

M.Sc.(Chem.) Semester - 2 (CBCS) Examination
March/April – 2024 (As Per Syllabus Year-2018)
Physical Chemistry (CORE)

Time: 02:30 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) Explain the functionality concept of polymers with two examples.
 - (2) Differentiate: Atactic and Syndiotactic.
- Q.1 (B) Answer any two questions out of three. (10)**
- (1) Explain the miscellaneous reactions of polymers and curing of epoxy resins.
 - (2) Explain the Acidolysis, Aminolysis and Hydrolysis polymer reactions.
 - (3) Write a note on the Block and Graft copolymers.
- Q.2 (A) Answer the following. (04)**
- (1) Explain any two methods of initiating the free radical polymerization.
- Q.2 (B) Answer any two questions out of three. (10)**
- (1) Discuss the kinetics of ionic polymerisation.
 - (2) Explain the kinetics of free radical polymerization and chain transfer reactions.
 - (3) Write a note on the evaluation of reactivity ratios and copolymerization behavior.
- Q.3 (A) Answer the following. (04)**
- (1) Discuss the effect of monomer temperature on direction of polycondensation reaction.
 - (2) Discuss the Molecular weight control in polycondensation.
- Q.3 (B) Answer any two questions out of three. (10)**
- (1) Discuss the kinetics of polycondensation reaction.
 - (2) Write a note on
 - i. Non-linear polycondensation.
 - ii. Reaction route of polyfunctional compounds.
 - (3) Discuss the polycondensation equilibrium and molecular weight of polymer.
- Q.4 (A) Answer the following. (04)**
- (1) Define the terms: Adsorption, Absorption and Sorption
 - (2) Explain the Zeta potential.
- Q.4 (B) Answer any two questions out of three. (10)**
- (1) Discuss in detailed on the types of adsorption.
 - (2) Write a note on the adsorption by solid from solution.
 - (3) Explain the Critical Micellar Concentration (CMC) with a suitable example.
- Q.5 (A) Answer the following (04)**
- (1) Explain the liquid junction potential.
 - (2) Explain the Dry cell with an example.
- Q.5 (B) Answer any two questions out of three. (10)**
- (1) Write a note on the Decomposition potential.
 - (2) Discuss the concentration cells of with and without transference.
 - (3) Explain the term overvoltage and discuss its applications and importance of hydrogen over voltage.
