OER Ch 3

CHE 111 - Homework - Ch 3c
Discovering Quantum Mechanics

Score: _____/45

Name: _____ Date: _____

[4 pt] 1. Draw a picture illustrating Rutherford's model of the atom. What is the major flaw in his model? Explain.

[5 pt] 2. What is Bohr's major contribution to QM? Draw a picture illustrating Bohrs model of the atom. How did it address the flaw in Rutherfords model? What are the **TWO** major flaws in the Bohr model of the atom?

[5 pt] 3. Define the term emission spectrum (or line spectra). Explain how Bohr's Model of the electron explains the experiment. Draw a picture illustrating the concept.

[5 pt] 4. What is De Broglie's major contribution to QM? Draw a picture illustrating De Broglie's model of the atom. Explain how did it address the flaw in Bohrs model? Which flaw did it not solve?

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[5 pt] 5. What is Heisenberg major contribution to QM? What equation is Heisenberg famous for? What flaw in De Broglie's model of the atom did Heisenberg point out?

[5 pt] 6. What is Schrödinger major contribution to QM. How did Schrödinger address Heisenberg's flaw in the De Broglie model?

[6 pt] 7. What are the major differences between Classical Mechanics and Quantum Mechanics (List at least 3)

[5 pt] 8. Calculate the wavelength of light absorbed when an electron in a hydrogen atom makes a transition from the n = 2 to n = 7 orbital. Explain. 8. _____

[5 pt] 9. An electron in the n = 6 orbital of a hydrogen atom relaxs to a lower energy level (orbital) and emits light with $\lambda = 93.8$ nm. What energy level/orbital did the electron end up in? Explain. 9. _____