

**2023**

**M.Sc.**

**First Semester**

CORE – 01

**GEOLOGY**

*Course Code: MGLC 1.11*

(Mineralogy, Crystallography & Analytical Techniques)

*Total Mark: 70*

*Pass Mark: 28*

*Time: 3 hours*

*Answer five questions, taking one from each unit.*

### **UNIT-I**

1. What are the fundamental building blocks of silicate minerals? How do they arrange to form various silicate structures? 14
2. Describe the key characteristics of solid solution? Explain the principle factors that determine the degree of solid solution in a mineral. 7+7=14

### **UNIT-II**

3. Explain the systematic mineralogy of amphibole group of minerals. 14
4. Write notes on the following: 7×2=14
  - (a) Beryl group of minerals
  - (b) Chlorite group of minerals

### **UNIT-III**

5. Discuss the systematic mineralogy of feldspar group of minerals. 14
6. Write notes on the following: 7×2=14
  - (a) Periclase and corundum
  - (b) Calcite and aragonite

## UNIT-IV

7. Explain the concept of symmetry. Write a note on 14 Bravais lattices. 7+7=14
8. Write notes on the following: 7×2=14
- (a) Point group
  - (b) Determination of optic signs

## UNIT-V

9. Explain the basic principles and applications of atomic absorption spectro-photometry in the analysis of geological samples. 14
10. Write notes on the following: 7×2=14
- (a) Thermo luminescence
  - (b) Geological application of x-ray diffractometry
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