

CHEMISTRY

BOOKS - OMEGA PUBLICATION

HALOALKANES AND HALOARENES

Questions

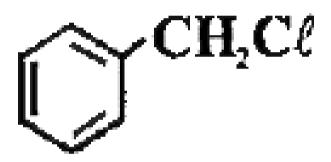
1. Write the IUPAC names of the following compounds:

$$(CH_3)_3CCH_2Br$$



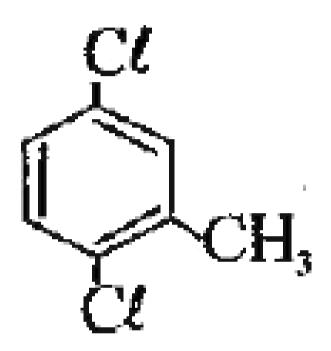
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2. Write the IUPAC names of the following compounds:





3. Write the IUPAC names of the following compounds:





4. Write the structural formula for 4-chloropent-2-ene.



5. How cholroethane is prepared from ethanol?



6. How will you prepare haloalkanes from alkene?



7. What happens when Br_2 reacts with $H_3C-HC=CH2$?



8. Show cis and trans structures of C6H5-CH=CH-C6H5



9. What will happen will choloropropane is treated with alcoholic KOH?



10. What happen whwn ethyl bromide is treated with alcoholic KOH?



11. What happen when 1,2-dibromoethane is heated with zinc in presence of ethanol?



12. What happen when propylene dibromide is heated with zinc in presence of ethanol?



13. What do you mean by dehydrohalogenation reaction?



14. Convert ethyne into ethene.



15. convert propyne into propene.



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16. Complete the following reaction equation:

$$CH_3CH_2CH = CH_2 + HBr
ightarrow$$



17. What do you mean by dehalogenation reaction?



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18. Write the equations for the preparation of 1iodobutane from

1- butanol



19. Write the equations for the preparation of 1iodobutane from

1 - chlorobutane



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20. Write the equations for the preparation of 2iodobutane from

but -1- ene



21. Draw structure of 3-bromo cyclohex-1-ene



22. How will you convert but-2-yne into but-2-ene.



23. How will you convert alcohols into alkene?



24. Draw structure of 3- chloromethyl pent-2-ene



25. What will happen when cyclo hexanol is heated with H3PO4.



26. What will happen when tert butyl alcohol is heated with H2SO4.



27. What will happen when ethanol is heated with alumina?



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28. What will happen when ethanol is heated with zinc chloride?



29. What will happen when bromine (Br2) is added to propene in the presence of CCl4?



30. What will happen when bromine (Br2) is added to ethene in the presence of CCl4?



31. Write the IUPAC name of CH3-CH2-CH=CH2



32. Write the IUPAC name of (CH3)2CH-CH2-C=CH



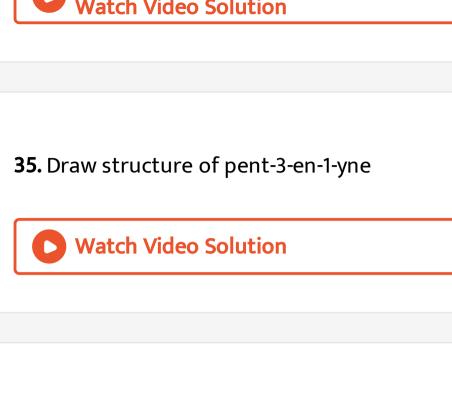
33. Write the IUPAC name of CH3-CH2-C=C-CH2-



CH₃

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34. Write the IUPAC name of CH3-CH2-C=CH



36. Draw structure of 3-methyl but-1-yne



37. Draw structure of 3-cyclopropyl prop-1-yne



38. What will happen when HBr is treated with propene.



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39. What will happen when HBr is treated with but-2-ene.



40. what will happen when HBr is added to propene in presence of peroxide?



41. What will happen when water is added to ethene in presence of acid?



42. How oxidation of propene takes place in presence of hot KMnO4?



43. Write chain isomers of pent-1-yne



44. What happen when ethene oxidised with cold KMnO4



45. What happen when propene oxidised with cold KMnO4



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46. Explain briefly

Plane of symmetry



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47. Explain briefly

Chiral carbon



48. Explain briefly

Resolution



49. Define the term chirality. Give two examples of chiral compounds.



50. What will happen whwn ethene is oxidised with hot KMnO4??



51. What will happen when 2-methyl propene is oxidised with hot KMnO4?



52. \pm 2-butanol is optically inactive



53. What will happen when but-2-ene is oxidised with hot KMnO4?



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54. What will happen when 2-methyl but-2-ene is oxidised with hot KMnO4?



55. What is racemisation?



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56. What will happen when 2,3-dimethyl but-2-ene is oxidised with hot KMnO4?



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57. What will happen chloroethane treated with alc. KOH?



58. Write the main product when n-butyl chloride is treated with alcoholic KOH.



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59. Give major product of 2-bromo-3-methyl butane when treated with alc KOH?



60. What will happen bromopropane treated with alc. KOH?



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61. How do the products differ when ethyl bromide reacts separately with aqueous KOH and alcoholic KOH? Name the products.



62. How is ethylbromide converted into: ethanol



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63. How is ethylbromide converted into: ethyl acetate



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64. How can you convert 2-bromopropane into 2iodopropane.



65. Give one example of Finkelstein reaction.



66. Name the reagent used to convert ethyl alcohol to ethene.



67. Name the reagent used to convert bromoethane to butane.



68. How will you convert chloroethane into butane?



69. Draw structure of 2-chloro-5-ethyl benzene.



70. Draw structure of 2-iodotoluene.



71. Draw structure of 1-bromo-4-methylbenzene



72. Draw structure of 1-bromo-2-phenylethane.



73. Draw structure of 3-chloro-3-methylcyclohex-1-ene.



74. Draw structure of 4- bromo aniline



75. Convert 32 celcius into fahrenheit?



76. How will you convert 303K into celcius?



77. How will you convert 273K into fahrenheit?



78. Why Fluorination of benzene not possible directly?



79. Differentiate $\sin x$ with respect to x.



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80. Write the following reaction:

Wurtz Fittig Reaction



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81. Give the following reactions:

Fitting reaction



82. How will you prepare chloroform from ethanol

? Give reactions of chloroform with nitric acid



83. How will you prepare chloroform from ethanol

? Give reactions of chloroform with



silver powder.

84. Convert chloroform into chloropicrin.



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85. How do the products differ when ethyl bromide reacts separately with KNO_2 and $AgNO_2$? Name the products.



86. Chloroform is a chlorine compound but gives no reaction with silver nitrate solution why?



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87. Why a small amount of ethyl alcohol is usually added to chloroform bottlkes?



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88. Why is chloroform stored in dark coloured hottles?



89. Give one important use and side effect of iodoform.



90. Give one example of Balz-schiemann reaction.



91. Complete the following reaction :

$$CH_{3}CH_{2}Br + AgCN
ightarrow$$



- 92. Write the main product when.
- 2, 4, 6- trinitrochlorobenzene is sujected to hydrolysis.



93. Write the main product when.

Methyl chloride is treated with AgCN.



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94. What is freon ? How is it prepared from CCl_4

? Write its one use.



95. Give two uses of freons



96. Write two environmental effects of freons.



97. How will you convert benzene into Benzene sulphonic acid ?



98. Give IUPAC name of D.D.T.





99. How is DDT prepared from chlorobenzene ? Give the chemical equation only.



100. Write DDT structure.



101. Give one important use and side effect of D.D.T.



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102. Complete the following reaction :

$$CH_3CH_2Br + AgCN
ightarrow$$



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

$$CH_3CH_2CH_2Cl + Nal \xrightarrow[ext{Heat}]{ ext{actone}}$$



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

$$CH_3CH(Br)CH_2CH_3 + NaOH \xrightarrow{\mathrm{Water}}$$



105. Write the structure of the major organic product in each of the following reactions : $CH_3CH_2Br + KCN \xrightarrow{\text{aq. Ethanol}}$

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

$$C_6H_5Ona + C_2H_5Cl
ightarrow$$



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

$$CH_3CH_2CH_2OH + COCl_2
ightarrow$$



108. Complete the following reaction equation:

$$CH_3CH_2CH = CH_2 + HBr \rightarrow$$



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

$$(CH_3)_3CBr+KOH \xrightarrow{ ext{ethanol}}^{ ext{thanol}}$$



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

$$CH_3CH = C(CH_3)_2 + HBr
ightarrow$$



111. Explain why is thionyl chloride method preferred for preparing alkyl chlorides from alcohol?



112. Anti Markownikov rule or peroxide effect applies to the addition of HBr only and not to the addition of HCI or HI give reason.



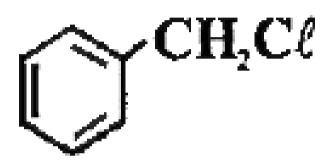
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113. Write the IUPAC names of the following compounds:

 $(CH_3)_3CCH_2Br$

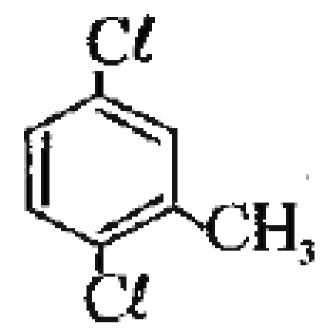


114. Write the IUPAC names of the following compounds:



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115. Write the IUPAC names of the following compounds:



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116. Write the structural formula for 4-chloropent-2-ene.

117. How haloalkanes are prepared from alcohols



118. How will you prepare haloalkanes from alkene?



119. What happens when Br_2 reacts with $H_3C-HC=CH2$?



120. Write down following name reaction:

Hunsdiecker reaction



121. Explain the following reactions:

Diazotisation reaction.



122. Explain the following reaction reaction : Sandmeyer's reaction.



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123. Explain the following reaction:

Gattermann reaction.



124. Give one example of Finkelstein reaction.



125. Convert benzene diazonium chloride to fluorobenzene.



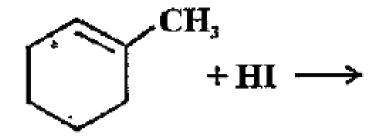
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126. How are the following conversions accomplished? Write reaction only.

Aniline into chlorobenzene



127. Complete the following reaction equation :





128. Complete the following reaction equation :

$$CH_3CH_2CH = CH_2 + HBr
ightarrow$$



129. Hydrocarbon C_5H_{10} does not react with chlorine but gives a single monochloro compound, C_5H_9Cl in bright sunlight: Identify the hydrocarbon.



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130. Write the equations for the preparation of 1-iodobutane from

1- butanol



131. Write the equations for the preparation of 1-iodobutane from

1 - chlorobutane



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132. Write the equations for the preparation of 1-iodobutane from

but -1- ene



133. How do you convert the following:

Prop-1-ene to 1- fluoropropane.



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134. How do you convert the following:

Chlorobenzene to 2-chlorotoluene.



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135. How boiling point of C-X for the same alkyl group vary down the group ?

136. With the help of hybridisation show that aryl halides are lesser reactive than alkyl halides.



137. C-X bond length in halobenzene is smaller than C-X bond length in CH_3-X



138. para - isomers have high melting point as compared to ortho and meta-isomers. Explain.



139. Alkyl halides though polar, are immiscible with water, why?



140. Why does electrophilic substitution take place at ortho and para positions in haloarenes?



141. Haloarenes are insoluble in water but soluble in benzene. Explain.



142. Alkyl halides though polar, are immiscible with water, why?



143. Explain why

Grignard reagents should be prepared under anhydrous conditions.



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144. The dipole moment of chlorobenzene is lower than that of cyclohexyl chloride. Explain.



145. With the help of resonance show that aryl halides are lesser reactive than alkyl halides.



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146. What is optical isomerism? What is the necessary and sufficient condition for a molecule to exhibit optical isomerism?



147. What are ambident uncleophiles? Explain with an example.



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148. Haloalkanes react with potassium cyanide (KCN) to give alkyl cyanide, but gives alkyl isocyanide with silver cyanide (Ag CN).



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149. Define retention.



150. Define inversion.

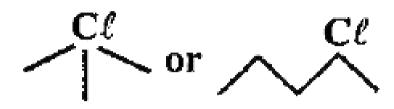


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151. Which one of the following compounds is more easily hydrolyzed by KOH and why? $CH_3CHClCH_2CH_3$ or CH_3CH_2Cl

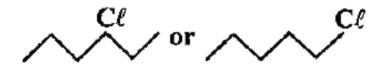


152. Which one in the following pairs undergoes substitution reaction faster and why?





153. Which one in the following pairs undergoes substitution reaction faster and why?





154. Rearrange the compounds of each of the following sets in order of reactivity towards S_N^2 displacement :

2-Bromo-2-methylbutane, 1- Bromopentane, 2-Bromopentane



155. Rearrange the compounds of each of the following sets in order of reactivity towards ${\cal S}_N^2$ displacement :

methylbutane, 3-Bromo-2-methylbutane



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156. Rearrange the compounds of each of the following sets in order of reactivity towards S_N^2 displacement : 2-Bromo-2-methylbutane, 1- Bromopentane, 2-

Bromopentane



157. The reaction

is



158. Explain briefly

Plane of symmetry



159. Explain briefly

Chiral carbon



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160. Explain briefly

Resolution



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161. Define the term chirality. Give two examples of chiral compounds.



162. Which metal is used in the preparation of Grignard's regent from haloalkanes ?



163. Out of 2-chloropentane and 2-chloro-2-methylpentane, which one is having chiral carbon atom? Explain.



164. \pm 2-butanol is optically inactive



165. What are optically active compounds?



166. What are enantiomers? Give an example.



167. What is racemisation?



168. Write a chemical reaction to illustrate Saytzeff's rule.



169. Why is dehydrohalogenation reaction in haloalkane termed as `beta-elimination ?



170. Write the main product when n-butyl chloride is treated with alcoholic KOH.



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171. How do the products differ when ethyl bromide reacts separately with aqueous KOH and alcoholic KOH? Name the products.



172. Why is Wurtz reaction not suitable for the preparation of odd number alkanes?



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173. How tert-butyl bromide reacts with aqueous KOH? Give the mechanism and kinetics of . reaction.



174. How is ethylbromide converted into: ethanol



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175. How is ethylbromide converted into: ethyl acetate



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176. Complete the following reaction $CH_3CH_2Br + KOH(aq)
ightarrow$



177. Give one example of Finkelstein reaction.



178. Name the reagent nsed to convert 1 chloro propane to 1 nitro propane.



179. Name the reagent used to convert bromoethane to butane.



180. How will you convert chloroethane into butane?



181. What happens when -

bromobenzene is treated with Mg in the

presence of dry ether



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182. Write short note on the followings

Hoffmann's ammonolysis



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183. Write short note on the followings

Complete: $CH_3CH_2OH + HCl \xrightarrow{\mathrm{anhy}}_{ZnCl_2}$



184. Write short notes on the followings:

Ullmann reaction



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185. Write short notes on the followings:

Haloform reaction



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186. Why haloalkanes are more reactive than haloarenes towards nuclophilic subsition

reaction?



187. Why does electrophilic substitution take place at ortho and para positions in haloarenes?



188. The reactivity order of haloalkanes is R-I>R-Br>R-Cl>R-F. Explain.



189. How chlorobenzene is prepared from benzene?



190. Why Fluorination of benzene not possible directly?



191. Discuss Friedel - Craft alkylation and acylation reaction with respect to haloarenes.



192. Write the following reaction:

Wurtz Fittig Reaction



193. Give the following reactions:

Fitting reaction



194. How will you prepare chloroform from ethanol? Give reactions of chloroform with nitric acid



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195. How will you prepare chloroform from ethanol? Give reactions of chloroform with silver powder.



196. Convert chloroform into chloropicrin.



197. How do the products differ when ethyl bromide reacts separately with KNO_2 and $AgNO_2$? Name the products.



198. Chloroform is a chlorine compound but it does not give white precipitate with silver nitrate

solution. Give reason. **Watch Video Solution** 199. Why ethyl alcohol is added to chloroform bottles? **Watch Video Solution** 200. Why is chloroform stored in dark coloured bottles? **Watch Video Solution**

201. Give one important use and side effect of iodoform.



202. Give one example of Balz-schiemann reaction.



203. Complete the following reaction : $CH_3CH_2Br + AgCN
ightarrow$

- 204. Write the main product when.
- 2, 4, 6- trinitrochlorobenzene is sujected to hydrolysis.



205. Write the main product when.

Methyl chloride is treated with AgCN.



206. What is freon ? How is it prepared from CCl_4 ? Write its one use.



207. Give two uses of freons



208. Write two environmental effects of freons.



209. Convert benzene into benzene hexachloride.



210. Give IUPAC name of D.D.T.



211. How is DDT prepared from chlorobenzene ? Give the chemical equation only.



212. Write DDT structure.



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213. Give one important use and side effect of D.D.T.



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214. Explain the mechanism of the following reaction:

$$n-BuBr-KCN \stackrel{{
m etOH} \quad -H_2O}{-\hspace{-0.5cm}\longrightarrow} n-BuCN$$

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

$$CH_3CH_2CH_2Cl + Nal \xrightarrow[ext{Heat}]{ ext{acetone}}$$



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

$$CH_3CH(Br)CH_2CH_3 + NaOH \stackrel{ ext{Water}}{\longrightarrow}$$



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

$$CH_3CH_2Br + KCN \xrightarrow{ ext{aq. Ethanol}}$$



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

$$C_6H_5Ona + C_2H_5Cl
ightarrow$$



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

$$CH_3CH_2CH_2OH + COCl_2
ightarrow$$



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

$$CH_3CH_2CH = CH_2 + HBr \xrightarrow{\mathrm{peroxide}}$$



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

$$(CH_3)_3CBr+KOH \xrightarrow{ ext{ethanol}}^{ ext{thanol}}$$



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

$$CH_3CH = C(CH_3)_2 + HBr \rightarrow$$



223. Explain why is thionyl chloride method preferred for preparing alkyl chlorides from alcohol?



224. Anti Markownikov rule or peroxide effect applies to the addition of HBr only and not to the addition of HCl or HI give reason.



Multiple Choice Questions Mcqs

1. Ethyl alcohol gives ethyl chloride with the help of

A. NaCl

B. Cl_2

C. KCl

D. $SOCl_2$

Answer: D



2. $CH_3-CH=CH_2+HI o X$ where X is

A.
$$CH_3 - CH_2 - CH_2 - I$$

$$\mathsf{B.}\,CH_3 - CH - CH_3 \\ |\\I$$

$$\mathsf{C.}\,CH_3-CH_2-CH_3$$

$$\mathsf{D.}\, CH_3 - CH_3 + CH_4$$

Answer: B



3. The reaction

$$CH_3-CH=CH_2+HBr
ightarrow CH_3-CH-CH_3 \ ert_{Br}$$

is

A. nucleophilic addition reaction

B. electrophilic addition reaction

C. electrophilic substitution reaction

D. free radical addition reaction

Answer: B



4. SN^1 reaction of alkylhalides leads to

A. retention of configuration

B. racemisation

C. inversion of corffiguration

D. None of these.

Answer: B



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5. Most reactive metal is:

- A. n-butyl chloride
- B. sec-butyl chloride
- C. tert-butyl chloride
- D. allyl chloride.

Answer: C



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6. The reactivity order of halides for dehydrohalogenation is

A. R-F> RI>RBr>RCl

B. R-I> RBr>RCl>RF

C. R-I> RCI>RBr>RF

D. R-F> RBr>RCl>RI

Answer: B



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7. Mg reacts with RBr best in

A. $C_2H_5OC_2H_5$

B. $C_6H_5OCH_3$

C. $C_6H_5N(CH_3)_2$

D. equally in all the three.

Answer: A



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8. Both methane and ethane can be prepared in single step by the use of

A. C_2H_4

B. CH_3OH

C. CH_3Br

D. CH_3CHO

Answer: C



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9. Alkyl halides react with Mg in dry ether to form

A. magnesium halide

B. Grignard's reagent

C. alkene

D. alkyne

Answer: B



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10. Which of the following metal can be used for carrying out Wurtz-Fittig reaction?

- A. Sodium
- B. Mercury
- C. Radium
- D. Any of these.

Answer: A

11. Ethyl alcohol gives ethyl chloride with the help of

A. NaCl

B. Cl_2

 $\mathsf{C}.\,KCl$

D. $SOCl_2$

Answer: D



12. $CH_3-CH=CH_2+HI o X$ where X is

A.
$$CH_3-CH_2-CH_2-I$$

B.
$$CH_3 - CH - CH_3$$

$$\mathsf{C.}\,CH_3-CH_2-CH_3$$

$$\mathsf{D.}\,CH_3-CH_3+CH_4$$

Answer: B



13. The reaction

is

- A. nucleophilic addition reaction
- B. electrophilic addition reaction
- C. electrophilic substitution reaction
- D. free radical addition reaction

Answer: B



14. SN^1 reaction of alkylhalides leads to

A. retention of configuration

B. racemisation

C. inversion of corffiguration

D. None of these.

Answer: B



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15. Most reactive halide towards SNI reaction is

- A. n-butyl chloride
- B. sec-butyl chloride
- C. tert-butyl chloride
- D. allyl chloride.

Answer: C



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16. The reactivity order of halides for dehydrohalogenation is

A. R-FgtR-CLgtR-BrgtR.

- B. R-IgtR--BrgtR-ClgtR-F
- C. R-IgtR-FgtR-BrgtR-Cl
- D. R-FltR-IgtR-BrgtR-Cl.

Answer: B



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17. Mg reacts with RBr best in

- A. $C_2H_5OC_2H_5$
- B. $C_6H_5OCH_3$

C. $C_6H_5N(CH_3)_2$

D. equally in all the three.

Answer: A



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18. Both methane and ethane can be prepared in single step by the use of

A. C_2H_4

B. CH_3OH

C. CH_3Br

D. CH_3CHO

Answer: C



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19. Alkyl halides react with Mg in dry ether to form

A. magnesium halide

B. Grignard's reagent

C. alkene

D. alkyne

Answer: B



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20. Which of the following metal can be used for carrying out Wurtz-Fittig reaction?

- A. Sodium
- B. Mercury
- C. Radium
- D. Any of these.

Answer: A

