Question 5

QUESTION	ANSWERS	EXTRA INFORMATION	MARK	AO / SPEC. REF.
05.1	equation to use is number of moles = concentration × volume		1	AO2/4.3.4 MS1c
	$0.6 \times \frac{50}{1000} = 0.03$ moles of HCl		1	
	2 moles of HCl react with 1 mole of $Ca(OH)_2$		1	
	$\frac{0.03}{2} = 0.015$ moles of $Ca(OH)_2$ react		1	
	$0.015 = $ concentration $\times \frac{30}{1000}$		1	
	concentration $= 0.015 \times \frac{1000}{30}$		1	
	concentration of $Ca(OH)_2 = 0.5$ mol/dm³		1	
TOTAL			**6**	

Question 6

QUESTION	ANSWERS	EXTRA INFORMATION	MARK	AO / SPEC. REF.
06.1	17		1	AO2/4.1.1.6
06.2	100(%)		1	AO2/4.3.3.2 MS1a/1c
06.3	M_r of $N_2 = 28$ moles of $N_2 = \frac{14}{28} = 0.5$ 1 mole of nitrogen makes 2 moles of ammonia mass of $NH_3 = 0.5 \times 2 \times 17 = 17$ g	correct answer scores 4 marks 34 g scores 3 marks (student thinks that N_2 has an M_r of 14) 8.5 g scores 3 marks (student assumes a 1:1 relationship) allow ecf	1 1 1 1	AO2/4.3.2.2 MS1a/1b/ 3b/3c
06.4	$\frac{2.55}{17} \times 100$ $= 15\%$	allow ecf from 06.3 if maximum mass of ammonia of 51 g was used, the answer is 5% if 34 g was used, the answer is 7.5% if 8.5 was used, the answer is 30%	1 1	AO2/4.3.3.1 MS1c
06.5	the reaction is reversible so it will not go to completion	ignore any other reasons as they cannot be deduced from the equation	1	AO1/4.3.3.1
TOTAL			**9**	