Name:_____ Period: _____

Section 14.1 Structure of an Atom Review. 50 points.

1. Positive ions attract positive or negative ions? _____
2. Negative ions repel positive or negative ions? _____
3. What two particles in an atom contribute to atomic mass and weigh nearly the same amount? _____& _____
4. Which particle in an atom is not in the nucleus? _____
5. The atomic number is the number of what? _____
6. How many protons would Carbon-13 have? _____
7. How many neutrons would Carbon-13 have? _____
8. If a boron atom had 5 protons and 7 neutrons, how would you write it's isotope name? _____
9. How many electrons does Ca^{2+} have? _____
10. Which scientist helped discover the atomic nucleus? _____
11. One proton is how many amu? _____
12. One neutron is how many amu? _____
13. A fluorine atom's atomic mass is 20. How many neutrons does it have? _____
14. Atoms with the same # of protons but different # of neutrons is an? _____
15. Which is the only element that does not have any neutrons? _____
16. Atoms with a charge due to differing numbers of protons or electrons are? _____
17. Which element has 74 protons? _____
18. Which element was used as foil in the discovery of the atom? _____
19. True or False. Can an ion have a +1/4 charge or a -5.4 charge? _____
20. What charge would an atom have if it lost one electron? _____
21. If a neon atom is neutral. How many electrons does it have? _____
22. A neutral atom has 7 protons and 8 neutrons. What is its mass? _____
23. Which element of carbon is unstable and used for dating old stuff? _____
24. True or False. Neutrons do not really serve a purpose in the atom. _____
25. An unstable nucleus that spontaneously breaks apart is labeled what? _____
26. T/F A stable atom is one with many more neutrons than protons _____

What holds an atom together? Go to page 317 in your book. Here, you will find four forces inside atoms. The top two are the most important…read the entire top two paragraphs to yourself and answer the questions associated with each one.

27. The first force is called the _____. It is the attractive force between _____ and _____. The electrons do not fall into the nucleus because they have _____. The analogy they use is the _____ orbiting around the _____.
28. The second force is the _____. This force is the STRONGEST force known the mankind! It is the attraction between _____ and _____. This has to be strong because the positively charged _____ in the nucleus repel each other.

Now go to page 320 in your book. We did not go into detail about alpha and beta decay but you need to know it. Read this page carefully and describe alpha and beta decay.

29. Describe alpha and beta decay in your own words and fill in the tables below.

	Alpha Decay	**Beta Decay**
Description		
Number of Protons	Decreases by 2	
Number of Neutrons		
Atomic Number		Increases by 1
Mass Number		

30. If a Carbon-14 atom were to undergo alpha decay, what element would it become? _____
31. If a Beryllium atom were to undergo beta decay, what element would it become? _____

Now go to page 315.

32. Who was the first to identify an electron? _____ in year _____

33. Draw his version of the atom. Describe it. Why is it wrong?

34. Draw the real version of the atom by drawing a helium atom. Describe how Rutherford's gold foil experiment led to the discovery of the nucleus.