QP CODE: 24026934

24026934

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE EXAMINATIONS, OCTOBER 2024

Third Semester

COMPLEMENTARY COURSE - CH3CMT03 - CHEMISTRY- PHYSICAL CHEMISTRY-I

Common to B.Sc Geology Model I, B.Sc Physics Model I & B.Sc Geology and Water Management Model III

2017 Admission Onwards

C0717CCA

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. What do the following stand for in crystal chemistry: (i) fcc; (ii) bcc?
2. What is meant by intrinsic semi conductivity?
3. Define a plane of symmetry. What is the associated symmetry operation?
4. What is the maximum number of this symmetry element that a crystal can possess?
5. What are cholesteric liquid crystals?
6. Give any two application of Henry's Law.
7. Name four important colligative properties.
8. Calculate the average kinetic energy of a hydrogen molecule at 0°C.
9. Oxygen at 1 atmosphere pressure and 0°C has a density of 1.4290 gL–1. Find the RMS velocity of oxygen molecules.
10. Mention two important factors that influence adsorption of gases on solid surfaces.
11. What is meant by Zeta potential?
12. Explain the term 'eutectic point'.

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Calculate the number of atoms associated with the three kinds of cubic unit cells, namely sc, fcc and bcc, for monoatomic elements.
14. Derive the d200:d220 : d111 for a fcc lattice arrived at.

15. The first order diffraction of a beam of X-rays of wavelength 15.4nm from the (100) planes of a crystal occurs at an angle of 11°29'. Calculate the distance between the (100) planes.

16. Explain intermolecular and intramolecular hydrogen bording with examples.

17. Compare intermolecular forces in liquids.

18. Calculate average velocity of oxygen molecule at 25°C. (R = 8.314 J K–1 mol–1).

19. Give Maxwell distribution of molecular velocities and explain the terms involed in it. Explain the features of Maxwell's plot.

20. What is a colloid? Discuss the essential differences between lypophilic and lyophilic colloids.

21. Give a labeled phase diagram of the water system.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. Discuss the magnetic properties of solids.

23. What is meant by viscosity of a liquid? Discuss the effect of temperature on it.

24. Write a short notes on :
(a) Electrophoresis and its applications.
(b) Tyndall effect and Brownian movement.

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

(2×10=20)