

BRAINYCHALKS
Institute for CBSE | JEE | NEET | OLYMPIAD
MONTHLY ASSESSMENT - I

Marks- 35

SUBJECT – CHEMISTRY

Time – 1hr 30min

PART A

(3 × 1 = 3 Marks)

1. Chlorobenzene is less reactive towards nucleophilic substitution due to:

- a) Inductive effect
- b) Resonance
- c) Hyperconjugation
- d) Steric hindrance

2. Assertion: Chlorobenzene does not undergo SN1 reaction.

Reason: Phenyl carbocation is unstable.

3. Iodoalkanes are more reactive than chloroalkanes due to:

- a) Strong bond
- b) Weak bond
- c) High polarity
- d) Low polarity

PART B

(4 × 2 = 8 Marks)

4. What is chiral carbon? Give example.

5. Write the reaction of ethyl chloride with:

- a) Aqueous KOH
- b) Alcoholic KOH

6. What happens when tertiary butyl alcohol is heated with copper at 573 K?

7. Why is thionyl chloride method preferred for preparing alkyl chloride from alcohols?

PART C

(8 × 3 = 24 Marks)

8. An organic compound A (C_2H_6O) reacts with thionyl chloride to form compound B. Compound B on treatment with alcoholic KOH gives

compound C, which on hydrogenation forms D. Identify A, B, C, D and write all reactions.

9. A hydrocarbon A undergoes chlorination in presence of FeCl_3 to form B. Compound B on heating with NaOH at high temperature and pressure gives C. Identify A, B, C and explain why the second reaction requires harsh conditions.

10. Write the mechanism of hydration of alkene.

11. An organic compound A ($\text{C}_2\text{H}_6\text{O}$) reacts with concentrated H_2SO_4 at 443 K to give compound B, at 413 K to give compound C. Identify A, B, C and write reactions.

12. Give reasons:

- C–Cl bond length in chlorobenzene is shorter than in CH_3Cl
- Dipole moment of chlorobenzene is lower than cyclohexyl chloride
- $\text{S}_\text{N}1$ reactions show racemisation in optically active compounds

13. The following compounds are given: 2-Bromopentane, 2-Bromo-2-methylbutane, 1-Bromopentane

- Which is most reactive towards $\text{S}_\text{N}2$?
- Which is optically active?

14. How will you convert:

- Propene to propan-1-ol
- Propene to propan-2-ol

15. Write the major product:

- $\text{C}_6\text{H}_5\text{-CH}_2\text{-CH=CH}_2 + \text{HBr}$ (in presence of H_2O_2) \rightarrow
- Cyclohexene + Br_2 (UV light) \rightarrow