

CHAPTER-4 | Structure of the Atom

QUIZ-01

1. Which sub-atomic particle was discovered by J.J. Thomson?

- A. Proton B. Neutron
C. Electron D. Positron (C)

Explanation: J.J. Thomson discovered the electron, a negatively charged sub-atomic particle.

2. What is the charge on a proton?

- A. Zero B. -1
C. +1 D. +2 (C)

Explanation: A proton carries a unit positive charge, i.e., +1.

3. In Rutherford's gold foil experiment, most alpha particles passed through the foil. What did this suggest?

- A. Atoms are solid
B. Nucleus is very large
C. Atom is mostly empty space
D. Electrons are heavy (C)

Explanation: The fact that most alpha particles passed straight through indicated that atoms are mostly empty space.

4. Which particle is present in the nucleus and has no charge?

- A. Proton B. Electron
C. Neutron D. Positron (C)

Explanation: Neutrons are neutral particles located in the nucleus.

5. Which formula gives the maximum number of electrons in a shell?

- A. $2n$ B. n^2
C. $n+2$ D. $2n^2$ (D)

Explanation: The maximum number of electrons in a shell is calculated using the formula $2n^2$, where n is the shell number.

6. What is the valency of an element with electronic configuration 2,8,2?

- A. 1 B. 2
C. 3 D. 4 (B)

Explanation: The element has 2 electrons in its outermost shell, so its valency is 2.

7. What is the atomic number of an element that has 8 protons?

- A. 6 B. 7
C. 8 D. 16 (C)

Explanation: The atomic number is equal to the number of protons, so the atomic number is 8.

8. Isotopes are atoms that have :

- A. Same mass number, different atomic number
B. Different number of electrons and neutrons
C. Same atomic number, different mass number
D. Same number of protons and neutrons (C)

Explanation: Isotopes have the same atomic number but different mass numbers.

9. Which of the following is an isobar pair?

- A. ${}^6\text{C}^{12}$ and ${}^8\text{O}^{16}$ B. ${}^{17}\text{Cl}^{35}$ and ${}^{17}\text{Cl}^{37}$
C. ${}^{18}\text{Ar}^{40}$ and ${}^{20}\text{Ca}^{40}$ D. ${}^1\text{H}^1$ and ${}^1\text{H}^2$ (C)

Explanation: Isobars have the same mass number but different atomic numbers, as in Ar^{40} and Ca^{40} .

10. How many electrons are present in a neutral atom of sodium (atomic number 11)?

- A. 10 B. 11
C. 12 D. 8 (B)

Explanation: A neutral atom has equal protons and electrons, so sodium has 11 electrons.