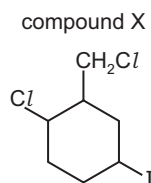
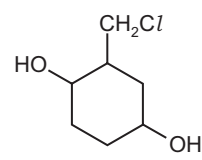
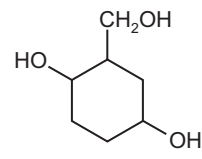
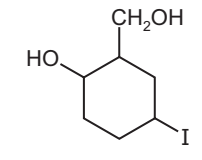
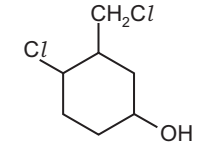


30 Compound X, $C_7H_{11}ICl_2$, is dissolved in ethanol and the solution mixed with warm aqueous silver nitrate.

A precipitate is seen immediately.



What is the colour of this precipitate and what is the structural formula of the **first** organic product?

	colour of the precipitate	structural formula of the first organic product
A	cream	
B	cream	
C	white	
D	yellow	

31 1,4-dibromobutane reacts with an excess of ethanolic sodium hydroxide until no further reaction takes place.

What is the relative formula mass of the major organic product?

- A** 54 **B** 56 **C** 74 **D** 90

30 Which reaction mixture produces a nitrile?

- A** halogenoalkane with KCN in ethanol
B halogenoalkane with NH_3 in ethanol
C ketone with 2,4-DNPH
D carboxylic acid with NH_3 in water

31 Which reaction is classified as S_N1 ?

- A** the reaction of 1-chloropropane with ammonia in ethanol
B the reaction of 1-chloropropane with potassium hydroxide in ethanol
C the reaction of 2-chloro-2-methylpropane with potassium cyanide in ethanol
D the reaction of 2-chloro-2-methylpropane with potassium hydroxide in ethanol

27 Structural and stereoisomerism should be considered when answering this question.

A mixture of 1-chlorobutane and 2-chlorobutane is heated with an excess of NaOH in ethanol.

How many different organic molecules will be produced?

- A** 1 **B** 2 **C** 3 **D** 4

30 An organic ion containing a carbon atom with a negative charge is called a carbanion.

An organic ion containing a carbon atom with a positive charge is called a carbocation.

The reaction between NaOH(aq) and 1-bromobutane proceeds by an S_N2 mechanism.

What is the first step in the mechanism?

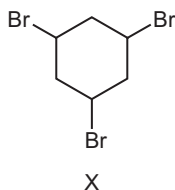
- A** attack by a nucleophile on a carbon atom with a partial positive charge
B heterolytic bond fission followed by attack by an electrophile on a carbanion
C heterolytic bond fission followed by attack by a nucleophile on a carbocation
D homolytic bond fission followed by attack by a nucleophile on a carbocation

31 2-chloropropane and 2-bromopropane react separately with aqueous NaOH.

Which row is correct?

	comparison of rates of reaction	explanation of the difference in reaction rates
A	2-chloropropane reacts faster	chlorine is more reactive than bromine
B	2-chloropropane reacts faster	the C–Cl bond is more polar than the C–Br bond
C	2-bromopropane reacts faster	the first ionisation energy of bromine is lower than chlorine's
D	2-bromopropane reacts faster	the C–Br bond is weaker than the C–Cl bond

32 The diagram shows the structure of compound X.



X undergoes hydrolysis to form product Y in which all of the bromine atoms are replaced by hydroxyl groups. Product Z is formed by oxidation of Y.

Two suggestions are listed.

- 1 Y is a secondary alcohol.
- 2 Z is a ketone.

Which suggestions are correct?

- A** both 1 and 2
B 1 only
C 2 only
D neither 1 nor 2

38 When bromoethane, C₂H₅Br, is heated with NaOH in ethanol, which type of reaction occurs?

- A** electrophilic substitution
B elimination
C nucleophilic substitution, mainly via an S_N1 mechanism
D nucleophilic substitution, mainly via an S_N2 mechanism