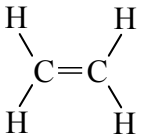
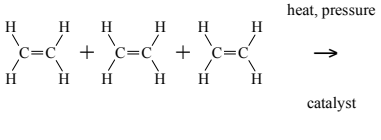
Assessment Schedule – 2005

Chemistry: Describe properties and reactions of carbon and its compounds (90648)

Evidence Statement

Q	Evidence	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
1(a)	A = Diamond B = Graphite C = C-60 (Buckminster fullerene or Bucky balls).	Any TWO correct.		
1(b)	(i) Solid	Correct		
1(b)	(ii) Layers of atoms can slide over each other due to weak forces between the layers.	Layers slide	Correct explanation	
2(a)	A polymer is a long molecule made up of many **repeating** units (**monomers**).	Correct		
2(b)	$-CH_2-CH_2-CH_2-CH_2-CH_2-CH_2-$	All single bonds, only carbons and hydrogens	All correct	
2(c)	The ethene molecule contains a double bond:  The double bond breaks and single bonds form between the ethene molecules. This is an addition polymerisation reaction. The conditions required include high temperature, pressure and the presence of a catalyst. OR  $CH_2-CH_2-CH_2-CH_2-CH_2-CH_2$	TWO of the conditions required for this reaction to occur.	Links the breaking of the double bond to the ability of ethene to form a polymer.	Links the breaking of the double bond to the ability of ethene to form a polymer AND identifies TWO of the conditions required for this reaction to occur.

Q	Evidence	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
3	The gas released is carbon dioxide. When the soft-drink bottle lid comes off, pressure is decreased, allowing the gas to escape. CO_2 is more soluble under pressure. CO_2 turns damp blue litmus red as it reacts with the water forming an acid: $CO_2 + H_2O \rightarrow H_2CO_3$ The acid turns the blue litmus red.	Pressure is decreased, gas escapes. OR Gas is acidic.	TWO of Pressure is decreased (gas escapes as CO_2 is more soluble under pressure). CO_2 turns damp blue litmus red as it reacts with the water forming an acid. Equation for reaction of CO_2 in water.	Pressure is decreased (gas escapes as CO_2 is more soluble under pressure). AND CO_2 turns damp blue litmus red as it reacts with the water forming an acid. AND Equation for reaction of CO_2 in water.
4(a)	(1) CH_3OH (2) propene (3) ethanoic acid (4) $CH_3CH_2CH_2CH_2CH_3$	THREE names / structures correct – must have all hydrogens.		
4(b)	Propene and pentane (C,E)	Identified correctly.		
4(c) (i)	$CH_3CH_2OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$	Reactants OR products identified with the correct formulae.	Reactants AND products identified with the correct formulae.	Correctly balanced equation. States not required
4(c) (ii)	Incomplete combustion produces carbon monoxide and soot as products. Soot can cause irritation of the lungs – respiratory problems (bronchitis, asthma etc). Carbon monoxide can cause decrease in oxygen in blood, leading to possible brain damage and death (due to binding with haemoglobin in red blood cells, so carbon monoxide rather than oxygen is carried around the body).	Identifies carbon monoxide OR carbon as a product, AND states that it has a negative health impact.	Identifies carbon monoxide OR carbon as a product, AND explains why it causes health problem.	Links BOTH dangerous products to health problems AND explains why they are a **health** problem.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
SIX opportunities answered at Achievement level or higher. 6 × A	EIGHT opportunities answered with THREE at Merit level or higher. 3 × M *plus* 5 × A	NINE opportunities answered with TWO at Excellence level and THREE at Merit level or higher. 2 × E *plus* 3 × M *plus* 4 × A