Q1. Which amine has only **three** peaks in its proton NMR spectrum?

A Methylamine

B Trimethylamine

C Diethylamine

D Propylamine

(Total 1 mark)

Q2. Which one of the following pairs of reagents reacts to form an organic product that shows only 2 peaks in its proton n.m.r. spectrum?

A butan-2-ol and acidified potassium dichromate(VI)

B ethanoyl chloride and methanol

C propanoic acid and ethanol in the presence of concentrated sulphuric acid

D ethene and hydrogen in the presence of nickel

(Total 1 mark)

Q3. Which one of the following pairs reacts to form an organic product with only 2 singlets in its proton n.m.r. spectrum?

A ethene and bromine

B propan-2-ol and acidified potassium dichromate(VI)

C ethanol and concentrated sulphuric acid

D epoxyethane and water in the presence of dilute sulphuric acid

(Total 1 mark)

Q4. Which one of the following does **not** have a singlet peak in its proton n.m.r. spectrum?

A butyl methanoate

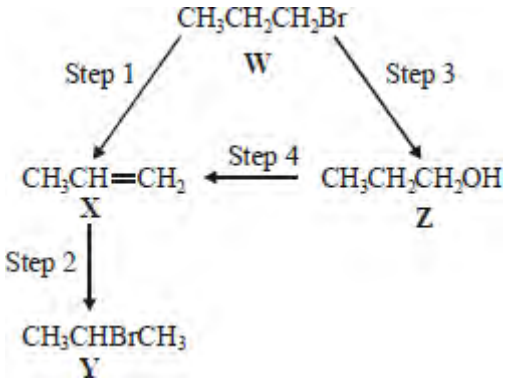
B propyl ethanoate

C ethyl propanoate

C methyl butanoate

(Total 1 mark)

Q5. For this question refer to the reaction scheme below.



Which one of the following statements is **not** correct?

A **W** and **Y** are structural isomers.

B **Z** is a primary alcohol.

C **Y** gives two peaks in its proton n.m.r. spectrum.

C **X** has geometrical isomers.

(Total 1 mark)

Q6. Which one of the following has a singlet peak in its proton n.m.r. spectrum?

A ethyl propanoate

B propyl methanoate

C hexan-3-one

D 2-chlorobutane

(Total 1 mark)

Q7. Propene reacts with hydrogen bromide to form a mixture of saturated organic products. The proton n.m.r. spectrum of the major organic product has

A 3 peaks with relative intensities 3 : 2 : 2

B 2 peaks with relative intensities 3 : 4

C 3 peaks with relative intensities 3 : 1 : 3

D 2 peaks with relative intensities 6 : 1

(Total 1 mark)

Q8. How many peaks will be observed in the low-resolution proton n.m.r. spectrum of $(CH_3)_2CHCOO(CH_2)_3CH_3$?

A 4

B 5

C 6

D 7

(Total 1 mark)