What is the Bohr Model of the Atom?

Worksheet

The Bohr model places electrons in discrete circular orbits around the nucleus, each orbit at a fixed distance and energy level. Electrons jump between levels by absorbing or emitting light (photons).

Questions

1. In Bohr's model, electrons are in

A) Random paths
B) Fixed circular orbits
C) Waves
D) Straight lines

2. Which energy level is closest to the nucleus?

A) n=1
B) n=2
C) n=3
D) No difference

3. What does an electron emit when jumping to a lower orbit?

A) Heat
B) A photon (light)
C) Neutrons
D) Protons

4. Does the Bohr model work well for all atoms?

A) Yes, perfectly
B) No, only for hydrogen
C) Only for metals
D) Only for gases

5. In the Bohr model, how many electrons can orbit in the first shell (n=1)?

6. Describe what happens when an electron jumps from n=2 to n=1.

7. How does the Bohr model differ from reality?

8. Define: What is the Bohr model?

9. Define: What is an electron shell?

10. Define: How many electrons can the first shell hold?

Answer Key

1. B) Fixed circular orbits - Bohr proposed fixed circular orbits at specific energy levels.

2. A) n=1 - n=1 is the lowest energy level, closest to nucleus.

3. B) A photon (light) - The energy difference is released as light (electromagnetic radiation).

4. B) No, only for hydrogen - Bohr model is accurate for hydrogen; quantum mechanics is needed for larger atoms.

5. First shell can hold maximum 2 electrons (1s orbital) Electron configuration: 1s

6. Electron loses energy The energy difference is emitted as a photon (light) This transition produces characteristic line spectrum

7. Bohr assumes fixed circular orbits Quantum mechanics reveals electrons exist in fuzzy probability clouds (orbitals) Bohr model works well for hydrogen but fails for larger atoms

8. An atomic model where electrons orbit the nucleus in fixed circular paths at specific energy levels.

9. A fixed circular orbit where electrons can exist; each shell is at a specific distance and energy level from the nucleus.

10. 2 electrons maximum (after that, the next shell begins).