

November 2025
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. Describe the systematic classification and mineralogical characteristics of the garnet group of minerals. 14
2. Write a note on each of the following: 7×2=14
 - (a) Solid solution
 - (b) Coordination number

UNIT-II

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

UNIT-III

5. Describe the systematic mineralogy of the feldspar group. Discuss the classification, chemical composition, crystal structure, physical properties, and distinctive features of both alkali and plagioclase feldspars. 14
6. Give the mineralogy of the following: 7×2=14
 - (a) Periclase and corundum
 - (b) Calcite and dolomite

UNIT-IV

7. Explain crystallographic symmetry and space lattices. Describe the 14 Bravais lattices with examples. 14
8. Write a note on each of the following: 7×2=14
- (a) Point group and space group
 - (b) Optic sign

UNIT-V

9. Explain the basic principles of X-ray diffractometry. Discuss its applications in mineralogy and material science. 14
10. Write a note on each of the following: 7×2=14
- (a) Electron probe microanalysis
 - (b) Gems and semi-precious minerals
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