11. Group 17

11.2 The chemical properties of the halogen elements and the hydrogen halides

Paper 2

Marking Scheme

Q1.

(c)(i)	$Br_2 + 2I^- \rightarrow 2Br^- + I_2$	1
(c)(ii)	(Br_2 / bromine is an) oxidising agent **AND** removes electron(s) from iodide (ions) I^- **OR** increases the oxidation number of I^- / iodide (ion)	1

Q2.

(a)(i)	chlorine = yellow-green bromine = orange / brown / red iodine = silver grey / black	1
(a)(ii)	oxidising strength **decreases** from chlorine to iodine	1
(a)(iii)	green colour disappears	1
(a)(iv)	H—Hal covalent bond strength **decreases** down the group	1

Q3.

(d)	bromine / Br_2 is not a strong enough / (too) weak as a oxidising agent (to oxidise chloride / Cl^-) owtte / Bromine / Br_2 cannot oxidise chloride (ion) / Cl^-	1

Q4.

(d)(i)	(solution / mixture / liquid) turns (colourless to) orange or brown	1

Q5.

(a)(ii)	(HI has the) lowest bond enthalpy	1

Q6.

(b)(i)	*Conditions for reaction with Cl_2 at room temperature* ultra-violet / uv	**1**

(b)(ii)	$I_2(g/s) + H_2(g) \rightleftharpoons 2HI(g)$ **M1** correctly balanced equation	**1**
	M2 correct state symbols AND use of equilibrium sign	**1**