

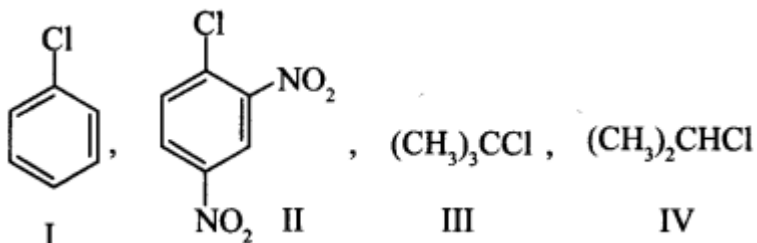


INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF CHEMISTRY
CLASS XII
CHAPTER – HALO ALKANES AND HALO ARENES
OBJECTIVE TYPE QUESTIONS



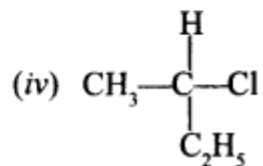
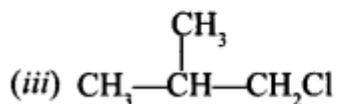
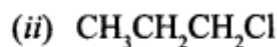
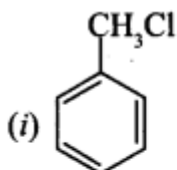
Multiple choice type questions

- Which of the following undergoes nucleophilic substitution exclusively by S_N1 mechanism?
(a) Benzyl chloride
(b) Ethyl chloride
(c) Chlorobenzene
(d) Isopropyl chloride
- The increasing order of nucleophilicity would be
(a) $Cl^- < Br^- < I^-$
(b) $I^- < Cl^- < Br^-$
(c) $Br^- < Cl^- < F^-$
(d) $I^- < Br^- < Cl^-$
- Which of the following is most reactive towards S_N1 reaction?
(a) $C_6H_5C(CH_3)C_6H_5Br$
(b) $C_6H_5CH_2Br$
(c) $C_6H_5CH(C_6H_5)Br$
(d) $C_6H_5CH(CH_3)Br$
- The correct order of increasing the reactivity of C—X bond towards nucleophile in following compounds



- $IV < III < I < II$
- $I < II < IV < III$
- $III < II < I < IV$
- $II < III < I < IV$

5. A dihalogen derivative 'X' of a hydrocarbon with three carbon atoms react with aq. KOH and produces hydrocarbon which forms red ppt. with ammonical Cu_2Cl_2 . 'X' gives an aldehyde on reaction with aq. KOH. The compound 'X' is
- 1, 3-Dichloropropane
 - 1, 2-Dichloropropane
 - 2, 2-Dichloropropane
 - 1, 1-Dichloropropane
6. Which of the following compound will undergo racemisation when reacts with aq. KOH?

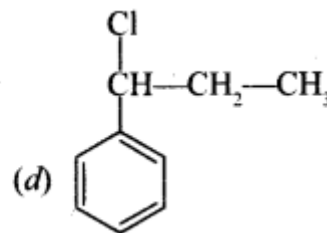
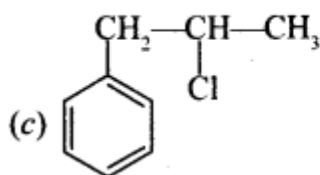
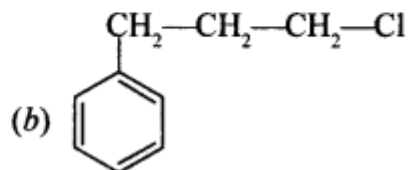
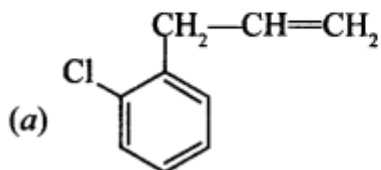
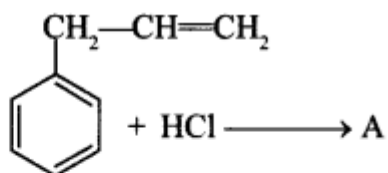


- (i) and (ii)
 - (ii) and (iv)
 - (iii) and (iv)
 - (iv)
7. The synthesis of alkyl fluoride is best accomplished by
- Finkelstein reaction
 - Swartz reaction
 - Free radical fluorination
 - Sandmeyer's reaction
8. How many chiral compounds are possible on monochlorination of 2-methyl butane?
- 2
 - 4
 - 6
 - 8
9. The increasing order of reactivity towards $\text{S}_{\text{N}}1$ mechanism is
- $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{C}}}-\text{CH}_2-\text{CH}_3$
 - $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$
 - $p\text{-CH}_3\text{O}-\text{C}_6\text{H}_4-\text{CH}_2\text{Cl}$
- III < II < I
 - II < I < III

(c) I < III < II

(d) II < III < I

10. What is 'A' in the following reaction?



11. Which of the following alkyl halides will undergo $\text{S}_{\text{N}}1$ reaction most readily? [NCERT Exemplar]

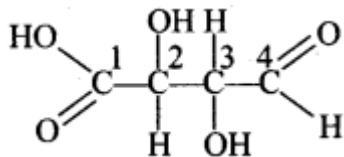
(a) $(\text{CH}_3)_3\text{C—F}$

(b) $(\text{CH}_3)_3\text{C—Cl}$

(c) $(\text{CH}_3)_3\text{C—Br}$

(d) $(\text{CH}_3)_3\text{C—I}$

12. Which of the carbon atoms present in the molecule given below are asymmetric?



(a) 1, 2, 3, 4

(b) 2, 3

(c) 1, 4

(d) 1, 2, 3

13. p-dichlorobenzene has higher melting point than its o- and m- isomers because

(a) p-dichlorobenzene is more polar than o- and m- isomer.

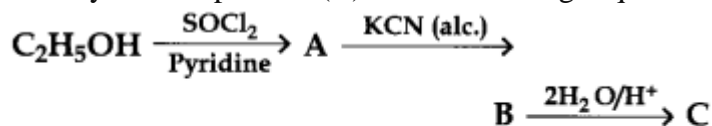
(b) p-isomer has a symmetrical crystalline structure.

(c) boiling point of p-isomer is more than o- and m-isomer.

(d) All of these are correct reasons.

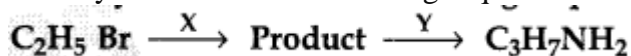
14. S_N1 reaction of alkyl halides lead to
 (a) Retention of configuration
 (b) Racemisation
 (c) Inversion of configuration
 (d) None of these
15. Fitting reaction can be used to prepare
 (a) Toluene
 (b) Acetophenone
 (c) Diphenyl
 (d) Chlorobenzene

16. Identify the end product (C) in the following sequence:



- (a) C₂H₅CH₂NH₂ (b) C₂H₅CONH₂
 (c) C₂H₅COOH (d) C₂H₅NH₂ + HCOOH

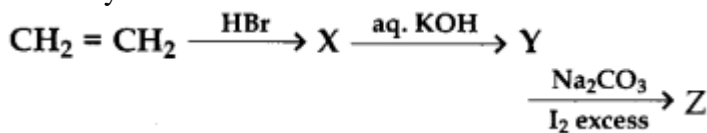
17. Identify X and Y in the following sequence



- (a) X = KCN, Y = LiAlH₄
 (b) X = KCN, Y = H₃O⁺
 (c) X = CH₃Cl, Y = AlCl₃ HCl
 (d) X = CH₃NH₂, Y = HNO₂
18. In the following sequence of reactions:

$$\text{C}_2\text{H}_5\text{Br} \xrightarrow{\text{AgCN}} \text{X} \xrightarrow{\text{Reduction}} \text{Y}; \text{Y is}$$
- (a) n-propylamine
 (b) isopropylamine
 (c) ethylamine
 (d) ethylmethylamine

19. Identify Z in the series



- (a) C₂H₅I
 (b) C₂H₅OH
 (c) CHI₃
 (d) CH₃CHO

20. Which of the following undergoes nucleophilic substitution exclusively by S_N1 mechanism?
- Benzyl Chloride
 - Ethyl chloride
 - Chlorobenzene
 - Isopropyl chloride
21. Which of the following is most reactive towards S_N1 reaction?
- $C_6H_5C(CH_3)C_6H_5Br$
 - $C_8H_5CH_2Br$
 - $C_6H_5CH(C_6H_5)Br$
 - $C_6H_5CH(CH_3)Br$
22. A Grignard reagent may be made by reacting magnesium with
- Methyl amine
 - Diethyl ether
 - Ethyl iodide
 - Ethyl alcohol
23. C-Cl bond of chlorobenzene in comparison to C-Cl bond in methyl chloride is
- Longer and weaker
 - Shorter and weaker
 - Shorter and stronger
 - Longer and stronger
24. A solution of (+) 2-chloro-2-phenylethane in toluene racemises slowly in the presence of a small amount of $SbCl_5$, due to the formation of
- carbanion
 - carbene
 - free radical
 - carbocation
25. The decreasing order of boiling points of alkyl halides is
- $RF > RCl > RBr > RI$
 - $RBr > RCl > RCl > RF$
 - $RI > RBr > RCl > RF$

d. $\text{RCI} > \text{RF} > \text{RI} > \text{RBr}$

26. The reaction of tert butyl bromide with sodium methoxide produces mainly
- isobutane
 - isobutylene
 - tert-butyl methyl ether
 - sodium tert butoxi

In the following questions a statement of assertion followed by a statement of reason is given.

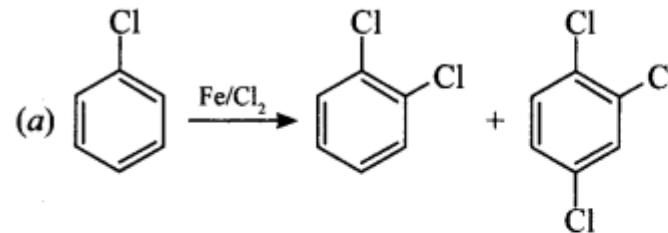
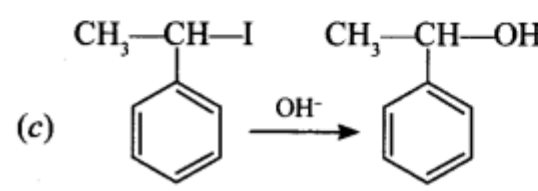
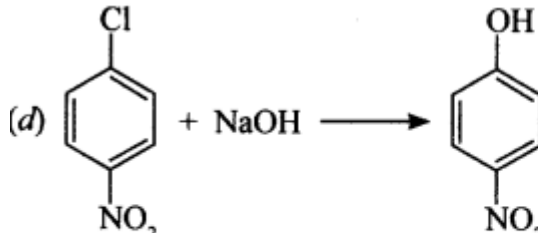
Choose the correct answer out of the following choices.

- Assertion and reason both are correct and reason is correct explanation of assertion.
 - Assertion and reason both are wrong statements.
 - Assertion is correct but reason is wrong statement.
 - Assertion is wrong but reason is correct statement.
 - Assertion and reason both are correct statements but reason is not correct explanation of assertion.
27. Assertion: KCN reacts with methyl chloride to give methyl isocyanide.
Reason: CN^- is an ambident nucleophile.
28. Assertion: tert-Butyl bromide undergoes Wurtz reaction to give 2, 2, 3, 3-tetramethylbutane.
Reason: In Wurtz reaction, alkyl halides react with sodium in dry ether to give hydrocarbon containing double the number of carbon atoms present in the halide.
29. Assertion: Presence of a nitro group at ortho or para position increases the reactivity of haloarenes towards nucleophilic substitution.
Reason: Nitro group, being an electron withdrawing group decreases the electron density over the benzene ring.
30. Assertion: In monohaloarenes, further electrophilic substitution occurs at ortho and para positions.
Reason: Halogen atom is a ring deactivator.
Assertion: Aryl iodides can be prepared by reaction of arenes with iodine in the presence of an oxidising agent.
Reason: Oxidising agent oxidises I_2 into HI.

Fill in the blanks

31. Chloromethane on treatment with excess of ammonia gives _____
32. The isomer of C_4H_9Br , (optical active) is _____ .
33. Out of chlorobenzene, o-chlorotoluene, m-chloro toluene, least reactive towards nucleophilic substitution is _____ .
- State True or False**
34. When benzene reacts with Cl_2 and $FeCl_3$, the attacking electrophile is Cl^+ .
35. IUPAC name of Diethyl bromomethane is 3-Bromo-pentane.
36. Among isobutyl bromide, n-Butyl bromide, secondary butyl bromide and tertiary butyl bromide, n-Butyl bromide has lowest boiling point.
37. Reactivity order of $HI > HBr > HCl > HBr$ towards nucleophilic substitution reaction.
38. Tert. halides undergo elimination reaction faster than nucleophilic substitution reaction.

39. Match the reactions given in Column I with the types of reactions given in Column II.

Column I	Column II
<p>(a) </p>	<p>(i) Nucleophilic aromatic substitution</p>
<p>(b) $\text{CH}_3\text{—CH=CH}_2 + \text{HBr} \longrightarrow \text{CH}_3\text{—}\underset{\text{Br}}{\text{CH}}\text{—CH}_3$</p>	<p>(ii) Electrophilic aromatic substitution</p>
<p>(c) </p>	<p>(iii) Saytzeff elimination</p>
<p>(d) </p>	<p>(iv) Electrophilic addition</p>
<p>(e) $\text{CH}_3\text{CH}_2\underset{\text{Br}}{\text{CH}}\text{CH}_3 \xrightarrow{\text{alc.KOH}} \text{CH}_3\text{CH=CHCH}_3$</p>	<p>(v) Nucleophilic substitution ($\text{S}_{\text{N}}1$)</p>