Organic(2011 VCE)

1) Which one of the following compounds is least soluble in water at room temperature?

- a) ethane
- b) ethanol
- c) ethylamine;
- d) ethanoic acid

Solution

2) The structure that is formed from the addition reaction between but-2-ene and Cl₂ is

В.

Solution

3) Consider the structures below.

Which structure is that of 2,2,4-trimethylpentane?

- a) I and III only
- b) I and IV only
- c) II and III only
- d) II and IV only

4) The compound that is not an isomer of of 2,2,4-trimethylpentane

- a) octane
- b) 3-ethylhexane
- c) 2, 4-dimethylpentane
- d) 2,4-dimethylhexane

Solution

5) Alanine, lysine and aspartic acid are amino acids. Which of these will react with 0.1 M HCl(aq)?

- a) lysine only
- b) alanine and lysine only
- c) aspartic acid and lysine only
- d) alanine, aspartic acid and lysine

Solution

6) Halothane is a general anaesthetic. The diagram below outlines the reaction pathway for the formation of halothane

$$CI$$
 CI CI CI

molecule X

Solution will appear here

Solution will appear here

Solution will appear here

	Type of reaction in step 2	Systematic name of molecule X
A.	substitution	1,2,2-trichloroethane
B.	addition	1,1,2-trichloroethane
C.	substitution	1,1,2-trichloroethene
D.	addition	1,2,2-trichloroethene

Solution

7) The pain killer ibuprofen lysine is more soluble in water than ibuprofen and can therfore be administered intravenously. Ibuprofen lysine is formed when ibuprofen and the amino acid, lysine, react with each other.

lysine

The structure of ibuprofen lysine is most likely

ibuprofen

A.
$$CH_3$$
 CH_2 CH_3 CH_3

Solution

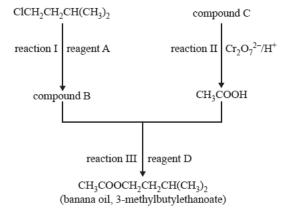
<u>Click</u> for detailed explanation of the solution to 7)

8) Banana oil, 3-methylbutylethanoate, $CH_3COOHCH_2CH_2CH(CH_3)_2$. is a sweet smelling liquid that gives bananas their characterisitic odour.

A chemist working for Raz Bananas Pty Ltd has proposed the following reaction pathway for the synthesis of banana oil.

Solution will appear here

Solution will appear here



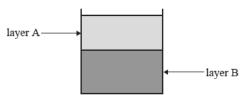
i) identify reagent A

Solution

- ii) Compound B is an alcohol. Draw its structutre Solution
- iii) Give the systematic name of compound B Solution
- iv) Give the systematic name of compound C Solution
- v) Identify reagent D Solution
- vi) Which reaction is an oxidation reaction Solution

The chemist decided to use fractional distillation to separate the final product, banana oil, from the mixture. Describe the principles of fraction distillation. **Solution**

9) Canola oil is completely converted to biodiesel fuel. One of the components of this biodiesel is ethyl stearate. Once cooled the product mixture of the conversion of canola oil to biodiesel separates into two layers. The top layer, layer A, in the diagram is the biodiesel fuel.



The following chemicals are involved in the production of biodiesel.

- i) glycerol
- ii) potassium hydroxide
- iii) ethanol
- Which of the above chemicals are found in layer B?
- a) i and ii only
- b) i and iii only
- c) ii and iii only
- d) i, ii and iii

Solution