

Oxidation and reduction in terms of electrons

Q1. (2018)

08.4	Fe ³⁺		1	AO2
	(because) reduction is gain of <u>electrons</u>	allow change in oxidation state / (+)3 to 0	1	AO1
	Fe ³⁺ + 3e ⁽⁻⁾ → Fe		1	AO2
				5.4.1.2 5.4.1.4

Q2. (2022)

07.2	4 Na + TiCl ₄ → 4 NaCl + Ti	allow multiples	2	AO2
		allow 1 mark for NaCl and Ti with incorrect / no balancing		5.1.1.1 5.3.1.1

Q3. (2022)

07.3	Na → Na ⁺ + e ⁻	ignore state symbols	2	AO2 5.4.1.2 5.4.1.4
		allow multiples		
		allow 1 mark for Na → Na ⁺ + e ⁻ with incorrect balancing		

Q4. (2023)

06.2	(magnesium atoms are) oxidised		1	AO2
	(because the atoms) lose (two) electrons		1	5.4.1.4 5.4.2.1 5.4.2.3 RPA8

Q5. (2024)

07.1	each calcium atom loses two electrons	allow 1 mark for calcium atoms lose electrons and chlorine atoms gain electrons	1	AO2 5.1.2.6 5.2.1.1
	(and) each chlorine atom gains one electron		1	
	(so) one calcium atom reacts with two chlorine atoms		1	
	(to form) Ca ²⁺ ions and Cl ⁻ ions or (to form) calcium ion(s) and chloride ion(s)		1	
		allow (to form) ions with full outer shells allow energy level for shell		