Name:

Study guide - Ch 4, 25

1. What is an atom?
2. What are protons, neutrons and electrons?
3. What is an elements atomic number?
4. What is an elements mass number?
5. What does 75 represent in Arsenic-75?
6. Fill in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **# of protons** | **# of electrons** | **# of neutrons** | **Atomic #** | **Mass #** |
| **Manganese** | 25 |  | 30 |  |  |
| **Sodium** |  | 11 | 12 |  |  |
| **Yttrium** |  |  |  | 39 | 89 |
| **Actinium** |  |  |  |  | 227 |

1. State the numbers of protons, neutrons and electrons in the following:

a. 80Br

b. 24Mg

c. 12C

1. What is an isotope?
2. What is average atomic mass?
3. What is the average atomic mass of silicon if 92.21% of the isotopes have mass 27.977 g, 4.70% have mass 28.976 g and 3.09% have mass 29.974 g?
4. What is the difference between a chemical rxn and a nuclear rxn.
5. What are the 3 types of radiation?
6. What will stop each type of radiation?
7. What is radioactive decay?
8. Write the symbols for an alpha particle, beta particle, gamma ray, neutron, proton and positron.

***Write the equations for the following processes (#16-20):***

1. The alpha decay of iridium-174
2. The beta decay of platinum-199
3. Positron emission from sulfur-31
4. Krypton-76 undergoes electron capture
5. Will gamma emission lead to a transmutation?
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. Selenium-83 has a half-life of 25.0 minutes. How many minutes would it take for a 10.0 mg sample to decay and have only 1.25 mg of it remain?
8. 10 grams of Bismuth-218 decay to 0.625 grams in two hours. What is the half-life of this isotope?
9. Define fusion and fission.
10. Why is it difficult to make a fusion reaction occur?