

Pre-Board Examination (Term II)

Class – XII

Subject – Chemistry (043)

M:M: 35

Section – A

1. Calculate the potential of hydrogen electrode in contact with a solution whose PH is 10. (2)
2. Write two difference between order of reaction and molecularity of a reaction. (2)
3. (a) Give the IUPAC name of $\text{H}_2\text{N} - \text{CH}_2 - \text{CH}_2 - \text{CH} = \text{CH}_2$
(b) Draw structure of allylamine. (2)

Section – B

4. Calculate the e.m.f of the following cell at 25°C :
 $\text{Fe} | \text{Fe}^{+2} (0.001 \text{ M}) || \text{H}^+ (0.01 \text{ M}) | \text{H}_2(\text{g})(1 \text{ bar}) | \text{Pt}(\&) E^\circ (\text{Fe}^{+2} | \text{Fe}) = -0.44\text{V}, E^\circ (\text{H}^+ | \text{H}_2) = 0.00\text{V}$ (3)
5. Derive an integrated rate equation for time period and half-life time for a first order reaction. (3)
6. Write any three differences between physical and chemical adsorption. (3)

7. (a) Zn, Cd and Hg are not considered as transition elements. Give reason. (3)
- (b) $[\text{Sc}(\text{H}_2\text{O})_6]^{+3}$ is a colourless salt. Explain.
- (c) Transition metals and their many compounds act as good catalyst. Explain. (3)
8. Discuss in detail hybridisation & magnetic behavior of $[\text{Fe}(\text{CN})_6]^{4-}$ ion on the basis of valence bond theory. Also calculate the spin magnetic moment. (3)
9. Discuss in detail crystal field theory for octahedral and tetrahedral complex. (3)
10. Write a note on (3)
- (a) Aldol condensation (b) Cannizzaro's Reaction
- (c) Wolf Kishner's Reduction
11. (a) Explain Hinsberg's test to distinguish between 1° and 2° amines. Give chemical reactions.
- (b) Complete the reactions
- $$\text{CH}_3 - \text{CH}_2 - \text{Cl} \xrightarrow{\text{NaCN}} \text{A} \xrightarrow[\text{Ni/H}_2]{\text{reduction}} \text{B}$$
- (3)

Section – C

12. Aldehydes, Ketones and Carboxylic acids are present in both plants and animal kingdom. They play an important role in biological process. They are responsible for fragrance and flavour of naturally occurring compounds. Acetone and acetic acid are widely used as solvents. Various carboxylic acids are used to prepare drugs (Analgesics, Antipyretics etc.) On the basis of the compound given above answer the following questions:

- (a) Give a chemical test to identify acetic acid
- (b) What happens when two moles of acetone are condensed in presence of Ba(OH)_2 ?
- (c) What happens when acetic acid is heated with P_2O_5 ?
- (d) What type of inter molecular force of attraction exist in aldehydes and ketones.
- (e) What happens when HCHO react with an alkali (NaOH)?

(5)