ACHIEVERS FOUNDATION

CHEMISTRY 12TH

HALOALKANES & HALOARENES : PRACTICE SHEET 1

One Mark Questions

1. Why does the C–Cl bond in chlorobenzene have partial double bond character?
2. Why is chlorobenzene less reactive than chloroethane towards nucleophilic substitution?
3. Why do tertiary alkyl halides generally undergo SN1 reactions?
4. Why do primary alkyl halides prefer SN2 reactions?
5. Why is iodide ion a better leaving group than chloride ion?
6. Why does tert-butyl chloride react faster than n-butyl chloride in aqueous KOH?
7. Why is fluorobenzene less reactive than chlorobenzene towards nucleophilic substitution?
8. Why does alcoholic KOH favour elimination while aqueous KOH favours substitution?
9. Why are aryl halides resistant to nucleophilic substitution reactions?
10. Why is benzyl chloride more reactive than chlorobenzene?

Two Marks questions

11. Explain why the boiling point of haloalkanes is higher than that of corresponding alkanes.
12. Why is the dipole moment of chlorobenzene lower than expected?
13. Explain the role of dry acetone in the Finkelstein reaction.
14. Why does tertiary butyl bromide react faster than tertiary butyl chloride?
15. Explain why allyl chloride is more reactive than vinyl chloride.
16. Why is SN2 reaction called a bimolecular reaction?
17. Why is SN1 reaction called a unimolecular reaction?
18. Explain why bromobenzene does not give phenol on treatment with aqueous NaOH under ordinary conditions.
19. Why does elimination predominate over substitution at higher temperatures?
20. Why is carbocation stability important in SN1 reactions?
21. Why is chlorobenzene difficult to hydrolyse?
22. Why does nucleophilic substitution occur more easily in benzyl chloride than in chlorobenzene?
23. Explain the role of carbocation stability in determining reaction rates.
24. Why are haloalkanes generally insoluble in water?

25. Why do haloalkanes have higher densities than corresponding alkanes?
26. Explain why tert-butyl chloride gives a precipitate faster than ethyl chloride in the silver nitrate test.
27. Why is the carbon atom bonded to halogen in chlorobenzene sp^2 hybridized?
28. Why does bromobenzene require drastic conditions for conversion into phenol?
29. Explain why SN2 reactions show inversion of configuration.
30. Why does the rate of SN1 reaction depend only on the concentration of alkyl halide?

Three Marks Questions

31. Explain the difference between SN1 and SN2 mechanisms based on:
    a) Intermediate formed
    b) Rate law
    c) Stereochemistry
32. Explain why the reactivity order towards SN1 reaction is:

    tert-Alkyl halide > sec-Alkyl halide > primary alkyl halide > methyl halide
33. Explain why the reactivity order towards SN2 reaction is:

    $CH_3X > 1° > 2° > 3°$
34. Why does chlorobenzene not undergo hydrolysis under normal conditions whereas benzyl chloride does?
35. Explain why aryl halides are less reactive than alkyl halides towards nucleophilic substitution.
36. How does resonance affect the reactivity of haloarenes?
37. Why do allylic and benzylic halides undergo substitution reactions more readily?
38. Explain the importance of leaving group ability in nucleophilic substitution reactions.