

Assessment Schedule – 2005**Chemistry: Describe selected non-metals and their compounds (90173)****Evidence Statement**

Q	Evidence	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
1(a)	Nitrogen fixation. OR Conversion of nitrogen in the air to nitrates in the soil.	Correct		
1(b)	(i) NH_4Cl (or other suitable NH_4^+ compound) (ii) heat (iii) NH_3	TWO correct		
1(c)(i)	<ul style="list-style-type: none"> the copper metal reacts (disappears) a brown gas is released a blue / green solution forms heat is released effervesce / bubbling / fizzing (not just gas given off). 	Any TWO correct observations.		
1(c)(ii)	$4\text{HNO}_3 + \text{Cu} \rightarrow 2\text{NO}_2 + 2\text{H}_2\text{O} + \text{Cu}(\text{NO}_3)_2$	Correct formulae of EITHER reactants OR products.	Correct formulae of BOTH reactants AND products.	Correctly balanced.
2(a)	Cl_2 is <ul style="list-style-type: none"> green a gas denser than air at room temperature. 	TWO correct.		
2(b)	$2\text{NaOH} + \text{Cl}_2 \rightarrow \text{NaOCl} + \text{NaCl} + \text{H}_2\text{O}$ OR $\text{NaOH} + \text{Cl}_2 \rightarrow \text{HOCl} + \text{NaCl}$	Formulae of products correct.	Correctly balanced.	
2(c)(i)	NaOCl can act as a bleach and an antiseptic.	ONE use described.	ONE use linked to oxidising properties of OCl^- .	Oxidising reactions of OCl^- applied to the two uses.
2(c)(ii)	NaOCl is an oxidising agent. NaOCl is a strong bleaching / oxidising agent used to remove colour or stains from cellulose or fabric. Oxidise bacteria (oxidises essential enzymes) / destroys ability of bacteria to function so it can be used as an antiseptic.		OR Properties of bleaching OR disinfecting linked to the reactions of NaOCl.	
3(a)	O: gas; colourless; slightly soluble. S: solid; yellow; insoluble.	FOUR correct.		
3(b)(i)	Na_2SO_3 is commonly added to foods to prevent them from spoiling. (Gives food a longer shelf life, OR preserves food.)	Na_2SO_3 prevents food from spoiling OR preserves the food.	Sodium sulfite removes oxygen from food	Na_2SO_3 is reductant that preserves food by removing oxygen to prevent spoilage
3(b)(i)	The Na_2SO_3 is a reducing agent / antioxidant / removes O_2 from food slowing the ripening process / preventing it oxidising / spoiling. The reactions of Na_2SO_3 creates an environment that bacteria cannot grow / reproduce in.		OR The use as a preservative is linked to the reactions of Na_2SO_3 .	AND creating an environment where bacteria cannot grow/reproduce.

Q	Evidence	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
4(a)	Sulfur dioxide (SO ₂); Nitrogen oxides (NO _x); Carbon dioxide (CO ₂)	TWO correct.		
4(b)	$\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$ $\text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_3 + \text{H}^+$ $2\text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_3 + \text{HNO}_2$ $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$	Formulae of reactants OR products correct for one reaction.	Formulae of reactants AND products correct for one reaction.	ONE correctly balanced equation.
4(c)	<p>Acid rain forms as gases dissolve in water in atmosphere. Effects could include:</p> <p>Living</p> <ul style="list-style-type: none"> - lung disorders in people and animals, including asthma. Can be caused by acid rain irritating the respiratory system - lowered pH in soil and water can kill plants and animals - irritate skin and eyes. <p>Non-living</p> <ul style="list-style-type: none"> - acid rain (fog, hail and snow) is deposited on land and water – lakes, streams, oceans have their pH affected. Heavy metals can be leached into the waterways - destroys buildings and statues made of carbonate compounds eg limestone, marble, because the acid rain reacts with the carbonates - affects paint on vehicles, allowing cars to rust more than in areas that don't have acid rain. 	TWO effects of acid rain are identified.	<p>TWO effects are explained. These can be on EITHER</p> <p>Two living things OR</p> <p>Two non-living things OR</p> <p>One of each.</p>	THREE effects on living things and non-living things (at least ONE of each) are explained.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
SEVEN opportunities answered at Achievement level or higher.	EIGHT opportunities answered with THREE at Merit level or higher.	NINE opportunities answered with THREE at Excellence level and ONE at Merit level or higher.
7 × A	3 × M <i>plus</i> 5 × A	3 × E <i>plus</i> 1 × M <i>plus</i> 5 × A