Section A

1. What is the functional group of the esters?
   Tick (✓) **one** box.

   A. COOH ☐

   B. COO ☐

   C. COH ☐

2. What small molecule is made during the formation of an ester?

   Tick (✓) **one** box.

   A. Carbon dioxide ☐

   B. Oxygen ☐

   C. Water ☐

3. Complete the general equation for the reaction that forms an ester:

   _____ + _____ → ester + _____

4. What is the name of the ester formed through the reaction between ethanoic acid and ethanol?
   Tick (✓) **one** box.

   A. Ethanol ethanoicate ☐

   B. Ethane ethanolate ☐

   C. Ethyl ethanoate ☐

5. Give one use of esters.

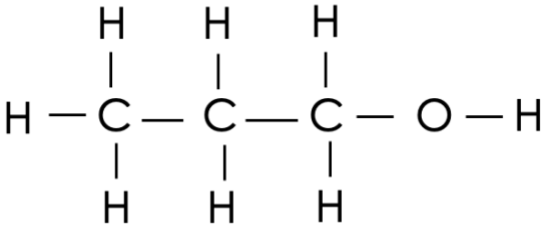
   _____

   _____

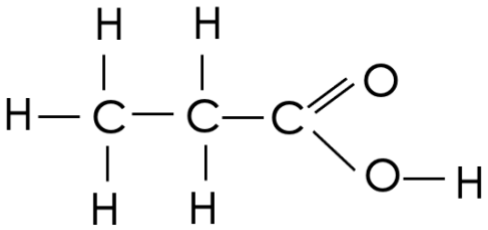
Section B

6. The displayed formulae below show two organic compounds.

Compound A



Compound B



Compound A and Compound B react to form a product called propyl propanoate.

a. What type of organic compound is propyl propanoate?

b. The reaction between Compound A and Compound B also forms another product. State the chemical formula of the other product.

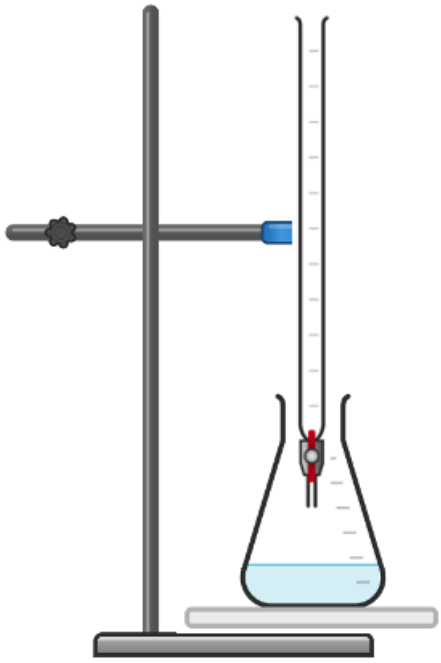
c. Organic compounds such as propyl propanoate are useful in perfumes. Give **two** properties of these types of compounds that make them useful in perfumes.

7. A student has a solution of ethanoic acid. Ethanoic acid is a weak acid.

a. Explain what is meant by a weak acid.

b. Name the edible product that contains ethanoic acid.

c. Describe how the apparatus shown below could be used to determine the concentration of the ethanoic acid solution.



d. Ethanoic acid can react with ethanol to form ethyl ethanoate.
Draw the displayed formula of ethyl ethanoate.

Section C

8. Naturally occurring fats and oils are complex esters.
   a. Describe the function of fats and oils in a balanced diet.
   b. Describe how to use qualitative reagents to test for the presence of fats.
   c. Describe where the digestion of fats takes place.
   d. Explain why fats must be digested.
   e. State the products of the digestion of fats.
   f. Name the type of enzyme that speeds up the digestion of fats.