PG (CBCS) ODD SEMESTER EXAMINATION, 2022
held in MARCH, 2023

EARTH SCIENCE

1st Semester

COURSE NO. ESCCC - 104

(Igneous Petrology)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer any five questions, taking one from each unit

UNIT-I

1. What do you mean by differentiation of magma? Describe the various processes of magma differentiation. 2+12=14
2. Write a detailed account of various physical properties of magma. Add a note on the origin of magma. 8+6=14

UNIT-II

3. Illustrate the equilibrium crystallization of magma in the Ab-An Solid solution system. Add a note on the effects of fractional crystallization and vapour pressure on the system. 8+3+3=14

4. Write illustrative notes on the following: 7x2=14
   a) Determination of falling temperature direction in ternary phase diagram.
   b) Equilibrium Crystallization behavior of magma in the Lencite-Quartz binary system.

UNIT-III

5. Describe granitoids in terms of petrology, mode of occurrences, tectonic setup and spatial distribution. 3+4+4+3=14

6. Write short notes on the following: 7x2=14
   a) Tectonic setup and distribution of basalts.
   b) Petrology and mode of occurrences of ultramafic rocks.

UNIT-IV

7 Write shorts notes on the following: 5+5+4=14
   a) Relation between Enriched Mantle (EM) and OIB.

   b) Relation between depleted mantle and MORB.
   c) Distinction between Tuoleiite and Calc-alkaline magma.

8. Write short notes on the following: 5+4+5=14
   a) Mineralogical composition of upper mantle
   b) Mantle plumes and hotspots
   c) Genesis of Alkaline magma.

UNIT-V

9. Write an essay on magmatism in relation to global tectonic processes. 14

10. Write notes on the following: 7x2=14
   a) Within plate magmatism.
   b) Igneous activity in relation to divergent plate boundary.

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