Composition of liquid *a* in weight percentage of An

(iv) Explain how crystallization of melts takes place in the system with reference to phase rule. 1+1+1+6=9



UNIT—II

(Mineralogy and Petrogenesis)

3. *(a)* How do nucleation and growth rate affect the size of minerals? Describe the origin of porphyritic texture. 2+5=7

Continued

(b) Write short notes on any *two* of the following : 3½×2=7

(i) Lamprophyre

(ii) Kimberlite

(iii) Peridotite

4. Discuss on the petrogenesis of granite. Add a note on its distribution in India. 10+4=14

GROUP—B : SEDIMENTARY AND METAMORPHIC PETROLOGY

UNIT—III

(Sedimentary Petrology)

5. *(a)* Write on the scalar and vector properties of sediments. 6

(b) Define sedimentary facies. Describe the concept of facies in sedimentology. 2+6=8

6. *(a)* What is provenance? How heavy minerals act as indicators of provenance? 2+5=7

(b) Write notes on any *two* of the following : 3½×2=7

(i) Skewness

(ii) Evaporites

(iii) Concept of environment of deposition

(Turn Over)

UNIT—IV

(Metamorphic Petrology)

7. *(a)* Define metamorphism. Discuss the pressure and temperature limits of metamorphism. 2+7=9

(b) Write on recrystallization and neo-crystallization. 5

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

(a) Migmatite

(b) Metamorphic zone

(c) Equilibrium and disequilibrium

(d) Green schist facies

(e) Contact metamorphism of impure limestone

(f) Retrograde metamorphism

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