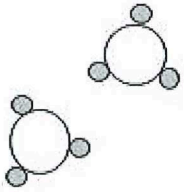


WJEC Chemistry 2
Option – Foundation Tier
2.6 Mark Scheme

Question		Marking details	Marks available						
			AO1	AO2	AO3	Total	Maths	Prac	
9/2	(a)	(i)	1			1			
		air do not accept oxygen							
		(ii)	1			1			
		award (1) for any sensible answer e.g. strong(er) equipment required requires thick(er) pipes requires strong(er) pipes <u>more</u> maintenance <u>may</u> explode <u>more</u> energy needed <u>more</u> expensive neutral answer - dangerous							
		(iii)	1			1			
		catalyst							
		(iv)		2		2			
		 award (2) for correct answer award (1) for one ammonia molecule drawn correctly award (1) max if any additional product(s) included							

Question	Marking details	Marks available					
		AO1	AO2	AO3	Total	Maths	Prac
(b)	A			1	1		
(c)	$2\text{NH}_3 + 3\text{Cl}_2 \longrightarrow \text{N}_2 + \boxed{6} \text{HCl}$		1		1		
	Question 9/2 total	3	3	1	7	0	0

Question		Marking details	Marks available															
			AO1	AO2	AO3	Total	Maths	Prac										
5	(a)	<table border="1"> <tr><td>crop growth on fields increases</td><td></td></tr> <tr><td>fertilisers run into waterways</td><td>✓</td></tr> <tr><td>plant growth in rivers and lakes increases</td><td>✓</td></tr> <tr><td>aquatic animals do not have enough oxygen</td><td>✓</td></tr> <tr><td>farmers' profits increase</td><td></td></tr> </table> <p>award (2) for all 3 correct award (1) for any 2 correct</p>	crop growth on fields increases		fertilisers run into waterways	✓	plant growth in rivers and lakes increases	✓	aquatic animals do not have enough oxygen	✓	farmers' profits increase				2	2		
	crop growth on fields increases																	
fertilisers run into waterways	✓																	
plant growth in rivers and lakes increases	✓																	
aquatic animals do not have enough oxygen	✓																	
farmers' profits increase																		
(ii)	<p>award (1) for statement that in general the larger the population, the more ammonia is used e.g. Asia has the largest population and the largest ammonia use / the largest population uses the most ammonia 'demand for food' is equivalent to population</p> <p>award (1) for recognising Africa as the exception e.g. Africa has the second largest population but the fourth largest ammonia use</p>			2	2	2												
(b)	(i)	<p>ammonium sulfate</p> <p>do not accept ammonia sulfate</p>		1		1												
	(ii)	<table border="1"> <tr><td>plants use nitrogen to make sugar</td><td></td></tr> <tr><td>plants use nitrogen to make water</td><td></td></tr> <tr><td>plants use nitrogen to make oxygen</td><td></td></tr> <tr><td>plants use nitrogen to make protein</td><td>✓</td></tr> </table>	plants use nitrogen to make sugar		plants use nitrogen to make water		plants use nitrogen to make oxygen		plants use nitrogen to make protein	✓	1			1				
plants use nitrogen to make sugar																		
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plants use nitrogen to make oxygen																		
plants use nitrogen to make protein	✓																	

Question	Marking details	Marks available					
		AO1	AO2	AO3	Total	Maths	Prac
	300 (2) if answer incorrect award (1) for $\frac{75}{15} / 5 / 0.3$		2		2	2	
(c)	$\text{N}_2 + \boxed{3} \text{H}_2 \rightleftharpoons \boxed{2} \text{NH}_3$		1		1		
	award (1) for any of following <ul style="list-style-type: none"> the reaction is reversible the reaction goes in both directions the reaction can go forwards or backwards do not accept equal both ways	1			1		
	I iron / Fe	1			1		
	II award (1) for any of following <ul style="list-style-type: none"> increases rate of reaction makes the reaction go faster / it go faster makes the ammonia more quickly makes the product more quickly process takes less time accept 'lowers the activation energy'	1			1		
	Question 5 total	4	4	4	12	4	0