

12.1 Electrons in Atoms

Question Paper

Course	DPIB Chemistry
Section	12. Atomic Structure (HL only)
Topic	12.1 Electrons in Atoms
Difficulty	Easy

Time allowed: 10
Score: /5
Percentage: /100

Question 1

Which is true about the emission spectrum of hydrogen in the visible region?

- A. The lines converge at longer wavelengths
- B. The lines converge at higher frequency
- C. The lines come from transitions between $n=\infty$ and $n=1$
- D. The lines are regularly spaced

[1 mark]

Question 2

The frequency of the point of convergence on a hydrogen emission spectrum is $32.883 \times 10^{14} \text{ s}^{-1}$.

What is the ionisation energy for one atom of hydrogen?

($h = 6.63 \times 10^{-34} \text{ J s}$)

A. $32.883 \times 10^{14} \times 6.63 \times 10^{-34} \text{ J}$

B. $\frac{6.63 \times 10^{-34}}{32.883 \times 10^{14}} \text{ J}$

C. J

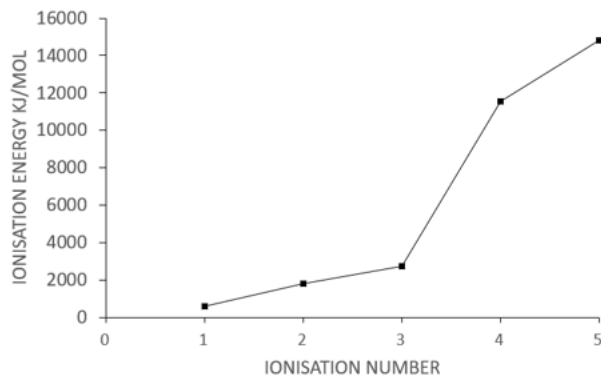
D. $\frac{32.883 \times 10^{14}}{6.63 \times 10^{-34} \times 1000} \text{ J}$

[1 mark]

Question 3

The first five ionisation energies of an element are shown below.

What element could this ionisation energy graph belong to?



- A. N
- B. P
- C. Al
- D. Na

[1 mark]

Question 4

Which are correct explanation(s) for the increase in ionisation energy across a period?

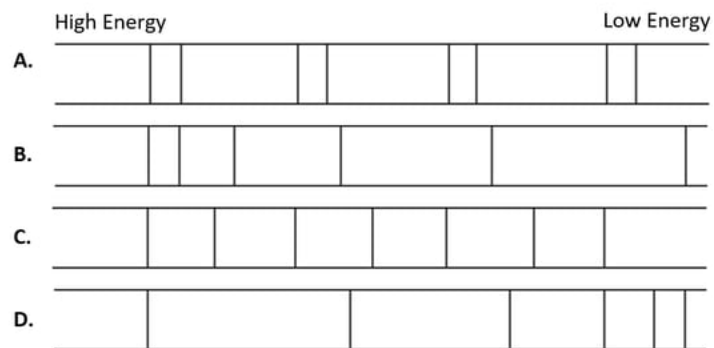
- I. Nuclear charge increases
- II. Atomic radius decreases
- III. Shielding remains constant

- A. I and II only
- B. I and III only
- C. I and III only
- D. I, II and III

[1 mark]

Question 5

Which spectrum belongs to hydrogen?



[1 mark]