

M.Sc.(Geology) (CBCS Pattern) Semester-I  
**PSCGEOT02 - Paper-II : Igneous Petrology**

P. Pages : 2

**GUG/W/24/11163**

Time : Three Hours



Max. Marks : 80

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

1. Discuss the chemical characteristics of igneous rocks found in different tectonic settings.

**OR**

Give a brief account of the following:

- a) Layered igneous complexes.
- b) Plume Magmatism.
- c) Mantle metasomatism.
- d) Magmatic activity associated with continental rifts.

2. Explain dynamic melting in the context of mantle processes.

**OR**

Explain the following in brief:

- a) Application of Phase Equilibrium Studies.
- b) Liquid Immiscibility.
- c) Crystal Fractionation.
- d) Melting Vs. Crystallization in the context of magma evolution.

3. Explain silica / alumina saturation and its importance in distinguishing between various types of igneous rocks.

**OR**

Discuss briefly the following:

- a) Harker Diagrams.
- b) Trace Earth Element systematics in igneous rocks.
- c) Inequigranular textures.
- d) Vesicular, Amygdaloidal and Scoriaceous structure.

4. Explain the process of weight norm and cation norm calculations in petrology, highlighting their importance with example.

**OR**

Explain the following in brief:

- a) Petrogenesis of Lamproites.
- b) Banded iron formations and its significance in petrogenesis.
- c) Komatiite formation and characteristics.
- d) Petrology of Kimberlites and its significance.

5. Write short notes on:

- a) Continental margins.
- b) Mafic dyke swarm
- c) Define Rayleigh crystallization.
- d) Fractional melting.
- e) Mg number.
- f) REE
- g) Lamproite Occurrence.
- h) Alkaline Rocks in India.

\*\*\*\*\*