25805016

QP CODE: 25805016

Reg No : .....

Name : .....

INTEGRATED M.Sc DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

INTEGRATED M.Sc BASIC SCIENCE-PHYSICS

COMPLEMENTARY - IPH3CM05 - CHEMISTRY- III FUNDAMENTALS OF PHYSICAL CHEMISTRY

2021 Admission Onwards

3FB80929

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is meant by intrinsic semiconductivity?
2. Define a symmetry element.
3. What are nematic liquid crystals?
4. State and explain Henry's law.
5. Give one postulate of kinetic theory that is not applicable to the behaviour of real gas.
6. Explain the term adsorbent and adsorbate.
7. What is meant by Brownian movement?
8. What is meant by protective colloid?
9. How many phases would be there in equilibrium in a one-component system under a condition of monovariance?
10. Define the term eutectic point.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Write a note on Hysteresis.
12. The Weiss indices of a lattice plane are 3,3 and 2. Calculate its Miller indices.
13. Write a note on viscosity.

14. Calculate the temperature at which the RMS velocity of nitrogen equals that of CO_2 at 300 K.

15. What is an adsorption isotherm? Discuss the Freundlich adsorption isotherm.

16. Distinguish between true solution, suspension and colloids.

17. Discusss the classification of colloids based on molecular size.

18. State and explain Nernst distribution law.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Discuss a) Calculation of number of atoms in a unit cell b) Calculation of lattice parameters of cubic unit cell.

20. Write notes on: a) Lowering of vapour pressure b) Elevation in boiling point c) Depression in freezing point.

21. Write a note on applications of colloids.

22. (a) What is a condensed system? Write the reduced phase rule equation. (b) Discuss salient features of lead-silver system.

(2×5=10 weightage)