



Class 12 Physics | Atoms

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. In Rutherford scattering, most α particles pass through thin foil because atoms are mostly:

- A. Stationary electrons
- B. Dense nuclear matter
- C. Empty space
- D. Uniform positive charge

2. Large-angle scattering indicates that positive charge is concentrated in a:

- A. Uniform sphere
- B. Diffuse electron cloud
- C. Large hollow shell
- D. Small massive nucleus

3. Bohr's angular-momentum condition is:

- A. $mvr = nh$
- B. $mvr = nh/(2\pi)$
- C. $mvr = 2\pi nh$
- D. $mvr = h/n$

4. Radius of the n th hydrogen orbit varies as:

- A. $1/n$
- B. n
- C. $1/n^2$
- D. n^2

5. Energy of hydrogen in level n is:

- A. $-13.6/n^2$ eV
- B. $-13.6/n$ eV
- C. $-13.6n^2$ eV
- D. $+13.6/n^2$ eV

6. Hydrogen energy in $n=2$ is:

- A. $+3.4$ eV
- B. -6.8 eV
- C. -13.6 eV
- D. -3.4 eV

7. Energy needed to ionise ground-state hydrogen is:

- A. 3.4 eV
- B. 1.51 eV
- C. 10.2 eV
- D. 13.6 eV

8. Energy needed to excite hydrogen from $n=1$ to $n=2$ is:

- A. 3.4 eV
- B. 17 eV
- C. 10.2 eV
- D. 13.6 eV

9. A transition from $n=3$ to $n=2$ in hydrogen belongs to:

- A. Balmer series
- B. Brackett series
- C. Lyman series
- D. Paschen series

10. Lyman-series transitions end at:

- A. $n=1$
- B. $n=2$
- C. $n=3$
- D. $n=4$

11. Lyman-series radiation is mainly in the:

- A. Infrared
- B. Radio
- C. Microwave
- D. Ultraviolet

12. When an electron falls to a lower allowed level, the atom:

- A. Emits a photon
- B. Absorbs a photon necessarily
- C. Always ionises
- D. Gains internal energy

13. A hydrogen atom in $n=3$ needs how much energy to ionise?

- A. 10.2 eV
- B. 13.6 eV
- C. 3.4 eV
- D. About 1.51 eV

14. The ratio of hydrogen orbit radii r_3/r_1 is:

- A. $1/3$
- B. 9
- C. $1/9$
- D. 3

15. For hydrogen, electron speed in n th Bohr orbit is proportional to:

- A. $1/n$
- B. n
- C. $1/n^2$
- D. n^2

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.B 4.D 5.A 6.D 7.D 8.C 9.A 10.A 11.D 12.A 13.D 14.B 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper

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