

TEST PAPER NO. 10

TOPIC : ORGANIC FUNCTIONAL GROUP NO. I
ALKYL AND ARYL HALIDES

M.M. 50

TIME: 3 HRS.

Name of Student _____ Roll No. _____

Q.NO. 1-10 carries 1 mark, 11-20 2 marks, 21-25 carries 3 marks, 26 carries 5 marks.

1. What are gem and vic dihalides?
2. Write the structure of following compound:
 - a. 2-chloro methylpentane
 - b. 4-tert-Butyl-3-iodoheptane
3. Write the isomer of the compound having formulae C_4H_9Br .
4. What are ambident nucleophiles? Explain with example.
5. Arrange the following compounds of each set in order of reactivity towards S_N2 displacement:
 - a. 2-Bromo-2-methylbutane, 1-Bromopentane, 2- Bromopentane
 - b. 1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 3-Bromo-2methylbutane
6. Why is sulphuric acid not used during the reaction of alcohols with KI?
7. Arrange the compounds in order of increasing boiling points:
Bromomethane, Bromoform, Chloromethane, Dibromomethane.
8. Why does the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?
9. p-Dichlorobenzene has higher m.p. and solubility than those of o- and m- isomers. Why?
10. The treatment of alkyl chlorides with aqueous KOH leads to the formation of alcohols but in the presence of alcoholic KOH, alkenes are major products. Explain
11. Draw the structures of all the eight structural isomer that have molecular formulae: $C_5H_{11}Br$. Name each isomer according to IUPAC system and classify them as primary, secondary and tertiary bromide.
12. Identify all the possible monochloro structural isomers expected to be formed on free radical monochlorination of $(CH_3)_2CHCH_2CH_3$
13. Write the mechanism of S_N1 and S_N2 reaction with example and difference b/w the two?
14. Explain the following name reaction:
 - a. Wurtz
 - b. Swart Reaction
15. Explain the nitration of chloro benzene and suggest a reason for the effect of NO_2 group and why it is more pronounced at o and p than m position?
16. Write Friedel Craft reaction? Why chlorine is an electron withdrawing group, yet it is ortho- para- directing in electrophilic aromatic substitution reactions?
17. Write the equations for the preparation of 1-iodobutane from:
 - a. 1-butanol
 - b. but-1-ene
18. Explain :
 - a. Alkyl halides, though polar, are immiscible with water

- b. Grignard reagents should be prepared under anhydrous conditions.
19. Carry out the following conversion:
- a. Ethanol to but-1-yne b. Bromomethane to propanone
20. Complete the following reaction:
- a. Benzene to 4 bormonitrobenzene b. Ethyl Chloride to propanoic acid
21. Write the chemical reaction of RX with following agent:
- a. NaOR b. AgCN c. R'NH₂
22. Write short note on following compound:
- a. Freon b. DDT c. Iodoform
23. What happens when:
- a. n-butyl chloride is treated with alcoholic KOH
- b. chlorobenzene is subject to hydrolysis
- c. methy bormide is treated with sodium (dry ether)
24. Predict all the alkenes that would formed by dehydrohalogenation of the following halides with sodium ethoxide in ethanol and identify the major alkene:
- a. 1 Brommo 1 methylclohexane b. 2-chloro-2-methylbutane
- c. 2,2,3- trimethyl 3-boromopentane
25. Predict the order of reactivity of four isomeric bromobutanes for SN₂ reaction?
26. Write the mechanism of the following reaction:



Primary alkyl halide C₄H₉Br (A) reacted with alcoholic KOH to give compound (B) Compound (B) is reacted with HBr to give (C) which is an isomer of (A). When (A) is reacted with sodium metal it gives compound (D), C₈H₁₈ which is different from the compound formed when n-butyl bromide is reacted with sodium metal. Give the structure formuale of A,B and C and write the reactions involved.