

Department of Chemistry
B.Sc. Semester IV 2024-2025

Question Bank

UNIT-I

1. The members of the first transition series resemble more to each other than their respective heavy congeners. Why?
2. a). Discuss stereochemistry of second and third transition series elements and compare them with their lighter congeners.
b). Why are density and melting point of zinc quite low as compared to transition elements of that period.
3. The member of the first transition series resembles more to each other than their respective heavy congeners, why.

UNIT-II

4. How will you distinguish between primary, secondary and tertiary alcohol by Victor Meyer's method. explain hydrogen bonding in alcohol and how does hydrogen bonding affect the properties of alcohols. Discuss the mechanism of acid and base catalyzed cleavage of epoxide
5. Right short note on-
 - a). Lederer Manasse's reaction
 - b). Fries rearrangement
 - c). Kolbe's Schmitt reaction
6. Explain
 - a). Bayer vilizer's oxidation
 - b). Benzoin condensation and Aldol condensation
 - c). discuss use of acetals/ketals as protecting group in organic synthesis

UNIT-III

7. What are carboxylic acids. Describe the structure of carboxylic group and what carboxylic acid much stronger acid than alcohol. Write methods of preparation and properties of malic acid?
8. Right short note on-
 - a). Rosenmund reaction
 - b). Chemical reactions of acetyl chloride (any two)

- c). Acid and alkaline hydrolysis of ester
 - d). Aminolysis
9. Explain
- a). Hoffmann's bromamide reaction
 - b). Coupling reaction
 - c). Gabriel Phthalimide reaction

UNIT-IV

10. What do you understand by entropy of mixture? How entropy changes in a mixture?
11. Write notes on:
- a)Nernst Heat Theorem
 - b)Third Law of Thermodynamics
 - c)Carnot Cycle
12. Write notes on:
- (a) Clausius Clapeyron equation
 - (b) Relationship between K_p & K_c
 - (c) Relation between equilibrium constant and free energy