

Question 1 (Answer: B)

- The subscript 2 is the proton number, so statement 1 is right.
- Neutrons = $3 - 2 = 1$, not three, so statement 2 is wrong.
- A +1 charge on 2 protons leaves 1 electron, so statement 3 is right.

Question 2 (Answer: B)

- Look for the large jump: $1450 \rightarrow 7740$, between the 2nd and 3rd ionisation energies.
- That means two electrons come off easily and the third has to come from an inner shell.
- Two outer electrons in Period 3 is Group 2 – magnesium.

Question 3 (Answer: C)

- 10 cm^3 of CH_3SH needs 30 cm^3 of O_2 , so $60 - 30 = 30 \text{ cm}^3$ of oxygen is left over.
- The gaseous products are $10 \text{ cm}^3 \text{ CO}_2$ and $10 \text{ cm}^3 \text{ SO}_2$.
- At room temperature the water is a *liquid* and does not count: $30 + 10 + 10 = 50 \text{ cm}^3$.

1(a)(i)	25 protons 30 neutrons 25 electrons
1(a)(ii)	(atoms of an element) with the same number of protons and different number of neutrons
1(a)(iii)	M1 (relative) isotopic mass. OR (relative isotopic) mass of Mn-55 and Mn-53 M2 (relative) abundance of each isotope
1(b)(i)	$1s^2 2s^2 2p^6 3s^2 3p^6 (3d^5 4s^2)$
1(b)(ii)	5
1(c)(i)	Mn / MnO_2 AND it gains electrons
1(c)(ii)	(+)4
1(c)(iii)	<i>Due to an issue with question 1(c)(iii), the question has been removed from the question paper.</i>