Test #2 Review

Chapter 3

Scientist	Contribution to Atomic Theory/What experiment?
Democritus	
John Dalton	
J.J. Thompson	
Demetri Mendeleev	Don't do
James Chadwick	
Ernest Rutherford	

1) Describe Ernest Rutherford's gold foil experiment.

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2) Draw a diagram of atom. Include the nucleus, protons, neutrons and electrons.

3) How many protons, electrons and neutrons are in the following atoms?

a. Calcium – 40

b. Bismuth – 209

c. Hydrogen - 2

4) What is the difference between the subatomic particles (proton, neutron, electron)? Discuss charge and size.

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Nuclear Chemistry Review

Using your knowledge of nuclear chemistry, write the equations for the following processes:

1) The alpha decay of iridium-174

2) The beta decay of platinum-199

3) Alpha emission from sulfur-31

4) Krypton-76 undergoes beta decay

5) Using your knowledge of alpha particles, beta particles and gamma ray, which has the best ability to penetrate objects? Which has the worst ability? **Explain**.

6) If the half-life for the radioactive decay of zirconium-84 is 26 minutes and I start with a 175 gram sample, how much will be left over after 104 minutes?

7) Explain the reason why atoms above atomic number 83 are radioactive. Be sure to include nuclear forces in your discussion.

8) What is the difference between fission and fusion reactions?

9) What is the significance of the equation $E = mc^2$? How are mass and energy related?