

QP	CODE:	24000604
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 Reg No
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 Name
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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.
- Identify the point group to which H₂O belongs and list out the symmetry elements present in it.

 $(10 \times 1 = 10)$



Part B

Answer any **six** questions.

Each question carries **5** marks.

- 13. Derive an expression for Gibbs free energy change of mixing (∆Gmix) 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 BaCl₂.
- 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 A⁰.
- 20. Distinguish between photochemical reaction and chemiluminescence with suitable examples.
- 21. Identify the types of axes and planes present in benzene molecule and planar XeF₄.

(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)

