

M.Sc.(Chem.) Semester - 2 (CBCS) Examination
March/April – 2026 (As Per Syllabus Year-2018)
Physical 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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- Q.1 (A) Answer the following. (04)**
(1) What is functionality? Give two examples of bi and tri-fictional compounds.
(2) Explain the cyclization reaction.
- Q.1 (B) Answer any two questions out of three. (10)**
(1) Distinguish:
(i) Syndiotactic and Atactic polymers.
(ii) Thermoplasts and Thermosets with suitable example
(2) Explain the Block and Graft polymers.
(3) Write a short not on
(i) Cross linking reaction (ii) Miscellaneous reaction
- Q.2 (A) Answer the following. (04)**
(1) Discuss the factors affecting free radical polymerization and properties of the resulting polymer
(2) Explain thermal and photochemical methods for initiating free radical polymerization
- Q.2 (B) Answer any two questions out of three. (10)**
(1) Discuss the kinetics of ionic polymerisation.
(2) Discuss co-polymerization and its kinetics.
(3) Explain :
(i) Kinetics of chain transfer reaction. (ii) Evaluation of reactivity ratios.
- Q.3 (A) Answer the following. (04)**
(1) Explain molecular weight control in polycondensation.
(2) Discuss the factors affecting the rate of polycondensation and molecular weight of the polymer.
- Q.3 (B) Answer any two questions out of three. (10)**
(1) Explain the kinetics of polycondensation reaction.
(2) Explain the Statistics of linear polycondensation.
(3) Write a note on
i. Polycondensation equilibrium and molecular weight of polymer
ii. Reaction route of polyfunctional compounds
- Q.4 (A) Answer the following. (04)**
(1) Give the brief explanation about Critical Micellar Concentration (CMC)
- Q.4 (B) Answer any two questions out of three. (10)**
(1) Give the difference between lyophobic and lyophilic sols.
(2) Write the detail explanation about physical and chemical adsorption
(3) Write a note on : (i) Surfactants (ii) Zeta potential
- Q.5 (A) Answer the following. (04)**
(1) Explain: liquid junction potential
(2) Explain the term: Overvoltage
- Q.5 (B) Answer any two questions out of three. (10)**
(1) Give a brief explanation about Decomposition potential.
(2) Write a note on
(i) Ni- Fe accumulator (ii) Zinc-Silver accumulator
(3) (i) Concentration cell without transference
(ii) The EMF of the concentration cell is 0.0118 volt at 25°C Temp.
Pb / PbSO₄ / CuSO₄ (a_± = 0.02205) : CuSO₄ (a_± = 0.00639) / PbSO₄ / Pb.
Calculate the transference number of Cu²⁺.
