

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2026 (NEW COURSE)****Physical and Analytical Chemistry(Core)****Time: 2:30 Hours****Marks:70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1(A) Answer the following question. (04)
(1) Discuss: Work function & its physical importance.
- Que.1(B) Answer any two questions out of three. (10)
(1) Discuss the entropy change in reversible processes.
(2) What is Cyclic process? Give four statements of Second law of thermodynamics.
(3) Discuss: Physical significance of entropy in detail.
- Que.2(A) Answer the following question. (04)
(1) Discuss in detail the formation of two pairs of partially miscible liquids in a ternary system.
- Que.2(B) Answer any two questions out of three. (10)
(1) Explain in detail Standard Calomel Electrode.
(2) Discuss the conductometric titration curve of Strong acid with Weak base.
(3) (i) Define (i) Specific Resistance (ii) Equivalent conductance
(ii) How equilibrium constant (K_c) of a cell reaction from emf is determined?
- Que.3(A) Answer the following question. (04)
(1) Derive the mathematical expression of Beer's law.
- Que.3(B) Answer any two questions out of three. (10)
(1) Explain: Neutralisation titration curve of weak acid and strong base by Volumetric analysis.
(2) Write a note on Fajan's method for Precipitation titration.
(3) Explain: Masking & Demasking agents in volumetric analysis.
- Que.4(A) Answer the following question. (04)
(1) Explain Carnot cycle with all operations in detail.
- Que.4(B) Answer any two questions out of three. (10)
(1) Derive Gibbs – Helmholtz equation.
(2) Discuss the shape of replacement titration curve of NH_4Cl with NaOH by Conductometry.
(3) Discuss the Instrumentation of Colourimeter with schematic diagram.
- Que.5(A) Answer the following question. (04)
(1) Write a detailed note on Weston standard cell.
- Que.5(B) Answer any two questions out of three. (10)
(1) Derive the equation $\Delta G^0 = -RT \ln K_p$.
(2) Write a note on Precipitation titration of AgNO_3 and NaCl by Conductometry.
(3) Write a note on Iodometry titration with proper example.
