Question	Marking Guidance	Mark	Comments
4(a)	Incomplete (or partially filled) d orbitals/sub-shells	1	Do not allow d shell
4(b)	Variable oxidation states	1	
4(c)(i)	$[H_3N–Ag–NH_3]^+$	1	Allow $[Cl–Ag–Cl]^–$ or similar Cu(I) ion Allow compounds in (i), (ii) and (iii) (eg Cl-Be-Cl) Allow no charge shown, penalise wrong charge(s)
4(c)(ii)	Cis platin drawn out as square planar	1	Allow $NiX_4^{2–}$ etc
4(c)(iii)	$[CuCl_4]^{2–}$ drawn out as tetrahedral ion	1	Or $[CoCl_4]^{2–}$ drawn out
4(d)(i)	$SO_2 + 1/2O_2 \rightarrow SO_3$	1	Allow multiples Allow $SO_2 + 1/2O_2 + H_2O \rightarrow H_2SO_4$ ignore state symbols
4(d)(ii)	In a different phase/state (from the reactants)	1	
4(d)(iii)	$V_2O_5 + SO_2 \rightarrow V_2O_4 + SO_3$ $V_2O_4 + 1/2O_2 \rightarrow V_2O_5$	1 1	can be in either order allow multiples
4(d)(iv)	Surface area is increased By use of powder or granules or finely divided	1 1	 Allow suspending/spreading out onto a mesh or support

4(e)(i)	Forms two or more co-ordinate bonds	1	Allow more than one co-ordinate bond or donates more than 1 electron pair. Do not allow "has more than one electron pair" Allow uses more than one atom to bond (to TM)
4(e)(ii)	Number of product particles > Number of reactant particles	1	Allow molecules/entities instead of particles Penalise incorrect numbers (should be 2→5)
	Disorder increases or entropy increases (or entropy change is positive)	1	Allow ΔG must be negative because ΔH = 0 and ΔS is +ve
4(e)(iii)	6	1	
	Cyanide strongly bound to Co (by co-ordinate/covalent bond)	1	