Name: _____

Class: _____

Due Date: _____

Physics Topic 61 – Structure of the Atom

Answer the following questions.

1. C: Draw and describe the main points of the *Thomson model of the atom*:

2. C: Describe the Geiger-Marsden-Rutherford experiment. Draw an image if you have to.

3. C: True or false: Your brain is mostly empty space.

4. C: Describe and draw the *Rutherford model of the atom*:

5. C: Which year were the following particles discovered?

Electron	Photon	Atomic Nucleus
Neutrino	Proton	Neutron

6. C: Define *nucleon number A.*

7. C: Define *atomic number Z.*

8. C: Define *nucleon.*

9. C: Define *nuclide.*

10. C: Define *discrete* and *continuous.*

11. C: Circle the correct answers in italic font:

    Free electrons have *continuous/discrete* energy. Bound electrons in an atom have *continuous/discrete* energy.

12. C: Define *ground state* and *excited state* of an electron in an atom. Draw a figure.

13. C: Define *transition.*

14. C: Which has more energy: an electron in an atom which is close to its nucleus or an electron in an atom which is farther from its nucleus? Draw a figure.

15. C: Define *absorption spectra*. What happens to an electron in an atom during *photon absorption*? Draw a figure.

16. C: Define *emission spectrum*. What happens to an electron in an atom during *photon emission*? Draw a figure.

17.C: We use the equation $E = hf$ for *electromagnetic waves*. Define and give the units for each variable.

18.C: State the meaning of the equation $R = R_0 A^{1/3}$ and define each variable.

19.E: Determine the radius of a silver nucleus. Silver has an atomic mass of 108.

20.E: Determine the radius of a gold nucleus. Gold has an atomic mass of 197.

21.C: What is the meaning of *nuclear density*? What is the value of the *nuclear density*?