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CAIE A LEVEL Chemistry Topic Questions / 9701

1.4.1-Ionisation-Energy-Equations-set-1-q p

Total Questions: 4

Note:

- For questions with answer choices as statements 1, 2 and 3, follow these instructions for selecting options A/B/C/D:
- A= 1, 2 and 3 are correct
- B=1 and 2 only are correct
- C=2 and 3 only are correct
- D=1 only is correct

Questions

Question 1:

Equations involving four enthalpy changes are shown.

$$Na(g) \rightarrow Na^{+}(g) + e^{-} \Delta H = W$$

$$Na(g) \rightarrow Na^{2+}(g) + 2e^{-} \Delta H = X$$

$$Na(s) \rightarrow Na(g)$$
 $\Delta H = Y$

$$Na(s) \rightarrow Na^{2+}(g) + 2e^{-} \Delta H = Z$$

Which equation represents the second ionisation energy of sodium?

- AX
- **B** X + Y W **C** X W **D** Z W

Question 2:

Which equation represents the first ionisation energy of iodine?

$$\textbf{A} \quad \frac{1}{2}\,I_2(g) \ \textbf{+} \ e^- \rightarrow \ I^-\!(g)$$

$$\textbf{B} \quad I(g) \ + \ e^- \rightarrow \ I^-\!(g)$$

$$\textbf{C} \quad \tfrac{1}{2} I_2(g) \ \rightarrow \ I^+(g) \ + \ e^-$$

$$\textbf{D} \quad I(g) \ \rightarrow \ I^{\scriptscriptstyle +}(g) \ + \ e^{\scriptscriptstyle -}$$

Question 3:

Which equation represents the second ionisation energy of an element X?

A
$$X(g) \to X^{2+}(g) + 2e^{-}$$

B
$$X^{+}(g) \rightarrow X^{2+}(g) + e^{-}$$

C
$$X(g) + 2e^- \rightarrow X^{2-}(g)$$

D
$$X^{-}(g) + e^{-} \rightarrow X^{2-}(g)$$

Questions (Continued)

Question 4:

Equations involving four enthalpy changes are shown.

$$Na(g) \rightarrow Na^{+}(g) + e^{-} \Delta H = W$$

$$Na(g) \rightarrow Na^{2+}(g) + 2e^{-} \Delta H = X$$

$$Na(s) \rightarrow Na(g)$$
 $\Delta H = Y$

$$Na(s) \rightarrow Na^{2+}(g) + 2e^{-} \Delta H = Z$$

What is the second ionisation energy of sodium?