



- Notes : 1. All questions are compulsory and carry equal marks.  
2. Draw neat sketches wherever necessary.

1. Describe magma with its nature and composition.

**OR**

Write notes on –

- a) Layered complexes.
- b) Mantle heterogeneities.
- c) Chemical characteristics of igneous rocks.
- d) Continental Margins.

2. Describe phase equilibrium studies with example of ternary systems.

**OR**

Write notes on –

- a) Differentiation.
- b) Liquid immiscibility
- c) Binary systems
- d) Fractional crystallization

3. Describe Major, Trace and rare earth element systematics in igneous rocks.

**OR**

Write notes on –

- a) Harker diagrams.
- b) Alumina Saturation
- c) Liquid lines of descent
- d) AFM diagram.

4. Describe in detail weight norm and cation norm.

**OR**

Write notes on

- a) QAPF diagram.
- b) Basalt.
- c) Kimberlite.
- d) Komatiite.

5. Write short notes on-

- a) Continental Rifts.
- b) Continental intraplates
- c) Magma genesis
- d) Dynamic melting
- e) TAS diagrams.
- f) Mg number
- g) Spilite
- h) Carbonatite.

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