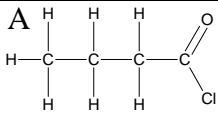
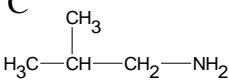
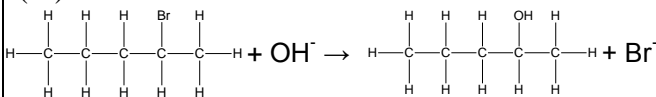
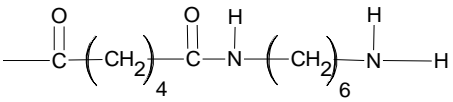
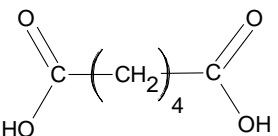
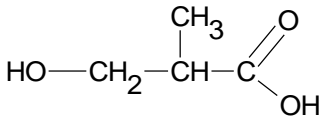
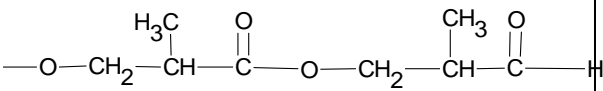


**Assessment Schedule 2011**  
**AS 90698 Chemistry 3.5 - Describe aspects of organic chemistry**

Qu	Evidence	Achievement	Merit	Excellence
<b>One (a)</b>	i) Alkene, alcohol, ester ii) <div style="text-align: center;"> </div>	<b>Three of:</b> (i) TWO correct (ii) ONE circled	<b>Achievement plus one of:</b>	<b>Achievement plus one of:</b>
<b>One (b)</b>	Optical isomerism. <b>Physical</b> <ul style="list-style-type: none"> <li>The isomers cannot be superimposed.</li> <li>The 2 isomers rotate plane polarised light in opposite directions.</li> <li>All other physical properties are the same.</li> </ul> <b>Chemical</b> <ul style="list-style-type: none"> <li>They react differently to each other when reacting with other optical isomers.</li> <li>They react in the same way when reacting with other compounds which are not optical isomers.</li> </ul>	Optical isomerism identified.	TWO bullet points	TWO physical bullet points AND TWO both chemical bullet points.
<b>One (c)</b>	(i) 1-butanol (butan-1-ol) (ii) 2°  3°	(i) Correct (ii) BOTH correct		
<b>One (d)</b>	Use Lucas reagent (conc. HCl/ZnCl <sub>2</sub> ) When added to the 3° alcohol, there will be immediate cloudiness. $\text{H}_3\text{C}-\underset{\text{CH}_3}{\overset{\text{OH}}{\text{C}}}-\text{CH}_3 + \text{HCl} \xrightarrow{\text{conc. ZnCl}_2} \text{H}_3\text{C}-\underset{\text{CH}_3}{\overset{\text{Cl}}{\text{C}}}-\text{CH}_3 + \text{H}_2\text{O}$ When added to the 2° alcohol, there will be cloudiness after a few minutes <b>when warmed</b> . $\text{H}_3\text{C}-\text{CH}_2-\underset{\text{CH}_3}{\overset{\text{OH}}{\text{C}}}-\text{H} + \text{HCl} \xrightarrow{\text{conc. ZnCl}_2} \text{H}_3\text{C}-\text{CH}_2-\underset{\text{CH}_3}{\overset{\text{Cl}}{\text{C}}}-\text{H} + \text{H}_2\text{O}$ When added to a 1° alcohol, there will be no reaction after 10 minutes, even when warmed. (Will react eventually but no equation required).	Lucas reagent identified.	ALL correct observations OR ALL correct equations OR ONE matching observation and equation	ALL correct including HCl identified as concentrated and ZnCl <sub>2</sub> shown as a catalyst

Qu	Evidence	Achievement	Merit	Excellence
Two (a)	<p>A </p> <p>B 2-bromopentane</p> <p>C </p> <p>D 3-chloro-4-methylhexanal</p>	<p>Three of: THREE out of four correct</p>	<p>Achievement plus two of:</p>	<p>Merit plus:</p>
Two (b)	<p>(i) condenser</p> <p>(ii) Reflux. The reaction needs to be heated to progress. Normally this would cause the reactants to evaporate before they can react. The condenser allows heating and condensing of the reactants so that they are not lost from the reaction vessel.</p> <p>(iii)</p> 	<p>(i) correct</p> <p>(ii) Named as reflux reaction OR partial explanation</p> <p>(iii) Correct organic product</p>	<p>(ii) Named as reflux AND correct explanation</p> <p>(iii) Correct equation</p>	
Two (c)	<p><math>\text{H}_3\text{C}-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_3</math></p> <p><math>\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}=\text{CH}_2</math></p>	<p>BOTH products correct</p>		
Two (d)	<p>Add moist red litmus to all 4 solutions</p> <ul style="list-style-type: none"> <li>Compound C will change the red litmus to blue, as the <b>amine is a weak base</b>.</li> </ul> <p>Add Tollens reagent to the remaining 3 solutions.</p> <ul style="list-style-type: none"> <li>Compound A will react violently (or produce white fumes), as the <b>acyl chloride will react with the water in the Tollens reagent</b>.</li> <li>Compound D will react with the Tollens reagent to form a silver mirror, as the <b>aldehyde will react with the <math>\text{Ag}^+</math> in the Tollens reagent</b>.</li> <li>Compound B will not react.</li> </ul>	<p>ONE test described with at least ONE solution identified with observation.</p>	<p>TWO tests described with at least TWO solutions identified with observations.</p>	<p>ALL solutions correctly identified with functional groups named and reasons in bold given.</p>

Qu	Evidence	Achievement	Merit	Excellence
Three (a)	(i) A small molecule (HCl) is removed when the monomers join.	Two of: (i) correct  (ii) correct	Achievement plus one of:	Merit plus:
	(ii) 			
(b)	HO—(CH <sub>2</sub> ) <sub>6</sub> —OH <b>Reagent:</b> MnO <sub>4</sub> <sup>-</sup> (H <sup>+</sup> optional) OR Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup> /H <sup>+</sup>   <b>Reagent:</b> SOCl <sub>2</sub> OR PCl <sub>3</sub> OR PCl <sub>5</sub>	TWO correct	ALL correct	
(c)	(i) Compound X   (ii) Compound Y 	Compound X given with an alcohol or carboxylic acid group and correct molecular formula.	Compound X correct	Compounds X & Y correct

Qu	Evidence	Achievement	Merit	Excellence
Four	Products A $\text{H}_3\text{C}-\text{CH}=\text{CH}_2$ B $\begin{array}{c} \text{HO} \\   \\ \text{H}_3\text{C}-\text{CH}-\text{CH}_3 \end{array}$ C $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ D $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{O}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_3$ E $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ Reagents 1 conc. $\text{H}_2\text{SO}_4$ 2 $\text{Br}_2$ 3 $\text{MnO}_4^-$ ( $\text{H}^+$ optional) OR $\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$ 4 $\text{PCl}_5$ OR $\text{SOCl}_2$ OR conc. $\text{HCl}/\text{ZnCl}_2$ if clearly stated that needs heat and is very slow. 5 $\text{NH}_{3(\text{alc})}$	TWO reactants AND TWO products	No more than TWO errors	ALL correct

**Judgement statement:**

Achievement	Achievement with Merit	Achievement with Excellence
3A	3M	3E
		OR
		2M + 2E