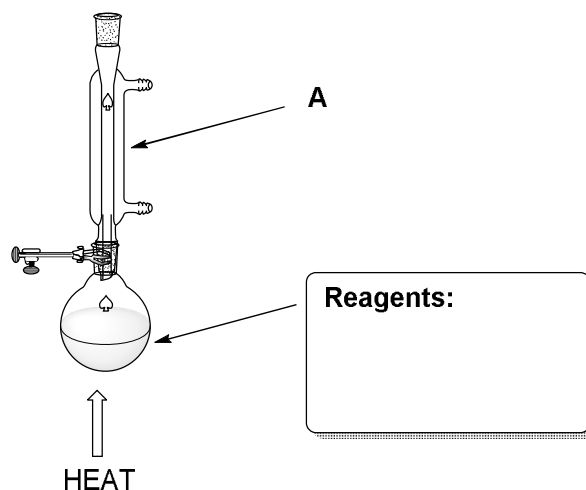




# STARTER FOR 10...

## 4.1 Oxidation of alcohols

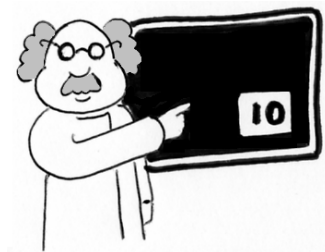
Adam set up the following apparatus in order to prepare some ethanoic acid.



1. What reagent(s) will Adam need to put in the round bottomed flask? (1 mark)
2. What colour change will Adam observe? (1 mark)
3. How does the experimental set up shown ensure a high yield of ethanoic acid? (2 marks)
4. Name the piece of apparatus labelled A (1 mark)
5. Draw a sketch of how the apparatus can be adapted to be used to produce and collect ethanol. Label any new pieces of apparatus you may need. (2 marks)



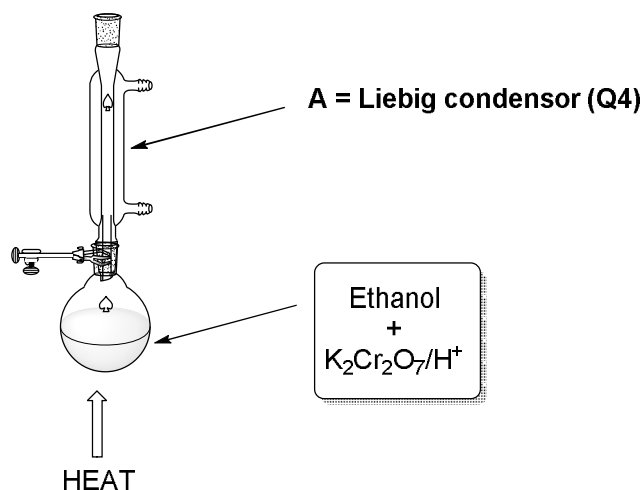
6. Bottles A, B and C contain pure samples of either ethanol, ethanal or ethanoic acid but the chemical labels have been lost. Suggest 2 reagents that can be used to determine which is which. (2 marks)



# STARTER FOR 10...

## Chapter 4: Answers

### 4.1 Oxidation of alcohols



1 as shown on the diagram (3 marks)

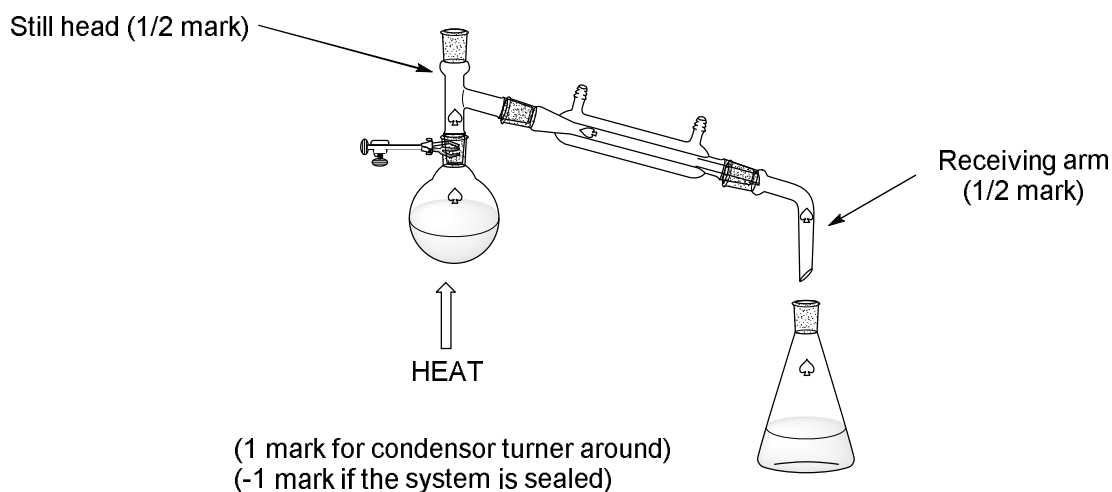
2 Orange to green (just goes green insufficient) (1 mark)

3 The reaction is set to reflux (1 mark, QoL)

Volatile oxidation products/aldehyde formed initially/ethanol evaporates then condenses and is returned to the reaction mixture (1 mark)

4 (Liebig) condenser

5



6

Sodium bicarbonate/Sodium hydrogen carbonate solution (will identify the acid) (1 mark)

Tollens' reagent (will identify the aldehyde) (1 mark)