2024

2nd Semester Examination (CCFUP : NEP)

GEOLOGY

Paper : MJ 2-T (Single Core Major)

(Mineral Science)

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***five*** questions. 2×5=10

1. What is crystal morphology?
2. Define miller indices.
3. Define minerals.
4. Name two carbonated minerals.
5. What is bonding in crystal structure?
6. What is polymorphism in mineralogy?
7. What is isotropic minerals?
8. Define refractive index of crystal.

P.T.O.

Group - B

Answer any ***four*** questions. 5×4=20

9. State and explain the Pauling's rules of coordination.

10. Classify crystal system on the basis of relation between axial length and axial angles.

11. Write short note on the types of solid solution with examples.

12. (a) Calculate the zone axis for two faces with Miller indices (101) and (111).

    (b) Write down the symmetry elements present in a cube.

    (c) Name the crystal system with lowest symmetry elements present in it. 2+2+1

13. (a) Differentiate between displacive and reconstructive polymorphism.

    (b) Differentiate between prism and pyramid. 2½+2½

14. (a) Show the stereographic projection for the symmetry elements and faces of a cube.

    (b) What is pseudomorphism? Give examples of two minerals which exhibit pseudomorphism. 3+2

Group - C

Answer any ***one*** question. 10×1=10

15. (a) Write a note on the general formula, structure and chemical composition of pyroxene group of minerals.

    (b) What is the difference between dioctahedral and trioctahedral sheet silicates? Name one mineral from each type. 6+4

16. (a) Note down all the possible cases for what happens to a grain of a uniaxial mineral whose optic axis is oriented parallel to the microscope stage and is rotated through 360° in both analyser in and out situations.

    (b) What do you mean by Becke line? Explain how Becke line can be used to determine if a grain has a R.I. greater or lesser that the R.I of the surrounding oil. 5+5

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