

JEE MAIN STRUCTURE OF ATOM — HEISENBERG UNCERTAINTY PRINCIPLE — PYQS

Max. Marks: 8
Questions: 2

Section A (MCQ) — 1 question

Q.1 Given below are two statements :

Statement-I: It is impossible to specify simultaneously with arbitrary precision, both the linear momentum and the position of a particle.

Statement-II: If the uncertainty in the measurement of position and uncertainty in measurement of momentum are equal for an electron, then the uncertainty in the measurement of velocity is

$$\geq \sqrt{\frac{h}{\pi}} \times \frac{1}{2m}.$$

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2025 (Online) 29th January Evening Shift]

- (1) Statement-I is false but Statement-II is true
- (2) Both Statement-I and Statement-II are true
- (3) Both Statement-I and Statement-II are false
- (4) Statement-I is true but Statement-II is false

Scan or tap for the full solution



Section B (Numerical) — 1 question

Q.2 Based on Heisenberg's uncertainty principle, the uncertainty in the velocity of the electron to be found within an atomic nucleus of diameter 10^{-15} m is _____ $\times 10^9$ ms^{-1} (nearest integer)

[Given : mass of electron = 9.1×10^{-31} kg, Planck's constant (h) = 6.626×10^{-34} Js] (Value of π = 3.14)

[JEE Main 2024 (Online) 9th April Evening Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 1 question

Ques.	1																		
Ans.	2																		

Section B (Numerical) — 1 question

Ques.	2																		
Ans.	58																		