

Atomic Models and Electron Distribution

Chapter 4: Structure of the Atom · Topic 2

Key Concept

For example, the innermost K shell ($n=1$) can hold a maximum of 2 electrons, the L shell ($n=2$) can hold up to 8, and the M shell ($n=3$) can hold up to 18 — though shells generally fill from the innermost outward before electrons occupy the next shell. This electron arrangement (also called electronic configuration) determines an element's chemical behaviour, particularly how many electrons are in its outermost shell, which governs how readily it forms bonds with other atoms.

Quick Revision Notes

- Bohr's model: electrons revolve in fixed-energy shells (K, L, M, N) around the nucleus.
- Maximum electrons per shell = $2n^2$ (K=2, L=8, M=18).
- Electrons fill shells from innermost to outermost.
- The number of electrons in the outermost shell governs an element's chemical bonding behaviour.

Practice Questions

- 1 Draw the electron arrangement for an atom with atomic number 11 (Sodium).
- 2 Calculate the maximum number of electrons the M shell ($n=3$) can hold.
- 3 Why does the number of outermost shell electrons affect how an atom bonds with others?