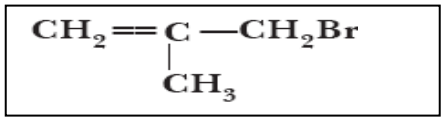
10. HALOALKANES & HALOARENES

1 Write the IUPAC name of the following compound: $CH_2=CHCH_2Br$ 1

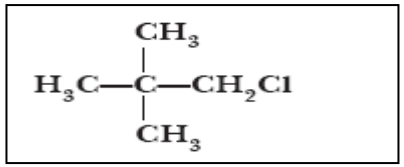
2 Give the IUPAC name of the following compound. 1



3 What happens when bromine attacks $CH_2=CH—CH_2—C\equiv CH$? 1

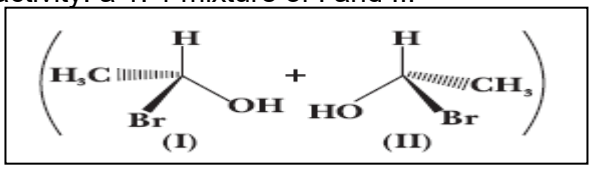
4 Write the IUPAC name of the following compound: $(CH_3)_3CCH_2Br$ 1

5 Write the IUPAC name of the following compound: 1



6 Identify the chiral molecule in the following pair: 1

7 Explain why the following pairs of compounds do not show optical activity. a 1: 1 mixture of I and II. 1

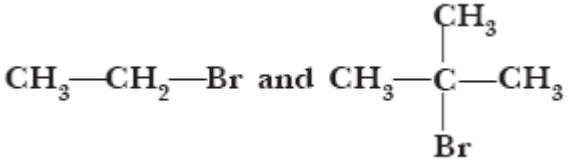


8 Draw the structure of 2-Bromopentane 1

9 Write the structure of the following compound:
2 -(2-chlorophenyl)-1-iodoethane. 1

10 Identify the products A and B formed in the following reaction:
$CH_3—CH_2—CH=CH—CH_3 + HCl \longrightarrow A + B$ 1

11 Which would undergo S_N2 reaction faster in the following pair and why?



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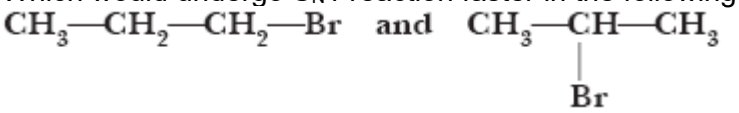
12 Which would undergo S_N1 reaction faster in the following pair:



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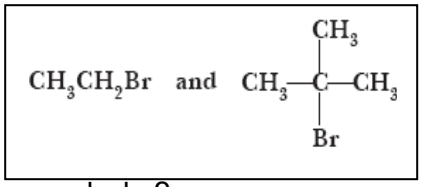
13 Which would undergo S_N2 reaction faster in the following pair and why?
$CH_3—CH_2—Br$ and $CH_3—CH_2—I$



1

14 Which would undergo S_N1 reaction faster and why? 1

15 Which will react faster in S_N2 displacement, 1-bromopentane or 2-bromopentane, and why? 1

16 A solution of KOH hydrolyses $CH_3CHClCH_2CH_3$ and $CH_3CH_2CH_2CH_2Cl$. Which one of these is more easily 1

hydrolysed?

17 Which of the compounds will react faster in S_N1 reaction with the OH– ion? 1
$CH_3—CH_2—Cl$ or $C_6H_5—CH_2—Cl$

18 Write a chemical reaction in which iodide ion displaces diazonium group from a diazonium salt. 1

19 Why iodoform has appreciable antiseptic property? 1

20 How can you obtain iodoethane from ethanol when no other iodine containing reagent except NaI is available in the laboratory? 1

21 Write a test to detect the presence of double bond in a molecule. 1

22 How will you obtain monobromobenzene from aniline? 1

23 Write the structure of the following compound: 1
2-(2-Bromophenyl) butane.

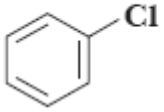
24 Write the structure of the following compound: 1
3-(4-chlorophenyl)-2-methylpropane.

25 Draw the structure of the following compound: 1
4-Bromo-3-methylpent-2-ene

26 Complete the following chemical equation : $H_3CCH_2CH{=}CH_2 + HBr \xrightarrow{\text{Peroxide}} .....$ 1

27 Why is the solubility of haloalkanes in water very low? 1

28 (*i*) $CH_3Cl + KCN \longrightarrow ?$

(*ii*)  $+ CH_3Cl \xrightarrow{AlCl_3} ? + ?$ 2

29 Identify the compounds A, B, C and D in the following sequence of reaction: 2

$$C_2H_5OH \xrightarrow[443\ K]{\text{Conc. } H_2SO_4} A \xrightarrow{HBr} B \xrightarrow{KOH(aq)} C \xrightarrow{I_2,\ NaOH} \underset{\text{yellow ppt.}}{D}$$

30 Write the structural formulae of the organic compounds ‘A’, ‘B’, ‘C’ and ‘D’ in the following sequence of reaction: 2

$$CH_3—\underset{\displaystyle Br}{\underset{|}{CH}}—CH_2—CH_3 \xrightarrow{\text{alc. KOH}} \text{‘A’} \xrightarrow{Br_2} \text{‘B’} \xrightarrow{\text{alc. KOH}} \text{‘C’} \xrightarrow[Hg^{2+},\ H_2SO_4]{H_2O} \text{‘D’.}$$

31 Write the structure of the major organic product in each of the following reactions:

(a) $(CH_3)_3CBr + H_2O \xrightarrow{heat}$

(b) $(CH_3)_2CH—CH(Br)CH_2CH_3 \xrightarrow[443\ K]{C_2H_5ONa}$

(c) $CH_3CH_2Cl + SbF_3 \xrightarrow{heat}$

(d) $CH_2=CHCH_2Br + CH_3C\equiv CNa \xrightarrow{liq.\ NH_3}$ 2

32 (a) Which alkyl halide from the following pairs would you expect to react
(b) more rapidly by an S_N2 mechanism and why?

$CH_3—CH_2—\underset{\displaystyle Br}{\underset{|}{CH}}—CH_3$; $CH_3—CH_2—CH_2—CH_2—Br$ 2

(b) Racemisation occurs in S_N1 reactions. Why?

33 tert-Butylbromide reacts with aq. NaOH by S_N1 mechanism while n-butylbromide reacts by S_N2 mechanism. Why? 2

34 Write chemical equation when
(i) methyl chloride is treated with AgNO2.
(ii) bromobenzene is treated with CH_3Cl in the presence of anhydrous $AlCl_3$. 2

35 Answer the following questions:
(i) What is meant by chirality of a compound? Give an example.
(ii) Which one of the following compounds is more easily hydrolyzed by KOH and why?
$CH_3CHClCH_2CH_3$ or $CH_3CH_2CH_2Cl$ 2

36 Cyanide ion acts as an ambident nucleophile From which end it acts as a stronger nucleophile in aqueous medium? Give reason for your answer. 2

37 Some alkyl halides undergo substitution whereas some undergo elimination reaction on treatment with bases. Discuss the structural features of alkyl halides with the help of examples which are responsible for this difference. 2

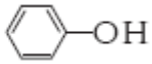
38 What are the IUPAC names of the insecticide DDT and benzenehexachloride? Why is their use banned in India and other countries? 2

39 A hydrocarbon of molecular mass 72 g mol^{-1} gives a single monochloro derivative and two dichloro derivatives on photo chlorination. Give the structure of the hydrocarbon. 2

40 Name the alkene which will yield 1-chloro-1-methylcyclohexane by its reaction with HCl. Write the reactions involved. 2

41 Predict the major product formed when HCl is added to isobutylene. Explain the mechanism involved. 2

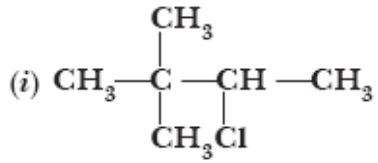
42 Which of the following compounds (a) and (b) will not react with a mixture of NaBr and H_2SO_4. Explain why? 2

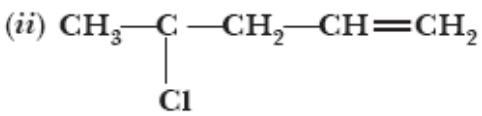
(a) $CH_3CH_2CH_2OH$ (b) 

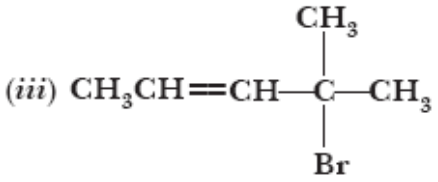
43 Which of the products will be major product in the reaction given below? Explain. 2

$$\underset{}{CH_3CH{=}CH_2} + HI \longrightarrow \underset{\text{'A'}}{CH_3CH_2CH_2I} + \underset{\text{'B'}}{CH_3CHICH_3}$$

44 3

(i) 

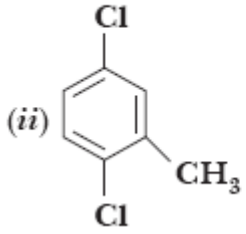
(ii) 

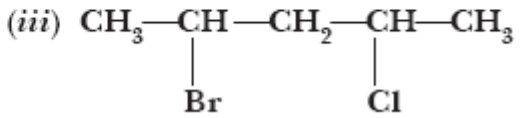
(iii) 

Write the IUPAC name of the following compounds:

45 3

(i) $(CH_3)_2CHCH(Cl)CH_3$.

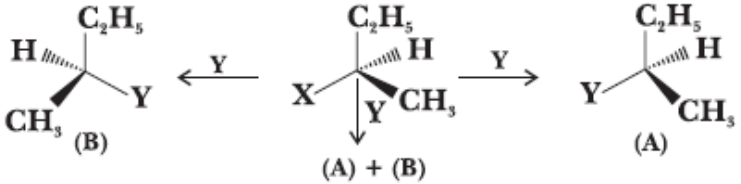
(ii) 

(iii) 

Write the IUPAC name of

46 An organic compound 'A' having molecular formula C_4H_8 on treatment with dil. H_2SO_4 gives 'B'. 'B' on treatment with conc. HCl and anhydrous $ZnCl_2$ gives 'C' and on treatment with sodium ethoxide gives back 'A'. Identify the compounds 'A', 'B' and 'C' and write the equations involved. 3

47 Consider the three types of replacement of group X by group Y as shown here. 3



This can result in giving compound (A) or (B) or both.

What is the process called if
(i) (A) is the only compound obtained?
(ii) (B) is the only compound obtained?
(iii) (A) and (B) are formed in equal proportions?

48

$(i)\ CH_3CH_2Cl \xrightarrow{NaCN} (A) \xrightarrow[Ni/H_2]{\text{reduction}} (B)$

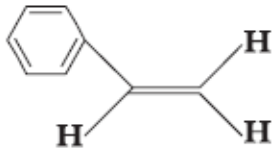
$(ii)\ C_6H_5N_2Cl + H_3PO_2 + H_2O \longrightarrow$

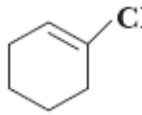
$(iii)\ R{-}\overset{\overset{O}{\|}}{C}{-}NH_2 \xrightarrow[H_2O]{LiAlH_4}$

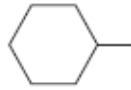
3

Complete the following chemical equations:

49

(i)  $+ HBr \longrightarrow$

(ii)  $+ HI \longrightarrow$

(iii)  $+ SOCl_2 \longrightarrow$

3

Complete the equations for the following reactions:

50 Complete the following reactions: 3

(i) $CH_3CH_2OH \xrightarrow{SOCl_2}$ 'A' $\xrightarrow{KCN}$ 'B'

(ii) $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3 \xrightarrow{PCl_5}$ 'A' $\xrightarrow{AgCN}$ 'B'

(iii) $CH_3CH_2Cl \xrightarrow{AgNO_2}$ 'A'

(iv) $(CH_3)_2CHCl + CH{\equiv}CNa \longrightarrow$ 'A'

(v) $CH_3CH_2CH_2Cl + CH_3COOAg \longrightarrow$ 'A' + 'B'

(vi) $2(CH_3)_2CHCl + 2Na \xrightarrow{\text{dry ether}}$

51 What happens when 3
(i) Chlorobenzene is treated with $Cl_2/FeCl_3$,
(ii) ethyl chloride is treated with $AgNO_2$,
(iii) 2-bromopentane is treated with alcoholic KOH?
Write the chemical equations in support of your answer.

52 Write the main product when 3
(i) n-Butyl chloride is treated with alcoholic KOH
(ii) 2, 4, 6- Tri nitrochlorobenzene is subjected to hydrolysis
(iii) methyl chloride is treated with AgCN

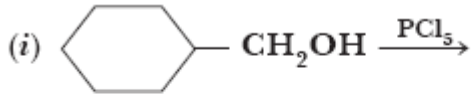
53 (a) Write a chemical test to distinguish between : 3
(i) Chlorobenzene and Benzyl chloride.
(ii) Chloroform and Carbon tetrachloride.
(b) Why is methyl chloride hydrolysed more easily than chlorobenzene?

54 Give reasons: 3
(a) n-Butyl bromide has higher boiling point than t-butyl bromide.
(b) Racemic mixture is optically inactive.
(c) The presence of nitro group ($-NO_2$) at o/p positions increases the reactivity of haloarenes towards nucleophilic substitution reactions.

55 (a) Why are alkyl halides insoluble in water? 3
(b) Why is Butan-1-ol optically inactive but Butan-2-ol is optically active?
(c) Although chlorine is an electron withdrawing group, yet it is ortho-, para- directing in electrophilic aromatic substitution reaction. Why?

56 Suggest a possible reason for the following observations: 3
(i) The order of reactivity of haloalkanes is RI > RCl > RBr.
(ii) Neopentyl chloride $(CH_3)_3CCH_2Cl$ does not follow SN_2 mechanism.
(iii) Ethers have low boiling points.

57 (a) Draw the structures of major monohalo products in each of the following reactions:



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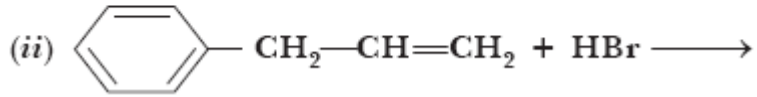
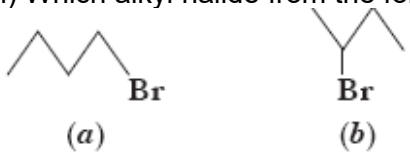


(b) Which halogen compound in each of the following pairs will react faster in S_N2 reaction:
(i) CH_3Br or CH_3I
(ii) $(CH_3)_3$ C—Cl or CH_3—Cl

58 Answer the following: 3
(i) Haloalkanes easily dissolve in organic solvents, why?
(ii) What is known as a racemic mixture? Give an example.
(iii) Of the two bromoderivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$ which one is more reactive in S_N1 substitution reaction and why?

59 (i) State one use each of DDT and iodoform. 3
(ii) Which compound in the following couples will react faster in S_N2 displacement and why?
(a) 1-Bromopentane or 2-bromopentane
(b) 1-Bromo-2-methylbutane or 2-bromo- 2-methylbutane.

60 (i) Which alkyl halide from the following pair is chiral and undergoes faster S_N2 reaction? 3



(ii) Out of S_N1 and S_N2, which reaction occurs with
(a) Inversion of configuration, (b) Racemisation?

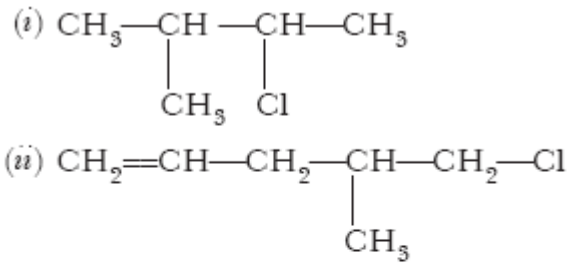
61 How would you convert the following. 3
(i) Prop-1-ene to 1-fluoropropane (ii) Chloro Benzene to 2-chloro toluene
(iii) Ethanol to propane nitrile

62 Although chlorine is an electron withdrawing group, yet it is ortho-, paradirecting in electrophilic aromatic substitution reactions. Explain why it is so? 3

63 Classify the following compounds as primary, secondary and tertiary halides
(i) 1-Bromobut-2-ene
(ii) 4-Bromopent-2-ene
(iii) 2-Bromo-2-methylpropane

3

64



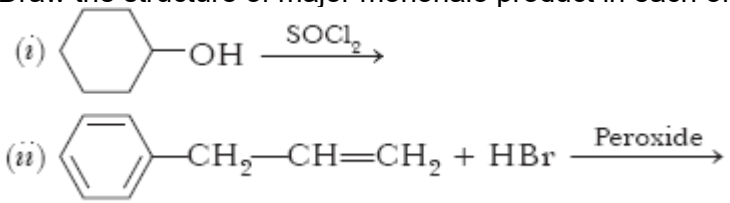
3

Write the IUPAC name of the following compounds:

65 An alkyl chloride (A), on reaction with magnesium in dry ether followed by treatment with ethanol gave 2-methylbutane. Write all the possible structures of (A).

3

66 Draw the structure of major monohalo product in each of the following reactions:



3

67 Which of the following undergoes nucleophilic substitution exclusively by S_N1 mechanism?
(a) Benzyl chloride (b) Ethyl chloride
(c) Chlorobenzene (d) Isopropyl chloride

1

68 The increasing order of nucleophilicity would be
(a) $Cl^- < Br^- < I^-$ (b) $I^- < Cl^- < Br^-$
(c) $Br^- < Cl^- < F^-$ (d) $I^- < Br^- < Cl^-$

1

69 $CH_3—\underset{\displaystyle CH_3}{\underset{|}{CH}}—CH=CH_2 + HBr \longrightarrow A$; 'A' is

(a) $CH_3—\overset{\displaystyle Br}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}—CH_2—CH_3$

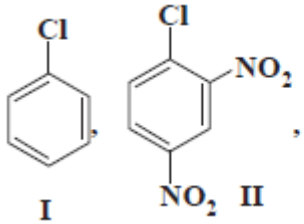
(b) $CH_3—\underset{\displaystyle Br}{\underset{|}{CH}}—\underset{\displaystyle CH_3}{\underset{|}{CH}}—CH_3$ 1

(c) $CH_3—\underset{\displaystyle CH_3}{\underset{|}{CH}}—CH_2—CH_2Br$

(d) $BrCH_2—\underset{\displaystyle CH_3}{\underset{|}{CH}}—CH_2—CH_3$

70 Which of the following is most reactive towards SN_1 reaction? 1
(a) $C_6H_5C(CH_3)C_6H_5Br$ (b) $C_6H_5CH_2Br$
(c) $C_6H_5CH(C_6H_5)Br$ (d) $C_6H_5CH(CH_3)Br$

71 The correct order of increasing the reactivity of C—X bond towards nucleophile in following compounds 1



I

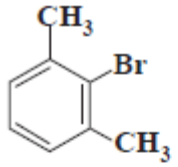
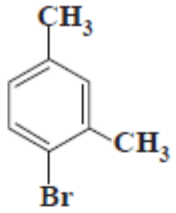
II

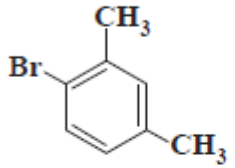
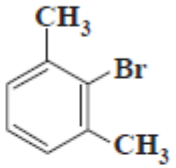
, $(CH_3)_3CCl$, $(CH_3)_2CHCl$

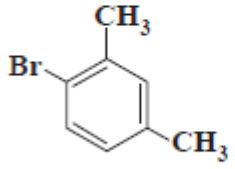
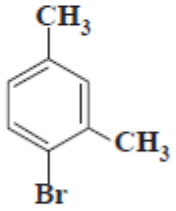
III IV

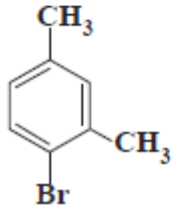
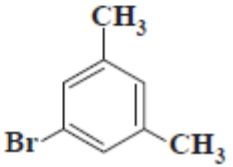
(a) IV < III < I < II (b) III < II < I < IV
(c) I < II < IV < III (d) II < III < I < IV

72 m-Xylene reacts with Br_2 in presence of $FeBr_3$, what are products formed 1

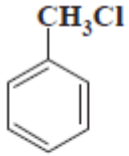
(a)  and 

(b)  and 

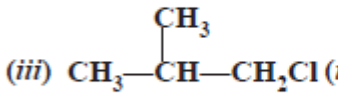
(c)  and 

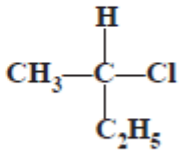
(d)  and 

73 Which of the following compound will undergo racemisation when reacts with aq. KOH? 1

(i) 

(ii) $CH_3CH_2CH_2Cl$

(iii) 

(iv) 

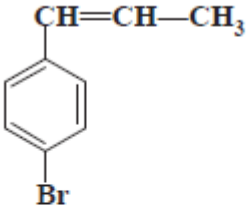
(a) (i) and (ii) (b) (ii) and (iv)

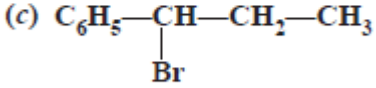
(c) (iii) and (iv) (d) (iv)

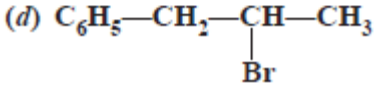
74 The reaction of $C_6H_5—CH==CH—CH_3$ with HBr produces

(a) $C_6H_5CH_2CH_2CH_2Br$

(a) $C_6H_5CH_2CH_2CH_2Br$

(b) 

(c) 

(d) 

1

75 $CH_3CH_2CH_2Br + NaCN \rightarrow CH_3CH_2CH_2CN + NaBr$, will be fastest in

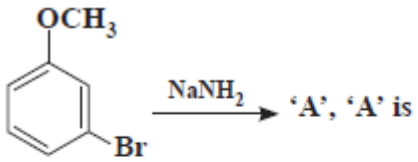
(a) ethanol

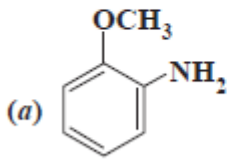
(b) methanol

(c) N, N dimethyl formamide

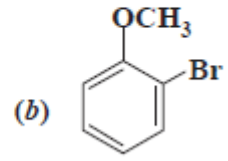
(d) Water

1

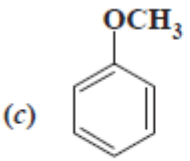
76 



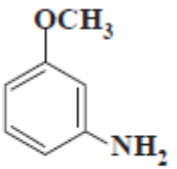
(a) and elimination addition reaction



(b) and cine substitution reaction



(c) and cine substitution reaction



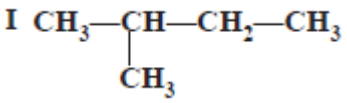
(d) and substitution reaction

1

77 A dihalogen derivative 'X' of a hydrocarbon with three carbon atoms react with alc. 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
(a) 1, 3–Dichloropropane (b) 1, 2–Dichloropropane
(c) 2, 2–Dichloropropane (d) 1, 1–Dichloropropane

78 The synthesis of alkyl fluoride is best accomplished by
(a) Finkelstein reaction (b) Swartz reaction 1
(c) Free radical fluorination (d) Sandmeyers reaction

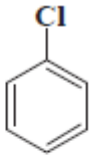
79 How many chiral compounds are possible on monochlorination of 2-methyl butane?
(a) 2 (b) 4 1
(c) 6 (d) 8

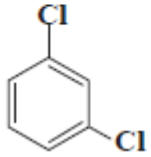
80 I 

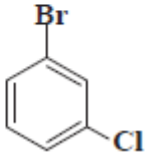
The increasing order of reactivity towards S_N1 mechanism is II $CH_3CH_2CH_2Cl$ 1
III p—CH_3O—C_6H_4—CH_2Cl
(a) III < II < I (b) II < I < III
(c) I < III < II (d) II < III < I

81 Arrange the following compounds in the increasing order of their densities. 1

(i) 

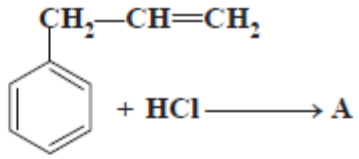
(ii) 

(iii) 

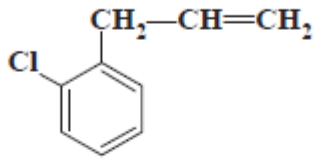
(iv) 

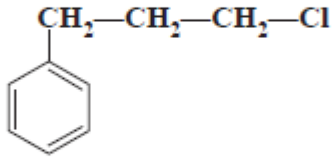
(a) (i) < (ii) < (iii) < (iv) (b) (i) < (iii) < (iv) < (ii)
(c) (iv) < (iii) < (ii) < (i) (d) (ii) < (iv) < (iii) < (i)

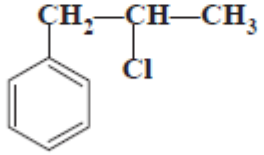
82

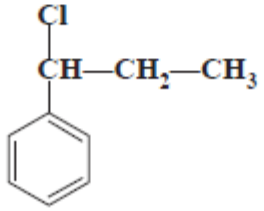


What is ‘A’ in the following reaction?

(a) 

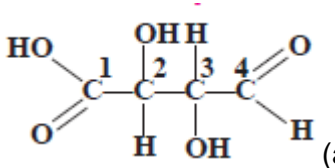
(b) 

(c) 

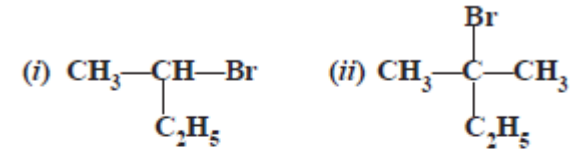
(d) 

1

83 Which of the following alkyl halides will undergo S_N1 reaction most readily? (a) $(CH_3)_3C—F$ (b) $(CH_3)_3C—Cl$ (c) $(CH_3)_3C—Br$ (d) $(CH_3)_3C—I$ 1

84 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 1

85 Which of the following compounds will give racemic mixture on nucleophilic substitution by OH^- ion?

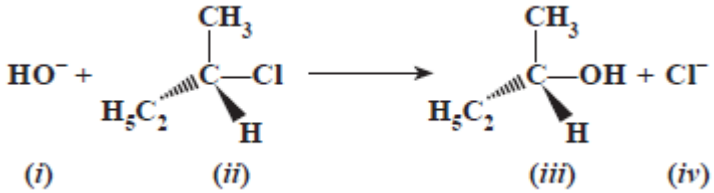


(*iii*) $CH_3—CH(C_2H_5)—CH_2Br$

(*a*) (*i*) (*b*) (*i*), (*ii*), (*iii*)

(*c*) (*ii*), (*iii*) (*d*) (*i*), (*iii*) 1

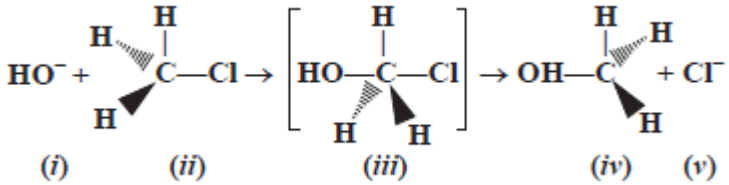
86 Consider the following reaction and answer the questions No. 21–23.



(*i*) (*ii*) (*iii*) (*iv*)

Which of the following statements are correct about this reaction? [NCERT Exemplar Problem] 1
(a) The given reaction follows S_N2 mechanism.
(b) (ii) and (iv) have opposite configuration.
(c) (ii) and (iv) have same configuration.
(d) The given reaction follows S_N1 mechanism.

87 Consider the following reaction and answer the questions No. 21–23. 1



Which of the following statements are correct about the reaction intermediate? [NCERT Exemplar Problem]

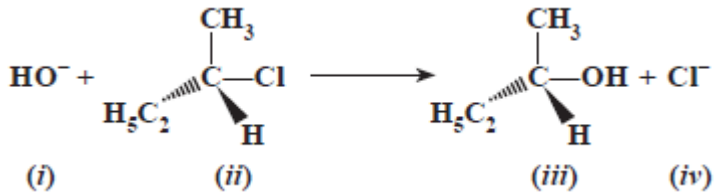
(a) Intermediate (iii) is unstable because in this carbon is attached to 5 atoms.

(b) Intermediate (iii) is unstable because carbon atom is sp^2 hybridised.

(c) Intermediate (iii) is stable because carbon atom is sp^2 hybridised.

(d) Intermediate (iii) is less stable than the reactant (ii).

88



Which of the following statements are correct about the mechanism of this reaction? [NCERT Exemplar Problem] 1

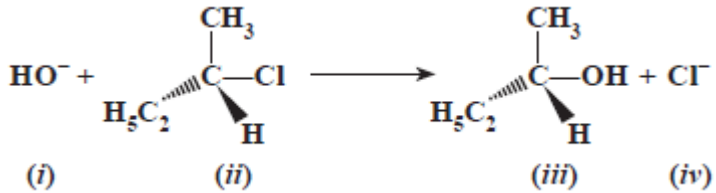
(a) A carbocation will be formed as an intermediate in the reaction.

(b) OH^- will attach the substrate (ii) from one side and Cl^- will leave it simultaneously from other side.

(c) An unstable intermediate will be formed in which OH^- and Cl^- will be attached by weak bonds.

(d) Reaction proceeds through S_N1 mechanism.

89



Which of the following statements are correct about the kinetics of this reaction? [NCERT Exemplar Problem] 1

(a) The rate of reaction depends on the concentration of only (ii).

(b) The rate of reaction depends on concentration of both (i) and (ii).

(c) Molecularity of reaction is one.

(d) Molecularity of reaction is two.

90 Haloalkanes contain halogen atom (s) attached to the sp^3 hybridised carbon atom of an alkyl group. Identify haloalkane from the following compounds. [NCERT Exemplar Problem] 1

(a) 2-Bromopentane

(b) Vinyl chloride (chloroethene)
(c) 2-chloroacetophenone
(d) Trichloromethane

91 Ethylene chloride and ethylidene chloride are isomers. Identify the correct statements. [NCERT Exemplar Problem]
(a) Both the compounds form same product on treatment with alcoholic KOH.
(b) Both the compounds form same product on treatment with aq.NaOH. 1
(c) Both the compounds form same product on reduction.
(d) Both the compounds are optically active.

92 Match the the compounds given in Column I with the effects given in Column II.

Column I	Column II
(a) Chloramphenicol	(i) Malaria
(b) Thyroxine	(ii) Anaesthetic
(c) Chloroquine	(iii) Typhoid fever
(d) Chloroform	(iv) Goiter
	(v) Blood substituent

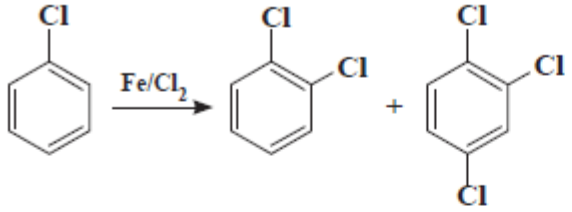
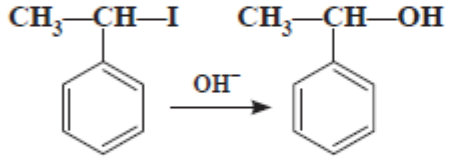
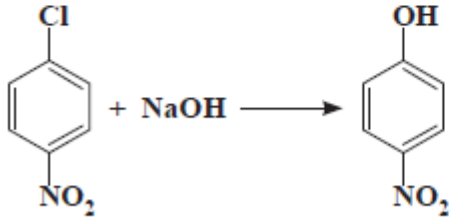
1

93 Match the items of Column I and Column II.

Column I	Column II
(a) S_N1 reaction	(i) vic-dibromides
(b) Chemicals in fire extinguisher	(ii) gem-dihalides
(c) Bromination of alkenes	(iii) Racemisation
(d) Alkylidene halides	(iv) Saytzeff rule
(e) Elimination of HX from alkylhalide	(v) Chlorobromocarbons

1

94 Match the reactions given in Column I with the types of reactions given in Column II. 1

Column I	Column II
(a) 	(i) Nucleophilic aromatic substitution
(b) $CH_3—CH=CH_2 + HBr \longrightarrow CH_3—\underset{\displaystyle Br}{\underset{\vert}{CH}}—CH_3$	(ii) Electrophilic aromatic substitution
(c) 	(iii) Saytzeff elimination
(d) 	(iv) Electrophilic addition
(e) $CH_3CH_2\underset{\displaystyle Br}{\underset{\vert}{C}}HCH_3 \xrightarrow{\text{alc.KOH}} CH_3CH=CHCH_3$	(v) Nucleophilic substitution (S_N1)

95 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. (Q.31 to Q.35)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement. 1
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion.
Assertion: KCN reacts with methyl chloride to give methyl isocyanide.
Reason: CN^- is an ambident nucleophile.

96 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. (Q.31 to Q.35) 1

(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement.
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. 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.

97 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. (Q.31 to Q.35)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement.
(d) Assertion is wrong but reason is correct statement. 1
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. 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.

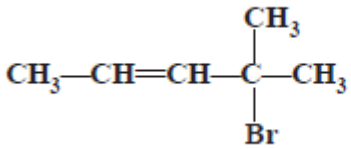
98 In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices. (Q.31 to Q.35)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement. 1
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. Assertion: In monohaloarenes, further electrophilic substitution occurs at ortho and para positions.
Reason: Halogen atom is a ring deactivator.

99 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. (Q.31 to Q.35)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement. 1
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. 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.

100 Chloromethane on treatment with excess of ammonia gives _____. 1

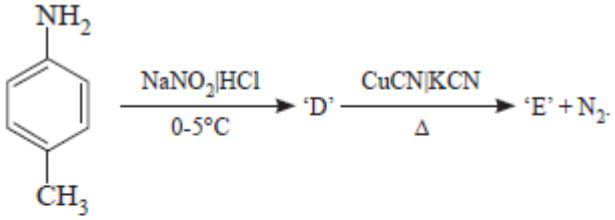
101 The isomer of C_4H_9Br, (optical active) is _____. 1

102 Out of chlorobenzene, o-chlorotoluene, m-chloro toluene, least reactive towards nucleophilic substitution is _____. 1

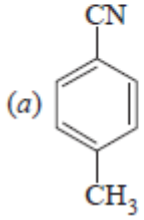
103  is allylic halide. [True or False] 1

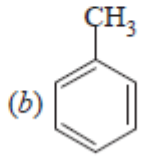
104 When benzene reacts with Cl_2 and $FeCl_3$, the attacking electrophile is Cl^+. [True or False] 1

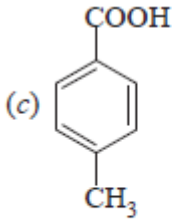
105 IUPAC name of Diethyl bromomethane is 3-Bromopentane. [True or False] 1

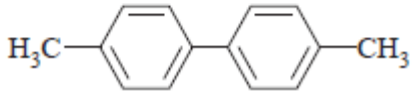
106 

The product 'E' is 1

(a) 

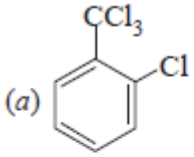
(b) 

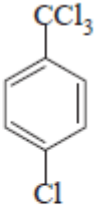
(c) 

(d) 

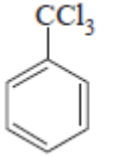
107 Toluene reacts with Br_2 in presence of sunlight to give
(a) o–Bromo toluene (b) p–bromo toluene
(c) Benzyl bromide (d) All of these 1

108

(a) 

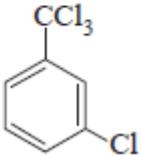
(b) 

1

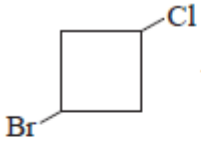


+ Cl_2 $\xrightarrow{FeCl_3}$ 'A', 'A' is

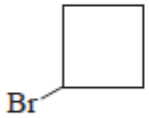
(c) Both (*a*) and (*b*)

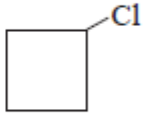
(d) 

109



+ 2Na $\xrightarrow[\text{Ether}]{\text{Dry}}$ 'X', X is

(*a*) 

(*b*) 

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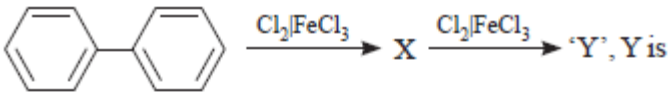
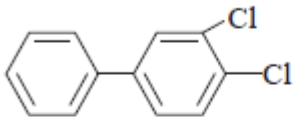
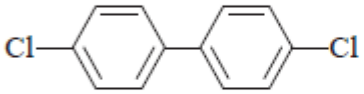
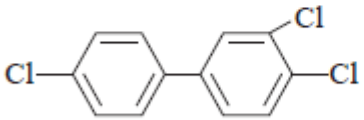
(*c*) 

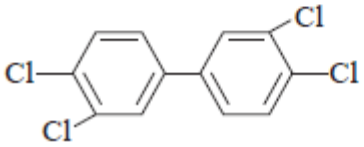
(*d*) 

110 

(a) 

(b) 

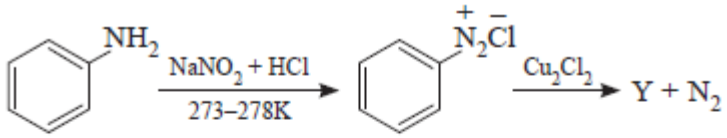
(c) 

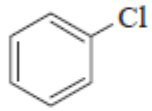
(d) 

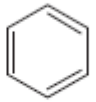
1

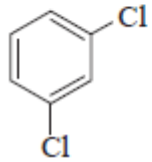
111 The order of reactivity of alcohols with halogen acids follows.
(a) 1° > 2° > 3° (b) 2° > 1° > 3°
(c) 3° > 1° > 2° (d) 3° > 2° > 1° 1

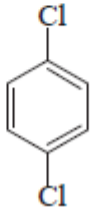
112 A primary alkyl halide would prefer to undergo _____. [NCERT Exemplar Problem]
(a) S_N1 reaction (b) S_N2 reaction
(c) α–Elimination (d) Racemisation 1

113 

(a) 

(b) 

(c) 

(d) 

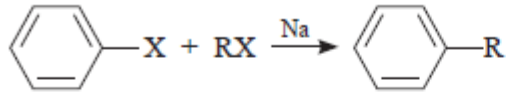
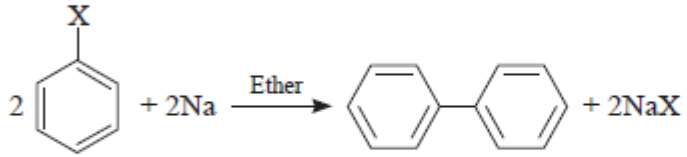
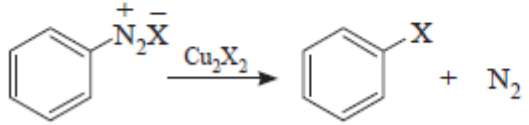
Identify the compound Y in the following reaction. 1

114 Alkyl halides are prepared from alcohols by treating with [NCERT Exemplar Problem]
(a) HCl + $ZnCl_2$ (b) Red P + Br_2
(c) H_2SO_4 + KI (d) All the above 1

115 Alkyl fluorides are synthesised by heating an alkyl chloride/bromide in presence of _____ or _____. (a) CaF_2 (b) CoF_2
(c) Hg_2F_2 (d) NaF 1

116 Which of the following compounds can be classified as aryl halides? [NCERT Exemplar Problem]
(a) p-$ClC_6H_4CH_2CH(CH_3)_2$
(b) p-$CH_3CHCl(C_6H_4)CH_2CH_3$
(c) o-BrH_2C-$C_6H_4CH(CH_3)CH_2CH_3$
(d) C_6H_5-Cl 1

117 Match the reactions given in Column I with the names given in Column II. 1

Column I	Column II
(a) 	(i) Fittig reaction
(b) 	(ii) Wurtz-Fittig reaction
(c) 	(iii) Finkelstein reaction
(d) $C_2H_5Cl + NaI \xrightarrow{\text{dry acetone}} C_2H_5I + NaCl$	(iv) Sandmeyer reaction

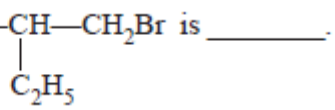
118 In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices. (Q.15 to Q.17)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement. 1
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion.
Assertion: It is difficult to replace chlorine by –OH in chlorobenzene in comparison to that in chloroethane.
Reason: Chlorine-carbon (C—Cl) bond in chlorobenzene has a partial double bond character due to resonance.

119 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. (Q.15 to Q.17)
(a) Assertion and reason both are correct and reason is correct explanation of assertion.
(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement. 1
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. Assertion: Hydrolysis of (–)-2-bromooctane proceeds with inversion of configuration.
Reason: This reaction proceeds through the formation of a carbocation.

120 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. (Q.15 to Q.17) 1
(a) Assertion and reason both are correct and reason is correct explanation of assertion.

(b) Assertion and reason both are wrong statements.
(c) Assertion is correct but reason is wrong statement.
(d) Assertion is wrong but reason is correct statement.
(e) Assertion and reason both are correct statements but reason is not correct explanation of assertion. Assertion: Nitration of chlorobenzene leads to the formation of m-nitrochlorobenzene
Reason: —NO_2 group is a m-directing group.

121 Out of chlorobenzene, p-chloronitrobenzene, 2,4,6-Trinitrobenzene, most reactive towards nucleophilic substitution reaction is _____. 1

122 The IUPAC name of  is _____. 1

123 Chlorobenzene, although–Cl group is electron with drawing but o and p-directly. [True/False] 1

124 $C_6H_5NH_2$ reacts with $CHCl_3$ and KOH to form $C_6H_5N{\equiv}C$ (offensive smelling) is called carbylamine reaction. [True/False] 1

125 CH_3CH_2OH reacts with I_2 and NaOH forms CHI_3 which acts as antiseptic. [True/False] 1

126 Complete the following chemical equation: $H_3CCH_2CH{=}{=}CH_2 + HBr \xrightarrow{\text{Peroxide}}$ _____. 1