

CHEMISTRY

BOOKS - VIKRAM PUBLICATION (ANDHRA PUBLICATION)

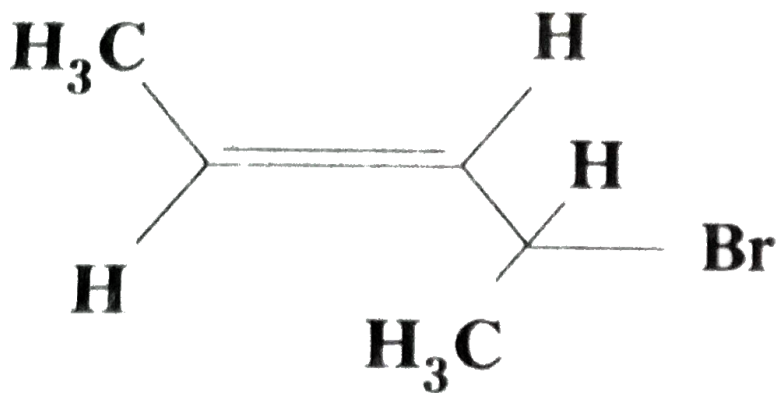
HALOALKANES AND HALOARENES

Textual Example

1. Draw the structures of all the eight structural isomers that have the molecular formula $C_5H_{11}Br$. Name each isomer according to IUPAC system and classify them as primary , secondary or tertiary bromide .

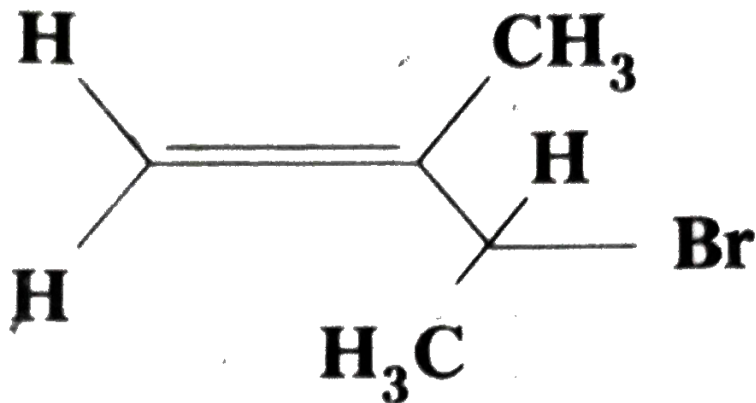
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2. Write IUPAC name



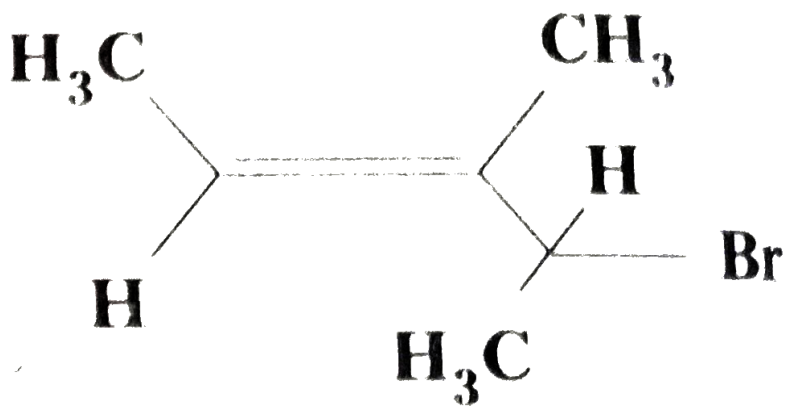
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3. Write IUPAC name



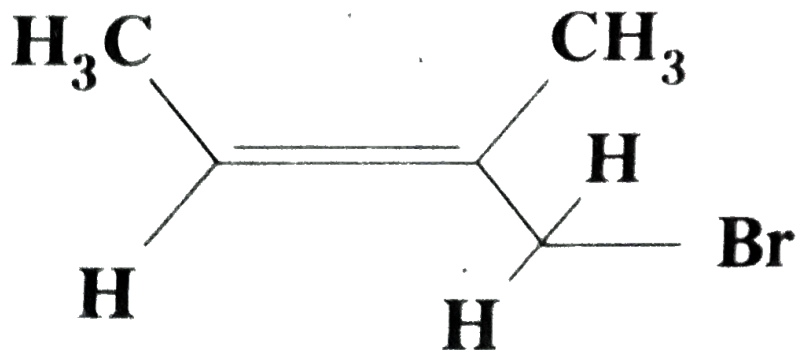
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4. Write IUPAC name



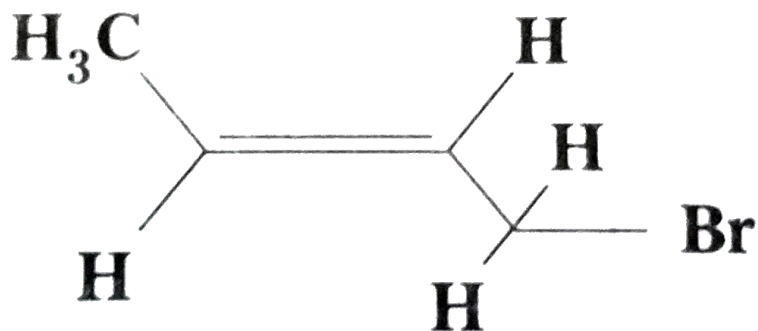
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5. Write IUPAC name



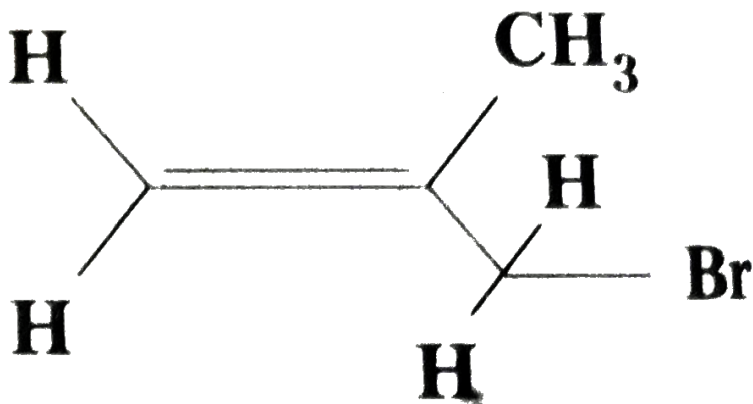
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6. Write IUPAC name



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7. Write IUPAC name

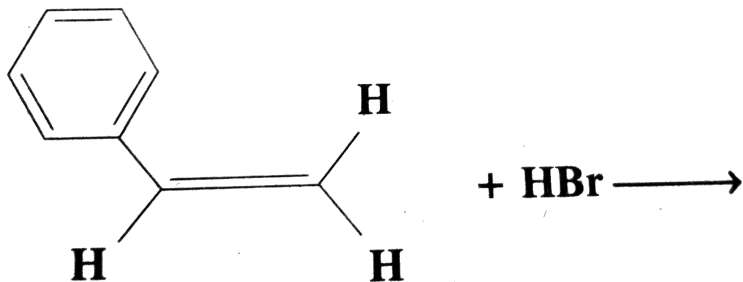


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8. Identify all the possible monochloro structural isomers expected to be formed on free radical monochlorination of $(CH_3)_2CHCH_2CH_3$.

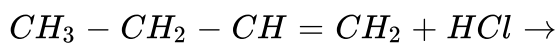
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9. Write the product of the reaction



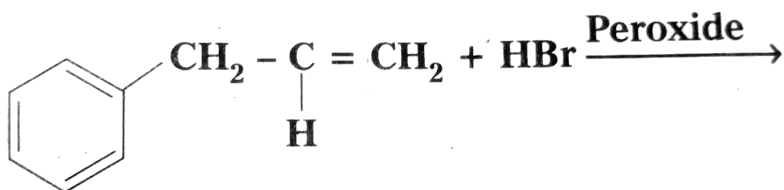
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10. Write the product of the reaction



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11. Write the product of the reaction

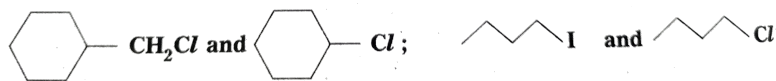


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12. Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as the chief product. Explain.

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13. In the following of halogen compounds, which would undergo S_N2 reaction faster?



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14. Predict the order of reactivity of the compounds in S_N1 and S_N2 reactions .

The four isomeric bromobutanes

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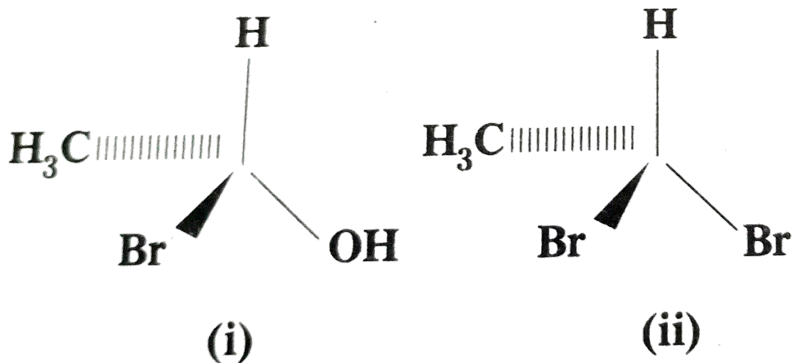
15. Predict the order of reactivity of the compounds in S_N1 and S_N2 reactions .

$C_6H_5CH_2Br$, $C_6H_5CH(C_6H_5)Br$, $C_6H_5CH(CH_3)Br$, $C_6H_5C(CH_3)(C_6H_5)Br$

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16. Identify chiral molecules in each of the following pair of compounds .

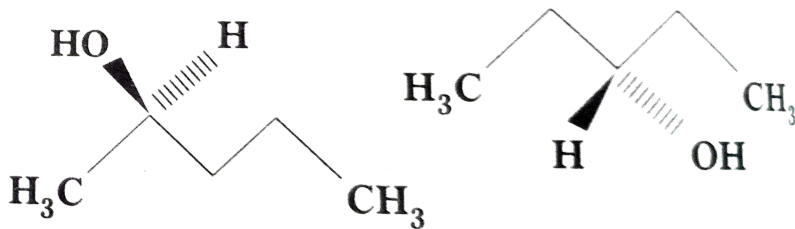
(Wedge and Dash representation according to Inter I yr)



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17. Identify chiral molecules in each of the following pair of compounds .

(Wedge and Dash representation according to Inter I yr)



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18. Identify chiral molecules in each of the following pair of compounds .

(Wedge and Dash representation according to Inter I yr)



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19. Although chlorine is an electron withdrawing group , yet it is ortho-, para-directing in electrophilic aromatic substitution reactions . Why ?

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Very Short Answer Questions

1. Write the structures of the compounds

(i) 2-chloro-3-methylpentan

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2. Write the structures of the following organic halides .

1-Bromo-4 sec-butyl-2-methylbenzene ,



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3. Which one of the following has highest dipole moment ?

(i) CH_2Cl_2 (ii) $CHCl_3$ (iii) CCl_4



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4. What are ambident nucleophiles ?



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5. Write the isomers of the compound having molecular formula C_4H_9Br



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6. Which compound in following pairs will react faster in S_N^2 reaction with $-OH$?

CH_3Br or CH_3I

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7. Which compound in following pairs will react faster in S_N^2 reaction with $-OH$?

$(CH_3)_3CCl$ or CH_3

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8. Explain why the alkyl halides though polar are immiscible with water .

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9. Out of $C_6H_5CH_2Cl$ and $C_6H_5CHClC_6H_5$, which is more easily hydrolysed aqueous KOH ?

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10. Treatment of alkyl halides with aq. KOH leads to the formation of alcohols, while presence of alc. KOH what products are formed ?

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11. What is the stereochemical result of S_N^1 and S_N^2 reactions ?

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12. What type of isomerism is exhibited by o, m and p-chlorobenzenes ?

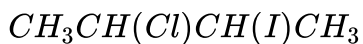
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13. What are Enantiomers ?

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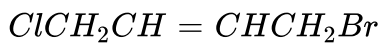
Short Answer Questions

1. Give the IUPAC names of the compound



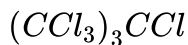
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2. Give the IUPAC names of the compound



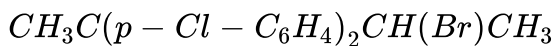
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3. Give the IUPAC names of the compound



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4. Give the IUPAC names of the compound



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5. Write the structures of the following organic halides .

1-Bromo-4 sec-butyl-2-methylbenzene ,

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6. Write the structures of the following organic halides .

2-Chloro-1-phenylbutane



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7. Write the structures of the following organic halides .

p-bromochlorobenzene ,

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8. Write the structures of the following organic halides .

4-t-butyl-3-iodoheptane .

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9. A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro-compound C_5H_9Cl in bright sunlight . Identify the hydrocarbon .

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10. Which compound in following pairs will react faster in S_N^2 reaction with $-OH$?

CH_3Br or CH_3I



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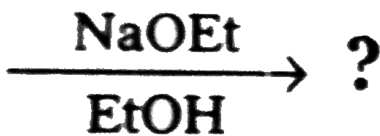
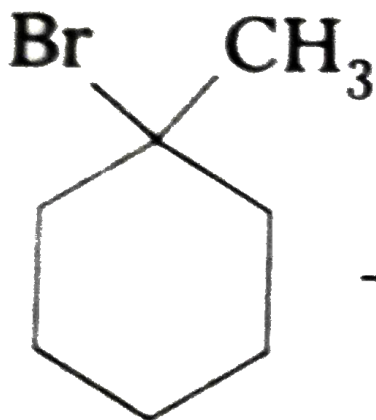
11. Which compound in following pairs will react faster in S_N^2 reaction with $-OH$?

$(CH_3)_3CCl$ or CH_3I



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12. Predict the alkenes that would be formed in the reaction and identify the major alkene .



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13. Predict the alkenes that would be formed in the reaction and identify the major alkene .



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14. How will you carry out the conversion

Ethane to bromomethene

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15. How will you carry out the conversion

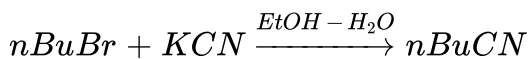
Toluene to benzyl alcohol

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16. Explain why the dipole moment of chlorobenzene is lower than that of cyclohexylchloride .

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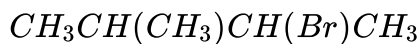
17. Write the mechanism of the following reaction:



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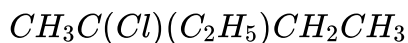
Long Answer Questions

1. Name the halides according to IUPAC system and classify them as primary , secondary , tertiary , vinyl or aryl halides .



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2. Name the halides according to IUPAC system and classify them as primary , secondary , tertiary , vinyl or aryl halides .



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3. Name the halides according to IUPAC system and classify them as primary , secondary , tertiary , vinyl or aryl halides .



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4. Name the halides according to IUPAC system and classify them as primary , secondary , tertiary , vinyl or aryl halides .



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5. Write the structure of the organic halogen compound

2-Bromo-3-methylhexane

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6. Write the structure of the organic halogen compound

4-tertiary-butyl-3-iodo benzene

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7. Write the structure of the organic halogen compound

2-(2-chlorophenyl)-1-iodooctane

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8. Write the structures of the following organic halides .

1-Bromo-4 sec-butyl-2-methylbenzene ,

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9. Discuss the physical properties of haloalkanes .

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10. Explain SN^2 reaction

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11. Explain why allylic and benzylic halides are more reactive towards S_N1 substitution while 1-halo and 2-halobutanes preferentially undergoes S_N2 substitution .

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12. Describe the stereo chemical effect on the hydrolysis of 2-bromobutane .

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13. What is the criteria for optical activity . Give two examples of chiral molecules .

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14. Define Racemic mixture

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15. Define Retention of configuration

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16. Define Enantiomers .

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17. Write the mechanism of dehydrohalogenation of 2-bromobutane .

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18. Explain the Grignard reagents preparation and application with suitable example.

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19. A primary alkyl halide C_4H_9Br (A) reacted with alcoholic KOH to give compound B. B on reaction with HBr yields C which is an isomer of A. When A is reacted with sodium metal forms D, C_6H_8 which is different from the compound formed when n-butylbromide is reacted with sodium. Give the structural formulae of A-D and write equations for all the reactions.

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20. Account for the statements :

Arylhalides are extremely less reactive towards Nucleophilic substitution reactions.

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21. Account for the statements :

p-Nitrochlorobenzene and o,p-dinitrochlorobenzene undergo Nucleophilic substitution readily compared to chlorobenzene.



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22. Explain how the conversions are carried out :

Propene to Propanol



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23. Explain how the conversions are carried out :

Ethanol to But-1-yne



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24. Explain how the conversions are carried out :

1-Bromopropane to 2-Bromopropane



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25. Explain how the conversions are carried out :

Aniline to chlorobenzene

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26. What happen when

n-butylchloride is treated with alc. KOH.

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27. What happen when

Bromobenzene is treated with Mg in presence of dry ether .

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28. What happen when

Methylbromide is treated with sodium in presence of dry ether .





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29. Write the reactions showing the major and minor product when chlorobenzene is reacted with CH_3Cl and CH_3COCl in presence of $AlCl_3$.



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Intext Questions

1. Write the structures of the compounds

(i) 2-chloro-3-methylpentan



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2. Write structure of the compound :

1-Chloro-4-ethylcyclohexane



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3. Write structure of the compound :

4-tert. Butyl -3-iodoheptane

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4. Write structure of the compound :

1,4-Dibromobut-2-ene

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5. Write structure of the compound :

1-Bromo-4-sec. butyl-2- methylbenzene .

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6. Why is sulphuric acid not used during the reaction of alcohols with KI ?



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7. Write structures of different dihalogen derivatives of propane .



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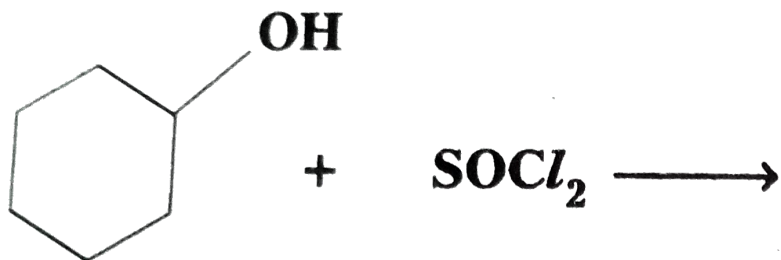
8. Among the isomeric alkanes of molecular formula C_5H_{12} , identify the one that on photochemical chlorination yields

- (i) A single monochloride.
- (ii) Three isomeric monochlorides.
- (iii) Four isomeric monochlorides.



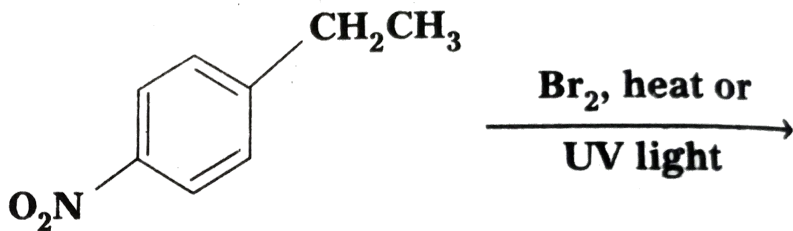
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9. Draw the structure of major monohalo product in the reaction



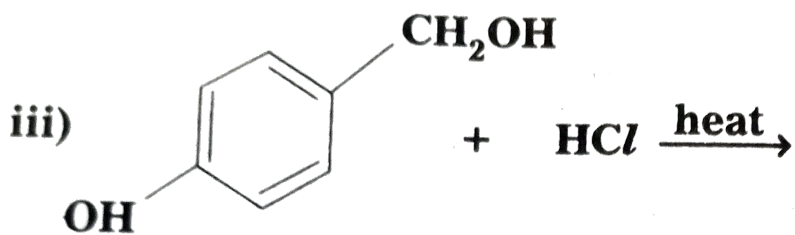
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10. Draw the structure of major monohalo product in the reaction



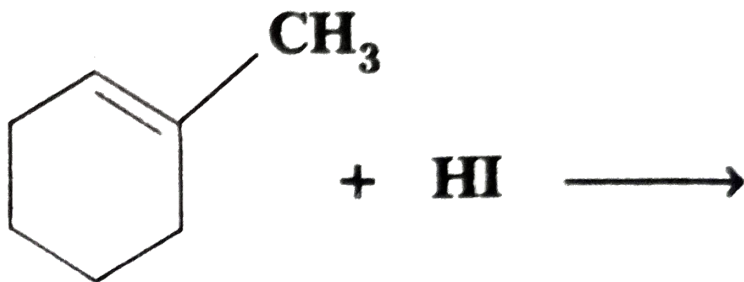
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11. Draw the structure of major monohalo product in the reaction



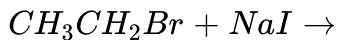
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12. Draw the structure of major monohalo product in the reaction



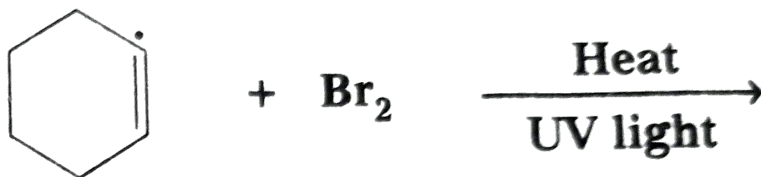
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13. Draw the structure of major monohalo product in the reaction



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14. Draw the structure of major monohalo product in the reaction



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15. Arrange the compound in order of increasing boiling points .

Bromomethane , Bromoform , Chloromethane , Dibromomethane .

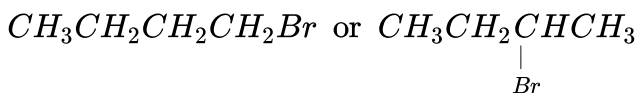
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16. Arrange the compound in order of increasing boiling points .

1-Chloropropane , Isopropyl chloride , 1-Chlorobutane .

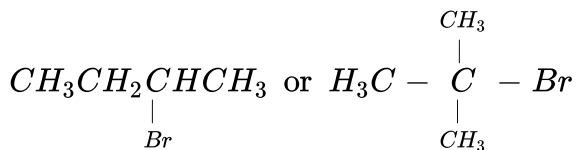
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17. Alkyl halide from the pair would react more rapidly by an S_N2 mechanism ? Explain your answer .



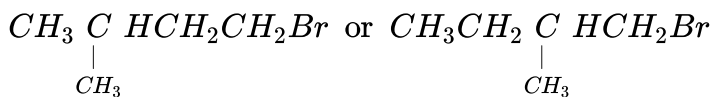
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18. Alkyl halide from the pair would react more rapidly by an S_N2 mechanism ? Explain your answer .



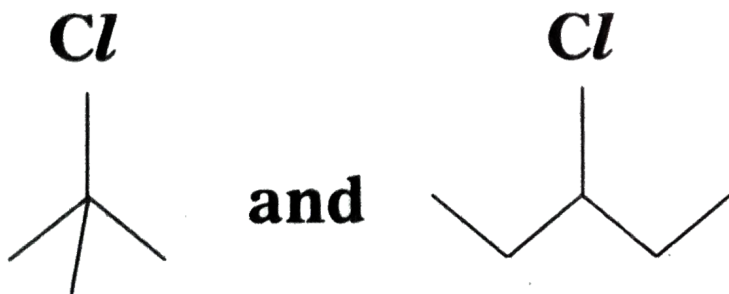
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19. Alkyl halide from the pair would react more rapidly by an S_N2 mechanism? Explain your answer .



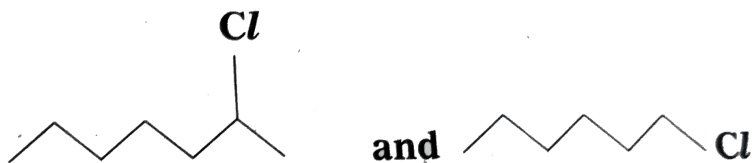
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20. In the pair of halogen compound , which compound undergoes S_N1 reaction ?



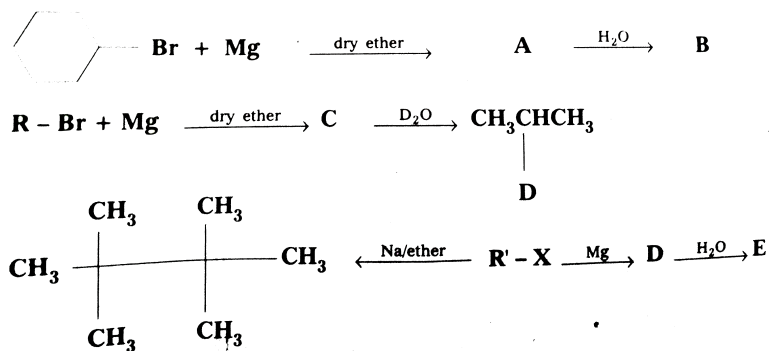
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21. In the pair of halogen compound , which compound undergoes S_N1 reaction ?



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22. Identify A, B, C, D, E, R and R^1 in the following :



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Vsaq

1. What is Grignard's reagent . How it is prepared .

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Saq

1. Write the preparations of Alkyl halides .

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2. Explain SN^1 reaction

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3. Explain SN^2 reaction

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4. What is Wurtz reaction ? Give equation .



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5. Explain different chemical properties of Alkyl halide .



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6. Explain Wurtz - Fitting reaction



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7. Explain Fittig reaction .



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8. Write any one method for the preparation of chloro benzene .



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9. Explain electrophilic substitution reactions of chloro benzene .



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