CHEMISTRY

BOOKS - A N EXCEL PUBLICATION

HALOALKANES AND HALOARENES

Question Bank

1. Write the structures of the following compounds 2-Chloro-3-methylpetane.

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2. Write the structures of the following compounds 1-Chloro-4-ethylcyclohxane.

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3. Write the structures of the following compounds 4-tert-butyl-3-iodohepetane

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4. Write the structures of the following compounds 1,4 Dibromobut-2-ene

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5. Write the structures of the following compounds 1-Bromo-4-sec butyl-2-methylbenzene

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

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7. Write the structures of different dihalogen derivatives of propane.

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8. Among isomeric alkanes of molecular formula C_5H_{12}, identity the one that on photochemical chlorination yields 3 isomeric monochlorides

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10. Among isomeric alkanes of molecular formula C_5H_{12}, identity the one that on photochemical chlorination yields 3 isomeric monochlorides

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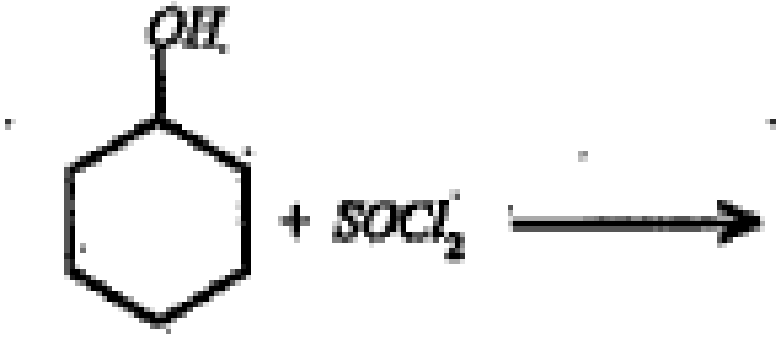
11. Draw the structures of major monohaloproducts in each of the following :



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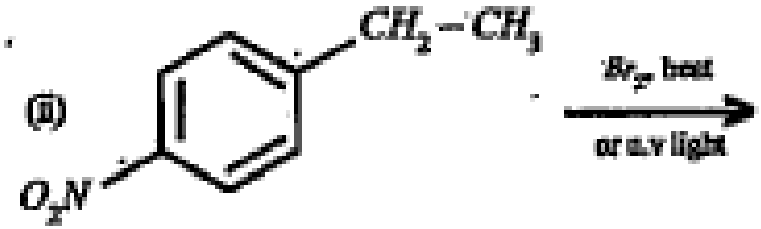
12. Draw the structures of major monohaloproducts in each of the following :



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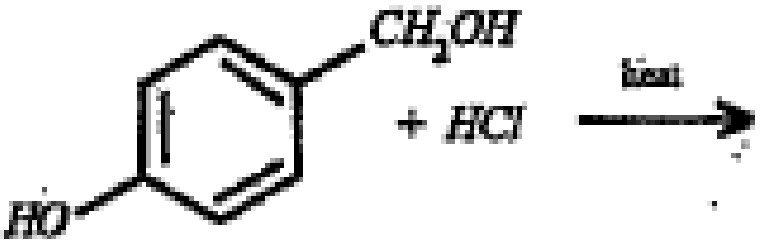
13. Draw the structures of major monohaloproducts in each of the following :



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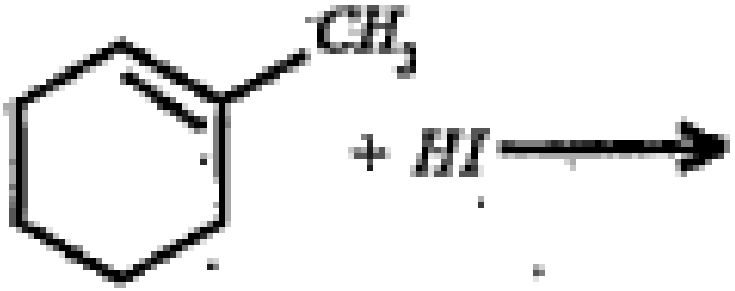
14. Draw the structures of major monohaloproducts in each of the following :



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15. Draw the structures of major monohaloproducts in each of the following :

$CH_3CH_2Br + NaI \rightarrow$

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16. Draw the structures of major monohaloproducts in each of the following :

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17. Arrange each set compounds in order of increasing boiling points. Bromomethane, Bromoform , Chloromethane, Dibromomethane

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18. Arrange each set compounds in order of increasing boiling points. 1-Chloropropane, Isopropyl chloride, 1-chlorobutane

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19. Chloroform is generally prepared from ethanol. Why is chloroform stored in brown coloured bottles ?

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20. Chloroform is generally prepared from ethanol. Iodoform gives a precipitate with $AgNO_3$ solution while chloroform does not. Why ?

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21. Chlorobenzene is less reactive that alkyl chlorides towards nucleophilic substitution reactions . Explain the reason for the less reactivity of chlorobenzene.

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22. Chlorobenzene is less reactive than that of alkyl chlorides towards nucleophilic substitution reactions . How can the reactivity of chlorine in chlorobenzene be increased ?

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23. Chlorobenzene is less reactive that alkyl chlorides towards nucleophilic substitution reactions. Which is the insecticide prepared using chlorobenzene?

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24. Identify A, B, in the following :

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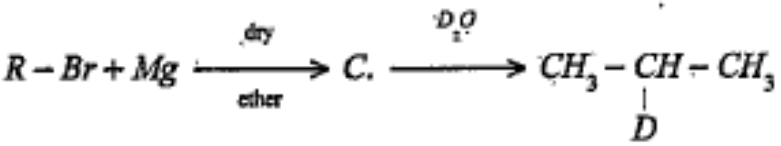
25. Identify C, in the following :



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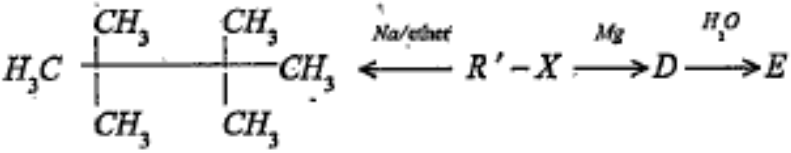
26. Identify D, E and R' in the following :



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27. Most of the organic chlorides, bromides and iodides react with certain metals to give compounds containing carbon - metal bonds. Give one example for such compound.

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28. Most of the organic chlorides, bromides and iodides react with certain metals to give compounds containing carbon - metal bonds. How will you prepare the above compound ?

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29. Write any two electrophilic subsitution reactions of chlorobenzene.

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30. An organic compound A reacts with metalic sodium in ether medium to form ethane. A also reacts with magnesium in ether medium to give B, which on hydrolysis gives methane. Identify A and B. Write down the chemical equation involved.

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31. Bromoethane when treated with alcoholic KOH gives ethene, KBr and H_2O. Identify the type of reaction.

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32. Bromoethane when treated with alcoholic KOH gives ethene, KBr and H_2O. Instead of bromethane, if you take 2-bromobutane, what is the major product obtained ? Write down the chemical equation for the reaction.

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33. Bromoethane when treated with alcoholic KOH gives ethene, KBr and H_2O. Explain the rule behind the above reaction .

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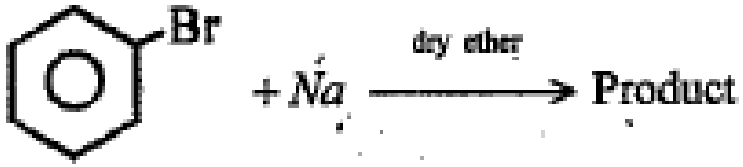
34. Haloalkanes and haloarenes react with metals to give hydrocarbons from which hydrocarbons are obtained easily.Identify the product



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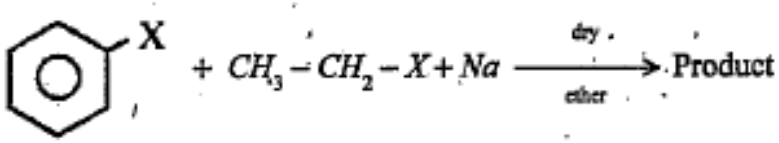
35. Haloalkanes and haloarenes react with metals to give hydrocarbons from which hydrocarbons are obtained easily identify the product and name the reaction.



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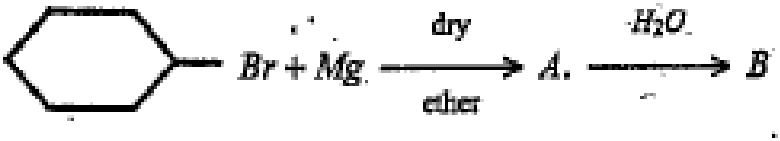
36. Identify A, B, in the following :



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37. Alkyl halides are the starting materials for the synthesis of a number of organic compounds. How is the following compound obtained from the alkylhalid $CH_3 - CH_2 - Br$? Ethene

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38. Alkyl halides are the starting materials for the synthesis of a number of organic compounds. How is the following compound obtained from the alkylhalid $CH_3 - CH_2 - Br$? Ethanol

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39. Alkyl halides are the starting materials for the synthesis of a number of organic compounds. How is the following compound obtained from the alkylhalid $CH_3 - CH_2 - Br$? Butane

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40. Alkyl halides are the starting materials for the synthesis of a number of organic compounds. How is the following compound obtained from the alkylhalid $CH_3 - CH_2 - Br$? Ethoxy ethane

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41. Nucleophilic substitution reactions are of two type - S_N^1 reaction and S_N^2 reaction. Write any two differences between S_N^1 and S_N^2 reactions

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42. Nucleophilic substitution reactions are of two type - S_N^1 reaction and S_N^2 reaction.Write any two reasons for the less reactivity of aryl halides towards nucleophil subsitution reactions.

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43. Write any two electrophilic subsitution reactions of chlorobenzene.

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44. For the preoarations of alkyl chlorides from alcohols, thionyl chloride ($SOCl_2$) preferred.Given reason.

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45. Haloalkanes undergo β-elimination reaction in presence of alcoholic potassium hydroxide. Which is the major product obtained by the β-

elimination of 2-bromopentane.

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46. Haloalkanes undergo β-elimination reaction in presence of alcoholic potassium hydroxide. Name the rule , which leads to the product in the above elimination reaction.

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47. Write the chemical equation for the preparation of toluene by Wurtz-Fittig reaction.

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48. Haloarenes undergo nucleophilic and eletrophilic subsitution reactions. write two examples for ambident nucleophiles

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49. Haloarenes undergo nucleophilic and eletrophilic subsitution reactions.Write one example for nucleophilic subsititution reaction of chlorobenzene.

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50. Haloarenes undergo nucleophilic and eletrophilic subsitution reactions. Write any two examples of electrophilic subsitution reaction of chlorobenzene.

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51. Most important chemical reactions of halo alkanes are their subsititution reactions. What is S_N^{-1} reaction ?

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52. Most important chemical reactions of halo alkanes are their subsititution reactions. Arrange the front isometic brormobutanes in the increasing order of their reactivity towards S_N^1 reaction.

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53. How will you prepare chlorobenzene from diazonium chloride ?

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54. Write 'Saytzeff rule'.

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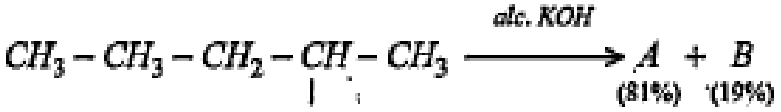
55. The products A and B of the following reaction are two isomeric alkenes. Identify A and B



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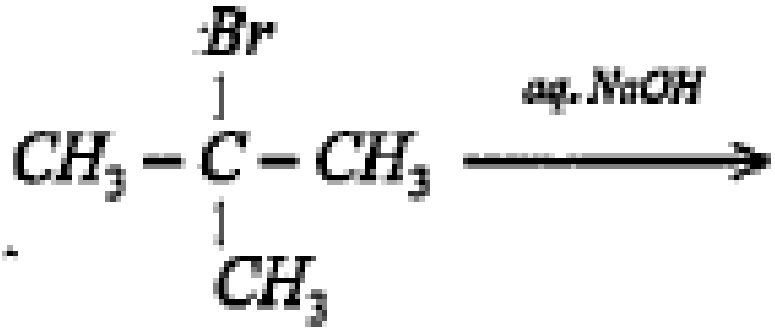
56. Identify the main product of the following reactions. Suggest whether the reaction S_N^1 or S_N^2.



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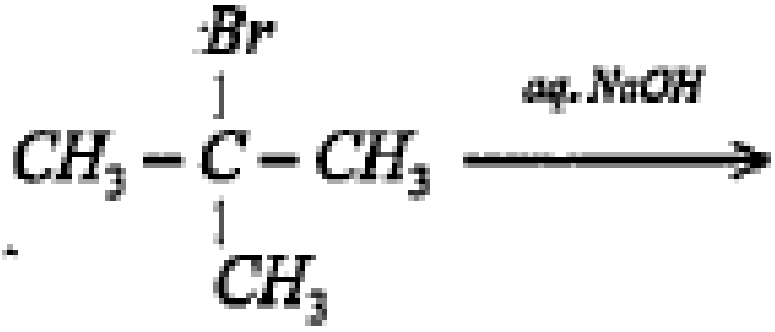
57. Identify the main product of the following reactions. Suggest whether the reaction S_N^1 or S_N^2.



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58. which one is chlorine containig insecticide?

A. DDT

B. Freon

C. Phosgene

D. Iodoform

Answer:

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59. Write the chemical equation for the preparation of toluene by Wurtz-Fittig reaction.

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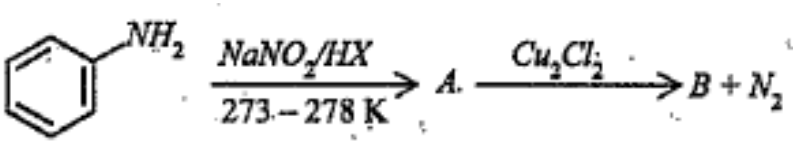
60. Halo arenes undergo Wurtz- Fitting reaction . Write the formula of A and B in the above reaction.



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61. Write 'Saytzeff rule'.

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62. Identify the major and minor products obtained by the reaction between 2-bromo butane and alcoholic KOH.

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64. 2-bromo butane exhibit optical isomerism. What is optical isomeism ?

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65. Chlorobenzene is less reactive that alkyl chlorides towards nucleophilic substitution reactions . Explain the reason for the less reactivity of chlorobenzene.

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66. Haloarenes undergo nucleophilic and eletrophilic subsitution reactions.Write one example for nucleophilic subsititution reaction of chlorobenzene.

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67. Write a method for the preparation of alkyl halides.

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68. Which of the following is not polyhalogen compound ?

A. Chloroform

B. Freon

C. Carbon tetrachloride

D. Chloro benzene

Answer:

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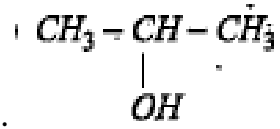
69. Halolkanes and haloarenes are compounds containing halogen atom. They undergo many types of reaction. Identity the product formed in the following reaction : $CH_3 - CH_2 - CH_2Cl \xrightarrow{alcKOH}$

A. $CH_3 - CH_2 - CH_2 - OH$

B. 

C. $CH_3CH = CH_2$

D. $CH_3C \equiv CH$

Answer:

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70. Chloroform is generally prepared from ethanol. Why is chloroform stored in brown coloured bottles ?

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71. Nucleophilic substitution reactions are of two type - S_N^1 reaction and S_N^2 reaction. Write any two differences between S_N^1 and S_N^2 reactions

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72. An ambident nycleophile is

A. Ammonia

B. Ammonium ion

C. Chloride ion

D. Nitrite ion

Answer:

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73. Write a method for the preparation of alkyl halides.

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74. Nucleophilic substitution reactions are of two type - S_N^1 reaction and S_N^2 reaction.Write any two reasons for the less reactivity of aryl halides towards nucleophil subsitution reactions.

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75. On kinetic consideration nucleophilic substitution in aryl/alkyl halides may be SN^1 or SN^2 mechanisms. Briefly explain $SN2$ mechanism with an example.

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76. Haloalkanes undergo β-elimination reaction in presence of alcoholic potassium hydroxide. Which is the major product obtained by the β-elimination of 2-bromopentane.

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77. Explain clearly how the two reagents in each of the following differ in their reaction with ethyl bromine. Consider only the main product formed in each case. Aqueous KOH, alcoholic KOH

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78. Explain clearly how the two reagents in each of the following differ in their reaction with ethyl bromine. Consider only the main product formed in each case. KCN, AgCN.

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79. Explain clearly how the two reagents in each of the following differ in their reaction with ethyl bromine. Consider only the main product formed in each case. KNO_2, $AgNO_2$

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80. S_N^1 reaction takes placed in two steps. The relative reactivity of an alkyl halide in S_N^1 reaction depends on the relative stability of carbocations formed by ionisation. Arrange the Following in decreasing order

$C_6H_5CH_2Br, C_6H_5CH(C_6H_5)Br, C_6H_5CH(CH_3)Br, C_6H_5C(CH_3)(C_6H$

.

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81. S_N^1 reaction takes placed in two steps. The relative reactivity of an alkyl halide in S_N^1 reaction depends on the relative stability of carbocations formed by ionisation. What will happen to the optical activity of a dextro rotatory isomer of alkyl halide if it undergoes hydrolysis by S_N^1 mechanism ?

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82. Optical isomerism is a kind of streoisomerism in which isomers differ in their behaviour towards plane polarised light, What is the cause of optical activity in organic compounds?

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83. Optical isomerism is a kind of streoisomerism in which isomers differ in their behaviour towards plane polarised light,Write the structure of the isomers of C_4H_9Cl which is optically active.

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84. Optical isomerism is a kind of streoisomerism in which isomers differ in their behaviour towards plane polarised light, What are enantiomers?

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85. Identify the possible alkenes that would be formed on dehydrohalogenation of the following organic halides with alcoholic KOH. Also identify the major alkene formed 1-chloropentane

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86. Identify the possible alkenes that would be formed on dehydrohalogenation of the following organic halides with alcoholic KOH. Also identify the major alkene formed 2-chloropentane

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87. Identify the possible alkenes that would be formed on dehydrohalogenation of the following organic halides with alcoholic KOH. Also identify the major alkene formed 2-chloro-2-methyl butane .

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