

Mark schemes

1	(a) A catalyst in the same phase/phase as the reactants	1	
	(b) (i) A reaction in which a product acts as a catalyst	1	
	(ii) Mn^{2+} or Mn^{3+} <i>"Self-catalysing" not allowed</i>	1	
	(c) (i) $2\text{CO} + 2\text{NO} \rightarrow 2\text{CO}_2 + \text{N}_2$ or $4\text{CO} + 2\text{NO}_2 \rightarrow 4\text{CO}_2 + \text{N}_2$ <i>C not allowed as a product</i>	1	
	Reducing agent CO	1	
	(ii) Pt, Pd or Rh	1	
	Deposited on a ceramic honeycomb or matrix or mesh or sponge	1	
	To increase surface area of catalyst	1	
	(d) (i) Reactants cannot move on surface or products not desorbed or Active sites blocked	1	
	(ii) Reactants not brought together or No increase in reactant concentration on catalyst surface or Reactants not held long enough for a reaction to occur or Reactant bonds not weakened	1	
			[10]
2			[1]
3			[1]