M.Sc. (Final) Examination, 2001

GEOLOGY

Paper VI

(Igneous and Metamorphic Petrology)

Time Three Hours
Maximum Marks 100

*Attempt **five** questions in all, section*
*at least **two** questions from each section.*
AU questions carry equal marks.

SECTION A

1. Explain what you understand by the term “texture” as applied to igneous rocks. Describe the various types of-textures known to you which may occur in volcanic rocks, with simple sketches. What light do they throw on the cooling history of the rocks?

2. Describe the crystallization behaviour of melts in the system Forsterite—Diopside—SiO_2 with help of a suitable phase diagram.

3. Write notes on any ***two*** of the following:
   (a) Phase rule.
   (b) Incongruent melting.
   (c) Assimilation.
   (d) Liquid Immiscibility.

4. Write a petrographical account of the Nepheline— Syenites~and discuss briefly the different views about their origin.

5. Discuss in detail any ***two*** of the following:
   (a) Anorthosite.
   (b) Alkali Olivine basalt.
   (c) Pegmatite.

SECTION B

6. Explain the concept of metamorphic facies. Describe the different types with reference to the physical conditions of their formations.

7. Write detailed notes on any ***two*** of the following:
   (a) Paired metamorphic belt.
   (b) Metamorphic differentiation.
   (c) ACF diagram.

8. Write an essay on “metamorphism in relation to magma and orogeny”.

9. Discuss Granulite facies of regional metamorphism. Give mineralogical associations and mode of occurrence of rocks belonging.to this facies.

10. Trace the structural and mineralogical changes undergone by an impure calcareous sediment subjected to thermal metamorphism.