

D6BCH2003

Reg.No.....

Name:

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023
(Regular/Improvement/Supplementary)

CHEMISTRY
GCHE6B11T: PHYSICAL CHEMISTRY III

Time: 2 Hours

Maximum Marks: 60

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)

1. State Kohlrausch's law
2. Define Ionic Mobility.
3. Draw and explain a typical titration curve obtained in the titration of a strong acid with a weak base.
4. Briefly explain the electrochemical theory of corrosion.
5. State Henry's law.
6. Define the term molar refraction.
7. Why do a solution of weak acid and its salt behave as buffer? Explain.
8. What is meant by the terms degree of hydrolysis and hydrolysis constant?
9. Explain the terms isotropy and anisotropy.
10. How many atoms per unit cell are present in simple cubic and face centered cubic?
11. What are liquid crystals? Give any two applications of liquid crystals.
12. Differentiate between intrinsic and extrinsic semi conductors.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 Marks)

13. Briefly explain non stoichiometric defects in crystals.
14. Derive Bragg's equation for diffraction of X-rays by crystal lattice.
15. Explain the crystal structure of CsCl based on powder diffraction pattern.
16. The solubility product of magnesium hydroxide at 25 °C is 1.4×10^{-11} . Calculate the solubility of magnesium in gram per litre? (Mg=24, O=16, H=1)
17. Explain the capillary rise method for measuring surface tension.
18. How will you determine the degree of dissociation of an electrolyte from its conductance measurement?
19. Explain Debye-Falkenhagen and Wein effects.

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. What are concentration cells? Explain different types of concentration cells. Give Nernst equation for EMF of each of the cell.
21. Explain colligative properties and their applications.

(1 × 10 = 10 Marks)