Worksheet 4:

Science Subject Worksheet: Comparing the Atomic Models

Name: _____ Date: _____

The Profound Defect: Why the Rules Had to Change

The scientific world used two different models to describe the tiny electron. You must decide which one is correct and why!

Model 1: The Classical (Bohr) Model

- **Description:** The electron is a simple **particle** that orbits the nucleus like a planet. Its location can be known with certainty.
- **Problem:** This model predicts that the particle should run out of energy and **crash into the nucleus**, making the atom unstable.

Model 2: The Quantum (Wave) Model

- **Description:** The electron **is** a **Quantum Energy Wave** that exists in a "probability cloud" around the nucleus. Its location is only known by chance (Superposition).
- **Solution:** The wave nature makes the atom perfectly **stable**.

Activity: The Comparison Diagram

Use the words from the **Word Bank** below and place them into the correct section of the Venn Diagram.

Word Bank

A. Particle **B. Wave** **C. Electron**

D. Definite orbit	**E. Superposition**	**F. Crash into nucleus**
G. Fuzziness (Probability Cloud)	**H. Fixed energy levels**	**I. Unstable (Predicts crash)**
J. Probabilistic (α,β)	**K. Stable**	

Comparing the Atomic Models
Classical (Bohr) Model
Only D, I, F
Both

Only C, HQuantum (Wave) Model
Only B, E, G, J, K