

Atomic and Nuclear Physics

Accelerated Physics

Name _____

- 1) What was the early Greek model of the atom?
- 2) What three experiments or problems lead to the reexamination of the atomic model of the Atom during the 19th and 20th century?
- 3) JJ Thomson developed one of the early models for the atom. What did he propose was the shape of the atom?
- 4) JJ Thomson did not like the idea of a positive charge. Why?
- 5) Who first recognized a relationship for the lines seen in atomic spectrography?
- 6) What was that relationship?
- 7) Who (all three people) destroyed JJ Thomson's model?
- 8) Describe their experiment.
- 9) Explain the conclusions that they drew from there experiment?

- 10) What was the photoelectric effect?
- 11) Who solved the problem?
- 12) Why was it important?
- 13) Give the four basic assumptions of the Bohr model of the atom.
- 14) Which one of the assumptions was wrong and why?
- 15) Bohr's model only applies to hydrogen, why?
- 16) What is the "Heisenberg Uncertainty Principle" and how does it apply to the atom?
- 17) What are the four quantum number currently accepted and what principle of physics do each represent?

- 18) What is the “Pauli Exclusionary Principle” and how does it relate the concept of conservation of momentum to the number of electrons found in each shell?

- 19) How does this all relate to fluorescent lights or lasers or the glowing stars you put on the ceiling of your bedroom?

- 20) What are the three types of natural radiation and what are they really?

- 21) What is the charge on each type?

- 22) What are the three most well known parts of an atom and where are they located in the structure of the atom?

- 24) What defines an element?

- 25) What is an isotope?

- 24) What holds the nucleus together?

- 25) Why are some nuclei stable and others not stable?

- 26) Which one is the most stable?

- 27) What is binding energy and where does it come from?
- 28) What is a half-life?
- 29) If half of the substance is gone in 3 hrs (it's half life is three hours), how long will it be before only a quarter remains?
- 30) If the half life of a substance is 64 days, how much is left after 256 days?
- 31) What are the four decay processes.

