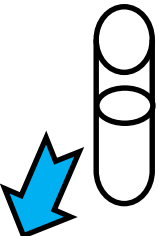
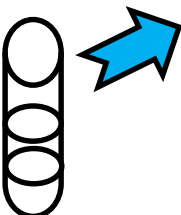
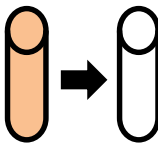
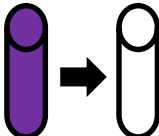
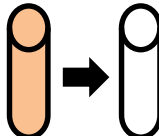

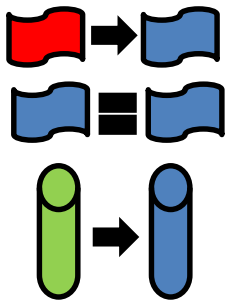
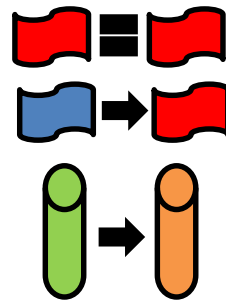
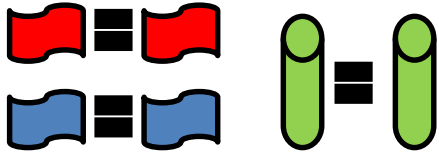
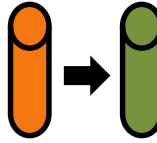



IDENTIFYING ORGANIC COMPOUNDS

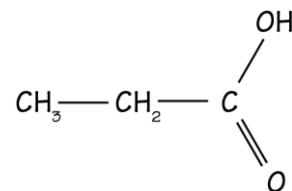
<p>miscible</p> 	<p>immiscible</p> 	<p>Insoluble in water</p> <ul style="list-style-type: none"> Alkanes Alkenes Alkynes Haloalkanes Bigger alcohols, carboxylic acids and amines (C4 and above approx.) 	<p>Slow reaction needing UV light and/or heat: Orange bromine water slowly decolourised.</p>  <p>Type of reaction: SUBSTITUTION</p>	<p>Reaction with $\text{H}^+/\text{MnO}_4^-$ (a purple coloured solution)</p>  <ul style="list-style-type: none"> Purple permanganate is rapidly decolourised by an <u>alkene</u> (makes a diol) <p>Type of reaction: OXIDATION</p>
<p>Soluble in water (C1-3/4 approx.)</p> <ul style="list-style-type: none"> Alcohols Carboxylic acids Amines (C1-5) 	<p>Solubility in water?</p>	<p>Reaction with bromine water, $\text{Br}_2(\text{aq})$?</p>	<p>Fast reaction: Orange bromine water rapidly decolourised.</p>  <p>Type of reaction: ADDITION</p>	
<ul style="list-style-type: none"> Amine: turns red litmus paper blue; blue litmus stays blue. Amines turn green UI solution blue. Carboxylic acid: turns blue litmus paper red; red litmus stays red. Carboxylic acids turn green UI solution orange. 	<p>Does it change the colour of litmus or Universal indicator?</p>	<p>Other things that might be useful to know!</p>	<p>Amines stink!</p> <ul style="list-style-type: none"> Many smell like dead fish or something decomposing..... 	
<p>amine</p> 	<p>carboxylic acid</p> 	<ul style="list-style-type: none"> Alcohol: Does not change red or blue litmus paper or green UI solution 	<p>Test for a <u>primary</u> alcohol</p>  <ul style="list-style-type: none"> Warm a sample with acidified dichromate solution $\text{H}^+/\text{Cr}_2\text{O}_7^{2-}(\text{aq})$ / heat Colour change from orange $\text{Cr}_2\text{O}_7^{2-}$ to green Cr^{3+} is seen. <p>Type of reaction: OXIDATION</p>	<ul style="list-style-type: none"> Carboxylic acids tend to have a "sharp smell" e.g. ethanoic acid has vinegary smell and butanoic acid smells like rancid butter..... Carboxylic acid + carbonate (CaCO_3) or hydrogen carbonate (NaHCO_3) - you will see bubbles of gas.  <p>Type of reaction: ACID-BASE or NEUTRALISATION</p>

TESTS TO KNOW

Examples of questions from recent NCEA exams

2014 (edited question)

Sodium carbonate is added to a sample of the following organic compound.



- Give the structure of the organic product formed.
- Describe the type of reaction occurring, giving a reason why it is classified as this type.

2013

Five separate colourless organic liquids are known to be:

- pentan-1-ol
- ethanol
- pent-1-ene
- pentane
- ethanamine.

Write a valid method to show how each of these liquids can be identified using only water, litmus paper, and bromine water, Br₂(aq).

Your method should allow another student to identify these liquids, and include:

- the reagent used
- any observations made.

You do not need to include equations in your answer.

2012

Two bottles containing pent-1-ene, CH₃CH₂CH₂CH=CH₂, and hexane, CH₃CH₂CH₂CH₂CH₂CH₃, require identification.

Two reagents, bromine water, Br₂, and acidified potassium permanganate, MnO₄⁻ / H⁺, are available.

Evaluate the possible use of BOTH reagents to distinguish between the pent-1-ene and hexane.

In your answer you should include:

- a description of the type of reactions that would occur
- any conditions that would be required
- any observations that would be made
- equations showing the structural formulae of the organic reactant(s) and product(s).