Name:_____
Date:_____ Period:_____

5.1 – Models of the Atom

1. Rutherford's gold foil experiment did a good job showing up what the inside of the atom was like, but he didn't have it all figured out. What were some problems with his model of the atom?

2. How did Niels Bohr change the Rutherford's model?

3. What is an energy level?

4. What is quantum?

5. Erwin Schrödinger took Bohr's model one more step farther. What changes did he make? Why did he make them?

6. Why did Schrödinger use a cloud to describe where we can find electrons?

7. What is an atomic orbital?

8. What shape is an *s* orbital? What shape is a *p* orbital?

5.2 – Electron Arrangement in Atoms

9. What is an electron configuration?

10. Explain the aufbau principle.

11. Explain the Pauli exclusion principle.

12. Explain Hund's rule.

13. How many electrons fit in an *s* orbital?

14. How many electrons fit in a *p* orbital?

5.3 – Physics and the Quantum Mechanical Model

15. What makes neon signs glow?

16. Define amplitude.

17. Define wavelength.

18. Define frequency.

19. Draw a wave with low amplitude and high frequency.

20. Draw a wave with high amplitude and low frequency.

21. What is the relationship between wavelength and frequency?

22. List 5 examples of electromagnetic radiation.

23. When sunlight passes through a prism, the different wavelengths separate into a(n) _____ of colors.

24. What color in the visible spectrum has the longest wavelength? The shortest?

25. What happens when we pass electric current through a gas?

26. What happens when electrons lose energy?

27. How can we use an atomic emission spectrum to identify elements in their gas phase?

28. How does the color of light compare to the amount of energy lost by electrons?

29. What is a photon?

30. What did de Broglie's equation predict about the behavior of particles?

31. The method of describing the motions of subatomic particles, atoms, and molecules is called _____.

32. How large must the mass be of an object for us to observe its wavelike motion?

33. What is the Heisenberg uncertainty principle?

34. Can we ever know where an electron is? Why or why not?

35. What properties of lasers make them good tools to use for things like LASIK or engraving?