

Question	Answer	Marks	AO Element	Notes	Guidance
1	D - The decomposition of N_2O_4 is an endothermic reaction.	1			
2(a)	V_2O_5	1			
2(b)	position of equilibrium shifts right/yield increases	1			
	to save energy	1			
2(c)	faster reaction/rate	1			
	more collisions per second/higher collision frequency	1			
	fewer moles/molecules (of gas) on right	1			
	(so) position of equilibrium shifts right/yield increases	1			
3(a)	add water (to yellow solid or to (anhydrous) iron(II) sulfate or to $FeSO_4$ or to products	1			
	goes green	1			

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3(b)	M1 Sulfur trioxide reacts with water to make sulfuric acid or equation	1			
	M2 sulfur dioxide reacts with oxygen to form sulfur trioxide or equation	1			
3(c)	M1 = 2.07	1		Allow 2.1 or 2.0666...7	
	M2 = 62.8.g	1			
	M3 (= M2/152 =) 0.41(3)	1			
	M4 (= M1/M3) rounded to the nearest whole number $\times = 5$	1			
					[Total: 16]