9701 CAMBRIDGE AS CHEMISTRY
TOPIC QUESTIONS AND MARK SCHEMES
TOPIC :ATOMIC STRUCTURE
TOPIC: IONISATION ENERGY
SET-1-QP-MS

1 **(a)** Define first ionisation energy.

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..... [2]

MARK SCHEME:

	• energy required • when one electron is removed • from each atom in one mole of • gaseous atoms two or three points for one mark, four points for two marks	**2**

2 **(i)** Explain what is meant by the term *first ionisation energy*.

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..... [3]

(ii) Explain why the first ionisation energy of neon is greater than that of fluorine.

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..... [2]

Mark Scheme:

(i)	The amount of energy required/energy change when one electron is removed from each atom in one mol of gaseous atoms	[1] [1] [1]	[3]
(ii)	Greater nuclear charge/number of protons Same shielding/number of shells/energy level	[1] [1]	[2]

3 **(a)** Explain what is meant by the term *ionisation energy*.

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..... [3]

Mark Scheme:

(a)	The amount of energy required / energy change / enthalpy change when one electron is removed from each atom / (cat)ion in one mol of gaseous atoms / (cat)ions **OR** energy change when 1 mole of electrons is removed from one mole of gaseous atoms / ions $X(g) \rightarrow X^{+}(g) + e^{-}$ gains 2 marks	1 1 1	3

4 The first six ionisation energies of an element **X** are given below.

ionisation energy / kJ mol^{-1}					
first	second	third	fourth	fifth	sixth
950	1800	2700	4800	6000	12300

(a) Define the term *first ionisation energy*.

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..... [3]

Mark Scheme:

(a)	Energy required to remove one electron from each atom	(1)
	in one mole of	(1)
	gaseous atoms of an element	(1)
	(‘*Energy change when one mole of gaseous atoms loses one mole of electrons’* would score all three marks.)	**[3]**