

Chemistry (Hons.) Paper-II

Answer five questions, selecting at least one from each Group, in which Q.No. 1 is compulsory.

1. Answer any three questions of the following :
 - (a) Half-life period of first order reactions is independent of initial concentration of reactant.
 - (b) Colligative properties of aqueous solution of NaCl are abnormal.
 - (c) Phenol is acidic and ethanol is neutral.
 - (d) CCl_4 molecule is tetrahedral in shape.
 - (e) Precipitation occurs only when ionic product exceeds solubility product.

Group-A

2. (a) Define Osmosis and osmotic pressure of solutions.
(b) Discuss a suitable method of determination of Osmotic pressure.
3. (a) Find out expression for rate constant of a first order reaction.
(b) What are the characteristics of first order reactions ?
4. (a) Define Ionic product and Solubility product of an electrolyte.
(b) Discuss the applications of solubility product principle in qualitative analysis of salts.
5. Write short notes on any three of the following :
 - (a) Bronsted acids and bases
 - (b) Elevation of boiling point
 - (c) Arrhenius equation of rate constant
 - (d) Abnormal osmotic pressure

Group-B

6. (a) Give two general methods for the preparation of Aldehydes and Ketones.
(b) Aldehydes and Ketones behave similarly as well as differently. Elaborate by two reactions for each case.
(c) Compare reactivities of Aldehydes and Ketones.
7. (a) Give methods of preparation of Urea.
(b) Discuss some important reactions of Urea.
8. Explain any three of the following :
 - (a) Tartaric acid exhibits optical isomerism.
 - (b) Acetaldehyde undergoes aldol condensation.
 - (c) Acetylene is a linear molecule
 - (d) Trichloroacetaldehyde undergoes cannizzaro reaction.
 - (e) Ethanol is miscible with water but chloroform almost immiscible.
9. What happens when : (any three)
 - (a) Glycol is treated with HIO_4 . LNMUonline.com
 - (b) Urea is treated with aq. KOH.
 - (c) Methyl amine is treated with HCl acid.
 - (d) Glycerol is treated with ethanoic acid.
 - (e) Formaldehyde is treated with ethyl magnesium bromide.
10. Write notes on any three of the following :
 - (a) Inductive effect
 - (b) Reaction intermediates
 - (c) Carbylamine reaction
 - (d) Hoffmann bromamide reaction