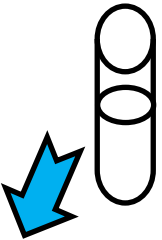
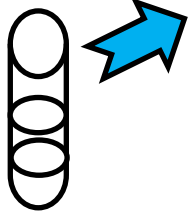
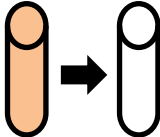
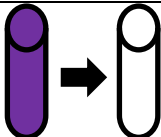
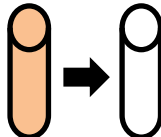

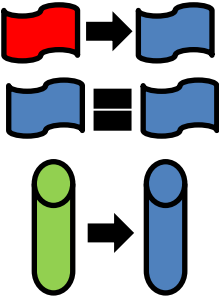
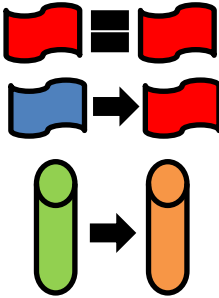
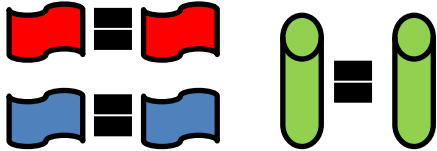
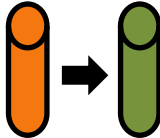



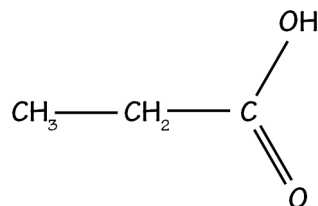
<p>miscible</p> 	<p>immiscible</p> 	<p>Insoluble in water</p> <ul style="list-style-type: none"> <li>Alkanes</li> <li>Alkenes</li> <li>Alkynes</li> <li>Haloalkanes</li> <li>Bigger alcohols, carboxylic acids and amines (C4 and above approx.)</li> </ul>	<p>Slow reaction needing UV light and/or heat: Orange bromine water slowly decolourised.</p>  <ul style="list-style-type: none"> <li>Alkane</li> <li>Haloalkane (I have never seen this asked in NCEA!)</li> </ul> <p>Type of reaction: SUBSTITUTION</p>	<p>Reaction with <math>H^+/MnO_4^-</math> (a purple coloured solution)</p>  <ul style="list-style-type: none"> <li>Purple permanganate is rapidly decolourised by an <u>alkene</u> (makes a diol)</li> </ul> <p>Type of reaction: OXIDATION</p>	
<p>Soluble in water (C1-4/5 approx.)</p> <ul style="list-style-type: none"> <li>Alcohols</li> <li>Carboxylic acids</li> <li>Amines</li> </ul>		<p>Solubility in water?</p>		<p>Reaction with bromine water, <math>Br_2(aq)</math>?</p>  <ul style="list-style-type: none"> <li>Alkene</li> <li>Alkyne</li> </ul> <p>Type of reaction: ADDITION</p>	
<ul style="list-style-type: none"> <li>Amine: turns red litmus paper blue; blue litmus stays blue. Amines turn green UI solution blue.</li> <li>Carboxylic acid: turns blue litmus paper red; red litmus stays red. Carboxylic acids turn green UI solution orange.</li> </ul>		<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! Oh yes they do!</p> <ul style="list-style-type: none"> <li>Many smell like dead fish or something decomposing.....</li> </ul> 
<p>amine</p> 	<p>carboxylic acid</p> 	<ul style="list-style-type: none"> <li>Alcohol: Does not change red or blue litmus paper or green UI solution</li> </ul> 	<p>Test for a <u>primary</u> alcohol</p>  <ul style="list-style-type: none"> <li>Warm a sample with acidified dichromate solution <math>H^+/Cr_2O_7^{2-}(aq)</math> / heat</li> <li>Colour change from orange <math>Cr_2O_7^{2-}</math> to green <math>Cr^{3+}</math> is seen.</li> </ul> <p>Type of reaction: OXIDATION</p>	<ul style="list-style-type: none"> <li>Carboxylic acids tend to have a "sharp smell" e.g. ethanoic acid has vinegary smell and butanoic acid smells like rancid butter.....</li> <li>Carboxylic acid + carbonate (<math>CaCO_3</math>) or hydrogen carbonate (<math>NaHCO_3</math>) - you will see bubbles of gas.</li> </ul>  <p>Type of reaction: ACID-BASE or NEUTRALISATION</p>	

TESTS TO KNOW

## Examples of questions

Sodium hydrogen 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.



Five separate colourless organic liquids are known to be:

Ethanamine, propanol, pentane, hexan-1-ol, pent-1-ene,

Write a valid method to show how each of these liquids can be identified using only water, litmus paper, and bromine water, Br<sub>2</sub>(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.

Two bottles containing pent-1-ene, CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH=CH<sub>2</sub>, and hexane, CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, require identification.

Two reagents, bromine water, Br<sub>2</sub>, and acidified potassium permanganate, MnO<sub>4</sub><sup>-</sup> / H<sup>+</sup>, are available.

Discuss 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).