Q1. Propene reacts with bromine by a mechanism known as electrophilic addition.

(a) Explain what is meant by the term *electrophile* and by the term *addition*.

Electrophile .....

.....

Addition .....

.....

(2)

(b) Explain why bromine, a non-polar molecule, is able to react with propene.

.....

.....

.....

(2)

(c) Outline the mechanism for the electrophilic addition of bromine to propene. Give the name of the product formed.

Mechanism

Name of product .....

(5)

(d) The polymerisation of propene to form poly(propene) is an important industrial process.

Name the type of polymerisation involved.

.....

(1)

(Total 10 marks)

Q2.

Summarised directions for recording responses to multiple completion questions			
A (i), (ii) and (iii) only	**B** (i) and (iii) only	**C** (ii) and (iv) only	**D** (iv) alone

Isomers of the ester $HCOOCH_2CH_2CH_3$, include

(i) ethyl ethanoate

(ii) methyl propanoate

(iii) butanoic acid

(iv) butyl methanoate

(Total 1 mark)

Q3. The number of structural isomers of $C_3H_2Cl_6$ is

A 2

B 3

C 4

D 5

(Total 1 mark)

Q4. How many structural isomers, which are esters, have the molecular formula $C_4H_8O_2$?

A 2

B 3

C 4

D 5

(Total 1 mark)

Q5. How many structural isomers, which are aldehydes, have the molecular formula $C_5H_{10}O$?

A 2

B 3

C 4

D 5

(Total 1 mark)