

Assessment Schedule – 2007**Science: Describe the chemical properties and effects of fertilisers (90766)****Evidence Statement**

Q	Achievement	Achievement with Merit	Achievement with Excellence
(a)	Artificially made.		
(b)	20% phosphorus	20% phosphorus, 0% nitrogen and potassium (percentages don't need to be stated if refers to the NPK rating given in question).	
(c)	negative 3		
(d)	negative 1		
(e)	Phosphate ion has 3 electrons / negative charges more than it has protons / positive charges. OR Hydrogen phosphate ion has 1 electron / negative charge more than it has protons / positive charges. Follow on error allowed for Achieved only from 1(c) and (d).	Phosphate ion has 3 electrons / negative charges more than it has protons / positive charges. AND Hydrogen phosphate ion has 1 electron / negative charge more than it has protons / positive charges.	
(f)	Calcium AND phosphorus		
(g)	Attempt made on both equations but mathematical errors.	$\text{Ca}_3(\text{PO}_4)_2$ $120 + 62 + 128 = 310$ $\text{P} = 62 / 310 = 20\%$ OR $\text{Ca}(\text{H}_2\text{PO}_4)_2$ $40 + 4 + 62 + 128 = 234$ $\text{P} = 62 / 234 = 26\% \text{ or } 26.5\%$	$\text{Ca}_3(\text{PO}_4)_2$ $120 + 62 + 128 = 310$ $\text{P} = 62 / 310 = 20\%$ AND $\text{Ca}(\text{H}_2\text{PO}_4)_2$ $40 + 4 + 62 + 128 = 234$ $\text{P} = 62 / 234 = 26\% \text{ or } 26.5\%$
(h)	Superphosphate is soluble OR rock phosphate is insoluble OR superphosphate is higher in Phosphorous. One point required.	Superphosphate is soluble and rock phosphate is insoluble. OR Superphosphate is higher in Phosphate than rock phosphate <i>Two required to be linked.</i>	
(i)	Describes one of: Nutrients dissolve in water OR enter plant by diffusion OR carried by xylem to cell OR added to cell's DNA.	Explains one point e.g. Nutrients dissolve in water so they are then in their ionic form	Explains two points e.g. Nutrients dissolve in water so they are then in their ionic form and made into DNA as ions can be taken in by cells.
(j)	micro element/micro nutrient/trace element		
(k)	Needed by the clover to make nitrogen fertiliser / clover is nitrogen fixing.	Mo is required by the nitrogen-fixing bacteria to convert nitrogen to nitrates.	
(l)	acidic		

(m)	Add lime/limestone. Follow on error from (l) allowed for Achieved only.	Add lime/limestone to react with the acid neutralising the soil.	
(n)	pH controls nutrient uptake and can affect soil solubility.	pH controls nutrient uptake AND/OR a high pH stops uptake of most nutrients AND/OR a low pH stops uptake of nitrogen and phosphorus and can affect soil solubility. AND/OR acid soils have highly soluble nutrients and leeching occurs. Either high OR low pH effects.	pH controls nutrient uptake AND a high pH stops uptake of most nutrients AND a low pH stops uptake of nitrogen and phosphorus and can affect soil solubility AND/OR acid soils have highly soluble nutrients and leeching occurs. <i>Both high and low pHs linked.</i>
(o)	Paddock readings high because that's where fertiliser added OR riparian plants use excess phosphate ions.	Paddock readings high because that's where fertiliser added AND riparian plants use excess phosphate ions.	
(p)	eutrophication		
(q)	Restrict the amount of phosphate fertiliser used on farms, OR use less soluble forms of phosphates. OR use organic fertiliser OR use slow release fertilisers. <i>One point required.</i>	Restrict the amount of phosphate fertiliser used on farms, OR use less soluble forms of phosphates. OR use organic fertiliser OR use slow release fertilisers <i>Two points required or one point explained.</i>	

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
EIGHT opportunities answered correctly. Minimum of $8 \times A$	EIGHT opportunities answered correctly, including at least FOUR at Merit level. Minimum of $4 \times M + 4 \times A$	EIGHT opportunities answered correctly, including at least TWO at Excellence level and at least TWO at Merit level. Minimum of $2 \times E + 2 \times M + 4 \times A$ OR EIGHT opportunities answered correctly including ONE Excellence (from Question (i) or (n)) and at least THREE at Merit level. Minimum of $1 \times E + 3 \times M + 4 \times A$