QP CODE: 23800346

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Reg No : .....

Name : .....

INTEGRATED PG DEGREE EXAMINATION, DECEMBER 2023

Third Semester

INTEGRATED MSC BASIC SCIENCE-PHYSICS

Complementary - IPH3CM05 - CHEM ISTRY- III FUNDAMENTALS OF PHYSICAL CHEMISTRY

2020 ADMISSION ONWARDS

AAA38F1E

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Define centre of symmetry. What is the maximum number of this symmetry element that a crystal can possess?
2. What are Weiss indices?
3. Give one application of Henry's law.
4. What is osmotic pressure?
5. Give the relationship that connects the RMS velocity of a gas with temperature.
6. What are associated colloids?
7. What are emulsifying agents?
8. Give two pharmaceutical applications of colloids.
9. Define phase.
10. What is meant by Condensed Gibbs Phase rule?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Calculate the number of atoms associated with the three kinds of cubic unit cells, namely sc, fcc and bcc, for monoatomic elements.

12. Differentiate between n-type and p-type semiconductors.

13. Write notes on: (i) Random packing theory of liquids (ii) Vacancy theory of liquids

14. What is compessibility factor? Explain the causes of deviation of real gases from ideal behaviour.

15. Distinguish between physisorption and chemisorption.

16. What is an adsorption isotherm? What are the limitations of Freundlich and Langmuir adsorption isotherms?

17. Write notes on: (i) Protective colloids (ii) Gold number

18. Discuss the phase diagram of lead-silver system. What are the phases that coexist at equilibrium at the eutectic point of the lead-silver system?

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Write a note on classification of magnetic materials.

20. What are liquid crystals? Explain the classification.

21. a) Write notes on: i) True solution ii) Colloids iii) Suspension b) Discuss the differences between physisorption and chemisorption.

22. State and explain Nernst distribution law. Discuss its applications.

(2×5=10 weightage)