QP CODE: 26017153

26017153

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE / MERCY CHANCE EXAMINATIONS, MARCH 2026

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

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Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. Why do gases always tend to be less soluble in liquids as the temperature is raised?
2. What is meant by partial molar properties?
3. Define molar conductivity. How it is related to conductivity.
4. How is ionic conductance related to temperature?
5. What is meant by electrolytic cells.
6. Give two examples for reference electrodes.
7. Define electrochemical series.
8. Represent Nernst equation for reduction of Cr^{3+}.
9. Give a brief description on glass electrodes.
10. What is meant by fluorescence?
11. Define C_3 axis of rotation.
12. Define the term point group.

(10×1=10)

Part B

*Answer any **six** questions.*

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

13. Discuss the variation of vapourpressure of completely miscible liquid pairs with composition.

14. How are the osmotic pressure measurements used for determining molar mass of a non-volatile solute?

15. Explain the terms asymmetry effect and electrophoretic effect.

16. Sketch and explain conductometric titration curve for mixture of strong and weak acids against strong base.

17. What are concentration cells? Derive an expression for E_{cell} of an electrode concentration cell.

18. What are potentiometric titrations? Explain how an acid base titration can be followed by potentiometrically.

19. State and explain various laws of photochemistry.

20. Distinguish between photochemical reaction and chemiluminescence with suitable examples.

21. Explain any two symmetry elements with example.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. (a) Discuss the phase diagram of a binary partially miscible liquid system and explain the significance of CST. (b) Explain the difference between upper CST and lower CST.

23. Explain the term transference number. Discuss Hittorf method used for the determination of transference number.

24. What is meant by corrosion? Briefly describe the methods for monitering and prevention of corrosion.

25. Define the term point group. Identify the point group to which H_2O , BF_3 and NH_3 belong and explain why.

(2×10=20)