Name: _____ Per: _____ Date: _____

Nuclear and the Atom Study Guide

1. State the number of protons, neutrons and electrons for the following elements:
   a. $^{12}B^{2-}$ b. **p. 113 #64b** c. **p. 113 #64c** d. $^{137}Cs^{+}$

2. Know how to calculate average atomic mass: Complete **p. 113 #66, p. 873 #7, 8**

3. Define isotope.

4. Know the characteristics of the proton, neutron and electron.

5. Where is most of the mass of the atom located? What takes up most of atom's volume?

6. What are the five parts of Dalton's Atomic Theory? Which were proven wrong?

7. What did Thomson discover and how did he do it? What was wrong about his model?

8. What did Rutherford discover and how did he do it? What were the conclusions that he drew from his experiment?

9. How is the nucleus held together? Why does it take so much energy to keep a nucleus together?

10. If a nucleus has too many protons or neutrons, what happens to the nucleus?

11. Where does nuclear energy come from? What equation explains nuclear energy?

12. What are the three types of nuclear reactions? How can you tell them apart?

13. Know the characteristics and symbols of all three nuclear particles.

14. What is half-life? Complete p. 837 #79-82 (for #80, change 90 days to 100 days, for #81, change 1.0g to 1.25g, for #82, decays per minute is just like grams and change 1250 to 1068)

15. Which nuclear reaction is prevalent on the sun? In a nuclear reactor?

16. Complete p. 838 #94 (btw! There's a typo! It should be $^{231}_{90}Th$)

17. Know how to balance nuclear equations. Complete p. 814 #7-9 p. 837 #69, 71, 72