Q1.

Which compound is **not** formed by reacting 3-bromo-3-methylhexane with warm, ethanolic potassium hydroxide?

A 2-ethylpent-1-ene ⬭

B 3-methylhex-1-ene ⬭

C 3-methylhex-2-ene ⬭

D 3-methylhex-3-ene ⬭

(Total 1 mark)

Q2.

The question below refers to the reaction of 1-bromopropane with a solution of potassium cyanide in aqueous ethanol.

What is the organic product of this reaction?

A propylamine ⬭

B butylamine ⬭

C propanenitrile ⬭

D butanenitrile ⬭

(Total 1 mark)

Q3.

The question below refers to the reaction of 1-bromopropane with a solution of potassium cyanide in aqueous ethanol.

The reactions of 1-bromopropane and 1-chloropropane with potassium cyanide in aqueous ethanol occur at different rates under the same conditions.

Which row correctly shows the compound that has a faster rate of reaction and the correct reason for this?

	Compound	**Reason**	
A	1-bromopropane	C–Br bond weaker than C–Cl bond	⬭
B	1-bromopropane	C–Br bond stronger than C–Cl bond	⬭
C	1-chloropropane	C–Br bond weaker than C–Cl bond	⬭
D	1-chloropropane	C–Br bond stronger than C–Cl bond	⬭

(Total 1 mark)

Q4.

Which compound can react with ammonia to produce propylamine?

A $CH_3CH{=}CH_2$ ⬭

B $CH_3CH_2CH_2OH$ ⬭

C $CH_3CH_2CH_2Br$ ⬭

D $CH_3CH_2CH_3$ ⬭

(Total 1 mark)

Q5.

Which compound could **not** be produced by reacting 2-bromo-3-methylbutane with sodium hydroxide?

A 2-methylbut-1-ene ⬭

B 3-methylbut-1-ene ⬭

C 2-methylbut-2-ene ⬭

D 3-methylbutan-2-ol ⬭

(Total 1 mark)

Q6.

Which species could act as a nucleophile?

A BH_3 ⬭

B NH_4^+ ⬭

C PH_3 ⬭

D SiH_4 ⬭

(Total 1 mark)

Q7.

Which compound has the fastest rate of reaction with potassium cyanide to form pentanenitrile?

A 1-bromobutane ⬭

B 1-chlorobutane ⬭

C 1-fluorobutane ⬭

D 1-iodobutane ⬭

(Total 1 mark)

Q8.

Which of the following mechanisms does **not** occur in reactions of bromoethane?

A Electrophilic addition ⬭

B Elimination ⬭

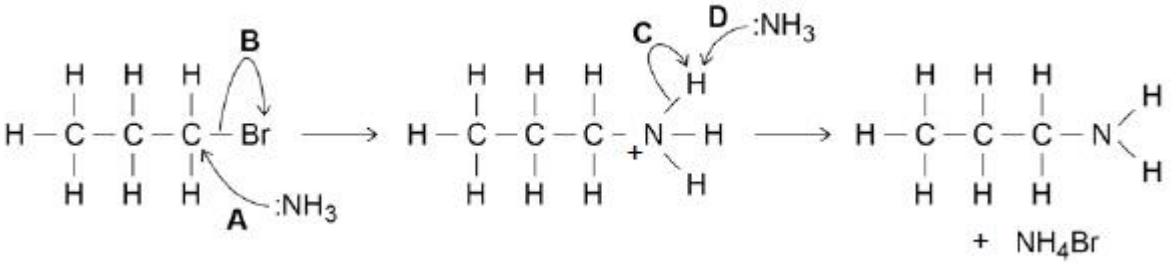
C Nucleophilic substitution ⬭

D Radical substitution ⬭

(Total 1 mark)

Q9.

Which of the arrows, labelled **A**, **B**, **C** or **D** in the mechanism in the diagram, is **not** correct?



A ⬭

B ⬭

C ⬭

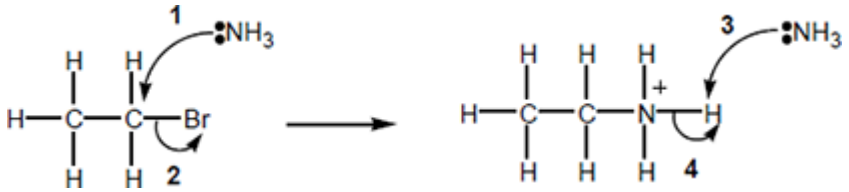
D ⬭

(Total 1 mark)

Q10.

This question is about a method that can be used to prepare ethylamine.

$$CH_3CH_2Br + 2NH_3 \longrightarrow CH_3CH_2NH_2 + NH_4Br$$



Which of the curly arrows in the mechanism is **not** correct?

A 1 ⬭

B 2 ⬭

C 3 ⬭

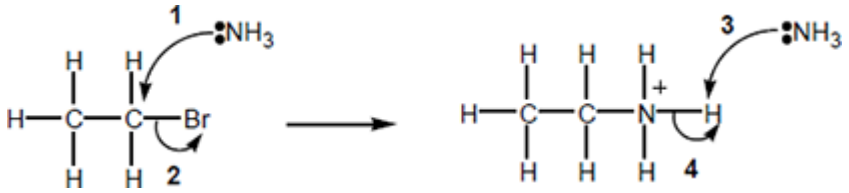
D 4 ⬭

(Total 1 mark)

Q11.

This question is about a method that can be used to prepare ethylamine.

$$CH_3CH_2Br + 2NH_3 \longrightarrow CH_3CH_2NH_2 + NH_4Br$$



Which statement about the reaction is **not** correct?

A Ethylamine is a primary amine. ⬭

B The mechanism is a nucleophilic substitution. ⬭

C Using an excess of bromoethane will prevent further reaction to form a mixture of amine products. ⬭

D Ammonium bromide is an ionic compound. ⬭

(Total 1 mark)

Q12.

Why are fluoroalkanes unreactive?

A Fluorine is highly electronegative. ⬭

B The F^- ion is very stable. ⬭

C They are polar molecules. ⬭

D The C–F bond is very strong. ⬭

(Total 1 mark)

Q13.

Pentanenitrile can be made by reaction of 1-bromobutane with potassium cyanide.

Which of these is the correct name for the mechanism of this reaction?

A Electrophilic addition ⬭

B Electrophilic substitution ⬭

C Nucleophilic addition ⬭

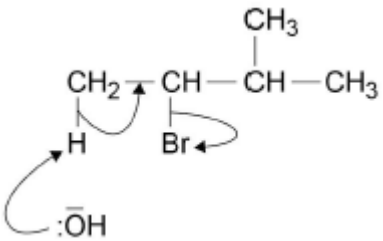
D Nucleophilic substitution ⬭

(Total 1 mark)

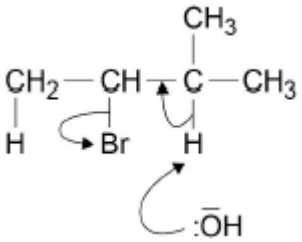
Q14.

Which of the following is a correct mechanism for the formation of
2-methylbut-2-ene
from 2-bromo-3-methylbutane?

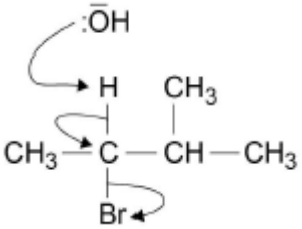
A



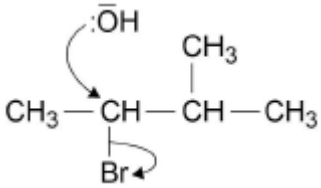
B



C



D



(Total 1 mark)