

Gaining Apex Coaching Centre

(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

Assignment Haloalkanes

- 1) Why fluorination of alkanes is not possible
- 2) Explain Hoffmann ammonolysis with limitation
- 3) Explain grooves process and also explain the role of ZnCl_2 in this process
- 4) Write the following reactions
 - i) Sandmeyer Reaction
 - ii) Hunsdiecker reaction
 - iii) Balz Schiemann reaction
 - iv) Ullmann reaction
 - v) Fittig
 - vi) Wurtz Fittig
 - vii) Finkelstein reaction
- 5) How will you detect the presence of double bond in a given compound
- 6) Why vinyl chloride is less reactive than ethyl chloride
- 7) Which compound in each of the following pairs will react faster in $\text{S}_\text{N}2$ reaction with OH^- :
 - i) CH_3Br or CH_3I
 - ii) $(\text{CH}_3)_3\text{CCl}$ or CH_3Cl
- 8) Predict the order of reactivity of the following compounds towards $\text{S}_\text{N}1$ mechanism
 $\text{C}_6\text{H}_5\text{CH}_2\text{Br}$, $\text{C}_6\text{H}_5\text{CH}(\text{C}_6\text{H}_5)\text{Br}$, $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{Br}$, $\text{C}_6\text{H}_5\text{C}(\text{CH}_3)(\text{C}_6\text{H}_5)\text{Br}$
- 9) How Iodination differs from chlorination reaction
- 10) Alkyl halides react with KCN to give cyanides while on reaction with AgCN gives isocyanides. Explain
- 11) Allyl chloride is hydrolyzed more readily than propyl chloride
- 12) Convert
 - i) Ethanol to But-1-yne
 - ii) Toluene to Benzyl alcohol
 - iii) Propene to propan-2-ol
 - iv) Ethane to ethanamine
 - v) Bromoethane to nitroethane
 - vi) But-1-ene to But-2-ene
 - vii) Ethane to Propanoic acid
 - viii) Ethane to butane
 - ix) Propane to butanamine
 - x) Ethane to 1,2-Dichloroethane
- 13) Why nucleophile attacks from backside in $\text{S}_\text{N}2$ mechanism
- 14) $\text{S}_\text{N}2$ reaction is always accompanied by inversion of configuration

Gaining Apex Coaching Centre

(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

- 15) What will be the product if neopentyl bromide reacts with benzene in the presence of AlCl_3 give proper Justification in support of your answer
- 16) Addition of HBr in 3-Methylbut-1-ene gives compound A. Justify that compound
With proper mechanism
- 17) No need for the addition of ZnCl_2 with HCl if alcohol is tertiary. Give proper Explanation in support of your answer
- 18) Can benzyl halides undergo $\text{S}_\text{N}2$ reactions?
- 19) Why CO compounds at Beta position reacts faster towards $\text{S}_\text{N}2$ Mechanisms
- 20) In case of Finkelstein reaction why NaI replaces other halogens
- 21) Write any reaction for the preparation of fluoroalkanes.
- 22) Addition HBr in Propene with or without peroxide gives different products. Explain with proper justification
- 23) Which is the best method for the preparation of Haloalkane and also write the reaction
- 24) Predict the major product on addition of KOH in 2-Bromo-3-Methyl butane with proper explanation
- 25) Arrange in increasing order of boiling point 1-chloropropane, isopropyl chloride and 1-chlorobutane
- 26) Complete the following reaction
- $\text{CH}_3\text{COOAg} + \text{Br}_2 \rightarrow ? \text{ alc KOH} \rightarrow$
 - $? + \text{P, Br}_2 \text{ CH}_3(\text{CH})\text{Br CH}_3 + \text{alc KOH} \rightarrow ? + \text{HBr (Peroxide)} \rightarrow$
 - $\text{CH}_3\text{CH}_2\text{Br} + \text{H}_2 + \text{Ni} \rightarrow$
 - $\text{CH}_3\text{CH}_2\text{Br} + \text{AgNO}_2 \rightarrow$
- 27) Out of Chlorobenzene and Chloroethane which is more reactive towards NAR
- 28) Explain Stereo Chemistry of $\text{S}_\text{N}2$ and $\text{S}_\text{N}1$
- 29) Write the example with IUPAC Name of Vicinal and Gem Halides
- 30) Explain Markownikov and Anti markownikov rule with the help of an example
- 31) Explain the formation of major product due to elimination of 2-Chloro butane
- 32) Why we not add Anhy ZnCl_2 for the preparation of Alkylchloride from tertiary alcohol
- 33) Convert
- But-1-ene to But-2-ene
 - Ethane to Propanoic acid

Gaining Apex Coaching Centre

(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

- iii) Propene to propan-2-ol
 - iv) Ethane to butane
 - v) Ethane to propanamine
 - vi) Propane to butanamine
 - vii) Butene to Butanol
 - viii) Propene to propan-2-ol
 - ix) Methane to tetrachloromethane
- 34) Which one of the following has the highest dipole moment?
(i) CH_3Cl_2 (ii) CHCl_3 (iii) CCl_4
- 35) Arrange each set of compounds in order of increasing boiling points
(ii) 1- Chloropropane, isopropyl chloride, 1- Chlorobutane.
- 36) Write structures of the following compounds: 3
(i) 2-Chloro-3-methylpentane
(ii) 1-Chloro-4-ethylcyclohexane
(iii) 4-tert. Butyl-3-iodoheptane
- 37) Arrange each set of compounds in order of increasing boiling points:
(i) Bromomethane, bromoform, chloromethane, dibromomethane. Give proper explanation in support of your answer
- 38) A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound $\text{C}_5\text{H}_9\text{Cl}$ in bright sunlight. Identify the hydrocarbon.
- 39) Haloalkanes undergo nucleophilic substitution whereas haloarenes undergo electrophilic substitution. Explain
- 40) During the addition of ammonia in excess of chloroethane different products are formed. Explain
- 41) KOH aqueous undergoes substitution while alcoholic KOH undergoes elimination
- 42) Explain the necessary and sufficient condition of compound to optically active
- 43) How retention of configuration is different from inversion of configuration
- 44) Racemic mixture is optically inactive
- 45) Why Racemization occurs in $\text{S}_\text{N}1$ reaction
- 46) Allyl chloride is hydrolyzed more readily than propyl chloride
- 47) Why is sulphuric acid not used during the reaction of alcohols with KI?

Gaining Apex Coaching Centre

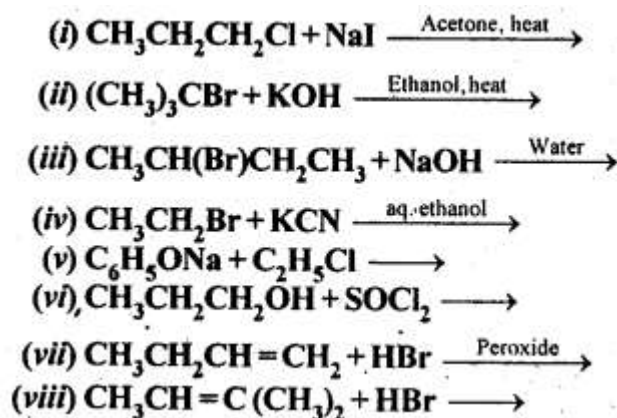
(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

48) Explain why

- (i) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?
- (ii) alkyl halides, though polar, are immiscible with water?
- (iii) Grignard reagents should be prepared under anhydrous conditions?

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



50) p-dichlorobenzene has higher m.p. and lesser solubility than those of o- and m-isomers.

Discuss.

51) How the following conversions can be carried out:

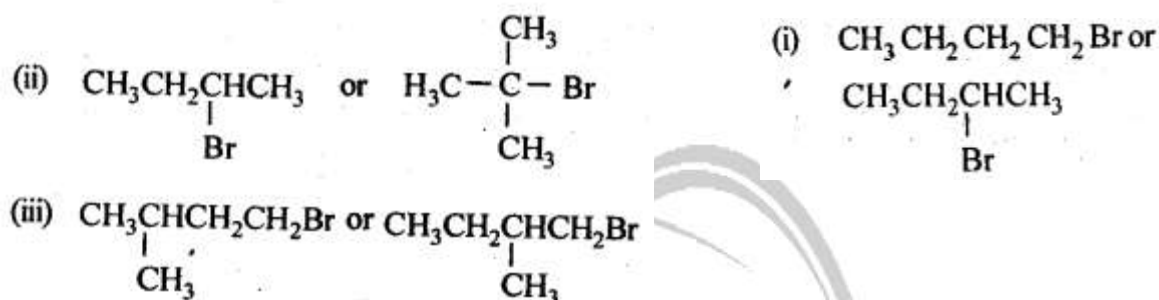
- (i) Propene to propan-1-ol (ii) Ethanol to but-1-yne
- (iii) 1-Bromopropane to 2-bromopropane (iv) Toluene to benzyl alcohol
- (v) Benzene to 4-bromonitrobenzene (vi) Benzyl alcohol to 2-phenylethanoic acid
- (vii) Ethanol to propanenitrile (viii) Aniline to chlorobenzene
- (ix) 2-Chlorobutane to 3,4-dimethylhexane (x) 2-Methyl-1-propene to 2-chloro-2-methylpropane.
- (xi) Ethyl chloride to propanoic acid (xii) But-1-ene to n-butyliodide
- (xiii) 2-Chloropropane to 1-propanol (xiv) Isopropyl alcohol to iodoform
- (xv) Chlorobenzene to p-nitrophenol (xvi) 2-Bromopropane to 1-bromopropane
- (xvii) Chloroethane to butane, (xviii) Benzene to diphenyl
- (xix) tert-Butyl bromide to isobutyl bromide (xx) Aniline to phenyl isocyanide

Gaining Apex Coaching Centre

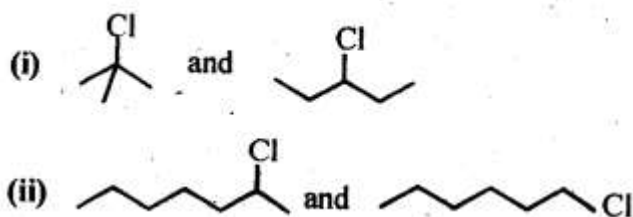
(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

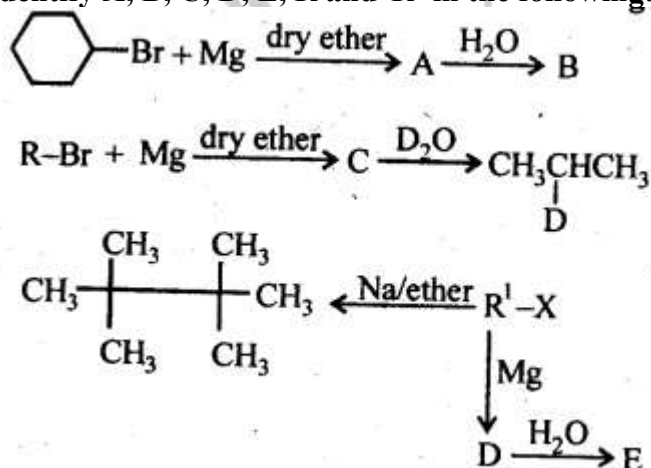
52) Which alkyl halide from the following pairs would you expect to react more rapidly by an S_N2 mechanism? Explain your answer.



53) In the following pairs of halogen compounds, which compound undergoes faster S_N1 reaction?



54) Identify A, B, C, D, E, R and R^1 in the following:



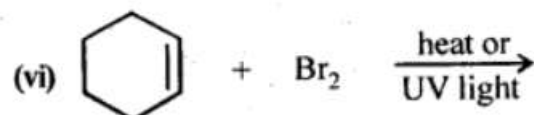
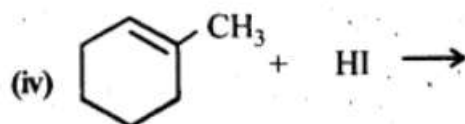
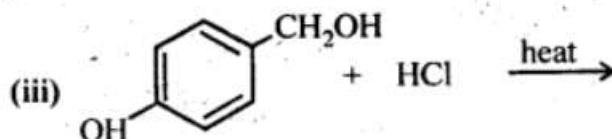
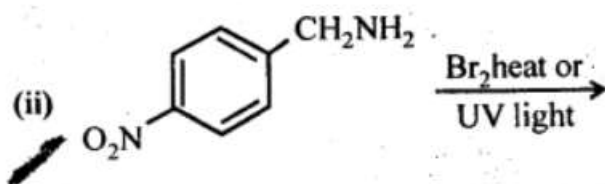
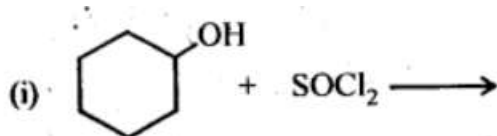
55) A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound $\text{C}_5\text{H}_9\text{Cl}$ in bright sunlight. Identify the hydrocarbon.

Gaining Apex Coaching Centre

(Where Toppers make..... Toppers)

Compiled By: Dapinderjeet Singh

58) Complete the following reactions



56) Which one of the following has the highest dipole moment?

(i) CH_3Cl_2 (ii) CHCl_3 (iii) CCl_4

57) A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound $\text{C}_5\text{H}_9\text{Cl}$ in bright sunlight. Identify the hydrocarbon.