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**HIGHER**

**CHEMISTRY**



## QUESTIONS

- 1 Which of the following represents the first ionisation energy of oxygen?
- A  $O(g) \rightarrow O^+(g) + e^-$
  - B  $O(g) + e^- \rightarrow O^-(g)$
  - C  $O_2(g) \rightarrow O_2 + (g) + e^-$
  - D  $O_2(g) + e^- \rightarrow O_2^-(g)$
- 2 As you move across a period from left to right, the electronegativity of elements increases. This is because:
- A There is an increasing positive nuclear charge
  - B There is an increasing number of electrons in the outer shell
  - C The mass of the atoms is increasing
  - D The atoms are closer to having a full outer shell
- 3 Explain why the first ionisation energy of the elements decreases, moving down Group one of the periodic table.
- 4 Explain why there is a large 'jump' between 3<sup>rd</sup> and 4<sup>th</sup> ionisation energy of aluminium.
- 5 Write the equation for the 2<sup>nd</sup> ionisation energy of sodium.

## ANSWERS

1 C

**REMEMBER!** The first ionisation energy of an element is the energy required to remove one mole of electrons from one mole of gaseous atoms of the element.

2 A

**REMEMBER!** Increasing nuclear charge means the atom exerts a stronger pull on the shared pair of electrons.

3 The outer electron is further from and more shielded from the nucleus.

4 The fourth electron is being removed from an energy level which is nearer the nucleus.

5  $\text{Na}^+ \rightarrow \text{Na}^{2+} + \text{e}^-$

**REMEMBER!** The elements with the highest electronegativities are at the top right corner of the Periodic Table. The elements with the lowest electronegativities are at the bottom left corner of the Periodic Table.

