

November 2025
M.Sc.
First Semester
CORE – 03
GEOLOGY
Course Code: MGLC 1.31
(Igneous & Metamorphic Petrology)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

1. Discuss magmatism in different tectonic settings, highlighting the nature of magma and the igneous products characteristic of each setting. 14
2. Compare and contrast the CIPW norm and TAS classification of igneous rocks, highlighting their basis, application, and limitations. 14

UNIT-II

3. What are ophiolites? Discuss in detail their origin and petrology. 2+12=14
4. Write a note on each of the following: 7×2=14
 - (a) Carbonatites
 - (b) Classification of granite rocks

UNIT-III

5. What are rare Earth elements? Discuss the applications of the rare Earth elements in igneous petrology. 2+12=14
6. Write a note on each of the following: 7×2=14
 - (a) Radiogenic isotopes
 - (b) Application of trace elements in petrogenesis

UNIT-IV

7. What are metamorphic isograds? Describe their significance in metamorphic petrology with suitable examples and neat diagrams. 2+12=14
8. Write a note on each of the following: 7×2=14
- (a) Regional metamorphism of basic metamorphic assemblages
 - (b) Barrovian zones of metamorphism

UNIT-V

9. Explain the concept of metamorphic facies with special reference to very high-pressure minerals and P-T conditions. 14
10. Write a note on each of the following: 7×2=14
- (a) Pyroxene hornfels facies
 - (b) Applications of geo-thermometry
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