UNIT-V

9. Describe granitoids in terms of petrology, mode of occurrences, tectonic Set ups and spatial distribution. 3+4+4+3=14

10. Write notes on the following: 5+4+5=14

a) Tectonic setups and distribution of basaltic rocks.
b) Modal classification of Ultra-mafic rocks.
c) Petrology and mode of occurrences of peridotites.

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PG ODD SEMESTER EXAMINATION, 2022
held in MARCH, 2023

EARTH SCIENCE

1st Semester

COURSE NO. ESCC - 501

(Mineralogy and 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. a) Define ionic radii of an atom. Discuss in detail the Pauling's first and second rules for ionic structure with suitable diagrams. 2+8=10

b) Write short notes on the following: 2+2=4

i) Metallic bonds

ii) Vander walls bonds.

2. a) What is coordination number? Draw the packing geometrics of ionic structures for different coordination numbers. 1+5=6

   b) Write short notes on the following; 2x4=8

      i) Principal quantum number

      ii) Ionization potential

      iii) Solid Solution

      iv) Polymorphism and pseudomorphism.

UNIT-II

3. a) Write in detail the general formula classification atomic structure and optical properties of olivine group. 10

   b) Write briefly on Inosilicates and Framework silicate structures. 4

4. a) Discuss in detail the silicate structures with suitable diagrams. 8

   b) Write briefly on: 3x2=6

      i) Atomic structure of garnet

      ii) P-T stability of olivine.

UNIT-III

5. a) Write in detail the general formula, classification, atomic structure and optical properties of amphibole group. 10

   b) Discuss the diagnostic physical and optical properties of biotite and muscovite. 4

6. a) Write in detail the general formula classification atomic structure and optical properties of pyroxene group. 10

   b) Discuss the basic atomic structure of mica group. 4

UNIT-IV

7 a) What do you mean by differentiation of magma. Describe the various magma differentiation processes. 2+6=8

   b) Compare and contrast the physical properties of mafic magma and felsic magma. Add a note on the factors influencing the physical properties of magma. 3+3=6

8. a) Write an illustrative account on the origin of magma. 8

   b) Write briefly on: 3+3=6

      i) Graphic and Myrmekitic texture

      ii) Magma mixing and magma mingling.