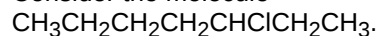


# Organic chemistry 2006 VCE

Consider the molecule



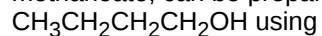
The systematic name of this molecule is

- A. 5-chloroheptane.
- B. 3-chloroheptane.
- C. 5-chlorooctane.
- D. 3-chlorooctane.

Solution will appear here

Solution

The raspberry- flavoured food additive, butyl methanoate, can be prepared from



- A. an addition reaction with  $\text{HCOOH}$ .
- B. an addition reaction with  $\text{CH}_3\text{COOH}$ .
- C. a condensation reaction with  $\text{HCOOH}$ .
- D. a condensation reaction with  $\text{CH}_3\text{COOH}$ .

Solution will appear here

Solution

The number of structural isomers that are carboxylic acids with the formula  $\text{C}_4\text{H}_8\text{O}_2$  is

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

Solution will appear here

Solution

Two chemical reactions occur as follows.  
 $\text{CH}_2=\text{CHCH}_2\text{CH}_2\text{CH}_3 + \text{X} \rightarrow \text{2-chloropentane}$

and

2-chloropentane + sodium hydroxide solution  
 $\rightarrow \text{Y}$

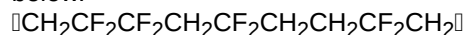
X and Y are given by

- A.  $\text{X} = \text{Cl}_2$  and  $\text{Y} = \text{CH}_3\text{CH}_2\text{CH}_2\text{CHOHCH}_3$
- B.  $\text{X} = \text{HCl}$  and  $\text{Y} = \text{CH}_3\text{CH}_2\text{CH}_2\text{CHOHCH}_3$
- C.  $\text{X} = \text{Cl}_2$  and  $\text{Y} = \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
- D.  $\text{X} = \text{HCl}$  and  $\text{Y} = \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

Solution will appear here

Solution

A short section of a polymer molecule is shown below.



This polymer could have been formed from

- A.  $\text{CF}_2\text{CH}_2$  only.
- B.  $\text{CF}_2\text{CF}_2$  and  $\text{CH}_2\text{CH}_2$ .
- C.  $\text{CF}_2\text{CF}_2$  and  $\text{CH}_2\text{CHCF}_3$ .
- D.  $\text{CH}_3\text{CHCF}_2$  and  $\text{CF}_3\text{CHCF}_2$ .

Solution will appear here

Solution

The molecule  $\text{HOCH}_2\text{CH}_2\text{CH}_2\text{COOH}$  (molar mass = 104 g/mol) forms a polymer in which the average polymer molecule contains 1000 monomer units.

The approximate molar mass of the polymer, in g/mol, is

- A. 68 000
- B. 86 000
- C. 95 000
- D. 104 000

Solution will appear here

Solution

A student was given four colourless liquids that were labelled A, B, C and D. They were known to be ethanol, ethanoic acid, pentane and hexene, but the exact identity of each liquid was unknown.

The student tested the properties of three of the liquids and obtained the results shown on the right.

Identify each of the liquids.

	A	B	C
Solubility in water	insoluble	soluble	soluble
Addition of red-coloured bromine ( $\text{Br}_2$ ) solution	colour disappears	no immediate reaction	no immediate reaction
Addition of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) powder	no reaction	gas evolved	no reaction

Solution