



QP CODE: 24000604

Reg No :

Name :

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

Sixth Semester

CORE COURSE - CH6CRT12 - PHYSICAL CHEMISTRY - IV

Common for B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry & B.Sc
Chemistry Model III Petrochemicals

2017 Admission Onwards

AE14ED41

Time: 3 Hours

Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. What is lower critical solution temperature?
2. What are azeotropic mixtures?
3. Define one Faraday.
4. How is ionic mobility related to ionic conductance?
5. Give two characteristics of reversible cells.
6. Represent cell reaction of Daniel cell.
7. The standard emf of a cell is given as 0.89 volt. What is the value for ΔG° for the reaction.
8. Represent an electrolyte concentration cell with transference.
9. Explain the principle of acid -base potentiometric titrations.
10. What is meant by internal conversion?
11. Define the term point group.
12. Identify the point group to which H_2O belongs and list out the symmetry elements present in it.

(10×1=10)



Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Derive an expression for Gibbs free energy change of mixing (ΔG_{mix}) for an ideal solution.
14. Which colligative property is preferred for the molar mass determination of macromolecules and why?
15. Explain the moving boundary method used for the determination of transference number.
16. Define ionic strength. Calculate the ionic strength of a solution containing 0.1 molal KCl and 0.2 molal BaCl_2 .
17. Give a brief description of different types of electrode with examples.
18. Briefly explain the electrochemical theory of corrosion taking a suitable example.
19. State and explain Stark- Einstein law. Calculate the energy of an einstein of radiation of wavelength 3000 \AA .
20. Distinguish between photochemical reaction and chemiluminescence with suitable examples.
21. Identify the types of axes and planes present in benzene molecule and planar XeF_4 .

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. State and explain Henry's law. Discuss its applications and limitations.
23. Write a note on different types of conductometric titrations.
24. Give a brief description of any two applications of EMF measurements.
25. Define the terms symmetry, symmetry operations and symmetry elements. Explain five symmetry elements with examples.

(2×10=20)

