**Homework #1: Chemistry 1013 Fall 2017**

**Due Friday 1 February in class 25 pts**

**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1) Fill in the answer: 9 pts total/1 pt per correct answer

1. Individual elements are distinguished by their count of \_\_\_\_protons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Individual isotopes of a given element are distinguished by their count of \_\_neutrons\_\_\_\_\_\_\_
3. Atomic number is the same as the count of \_\_\_protons\_\_\_\_\_\_ in a given element

37**X**

17

**17**

7X

**17**

1. The isotope X: has \_\_\_20\_\_\_\_\_\_\_neutrons and the element symbol\_\_\_\_\_Cl\_\_\_\_\_\_
2. Name the three major kinds of elements in the Periodic Table:

1)\_\_\_\_\_metals\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2)\_\_\_\_\_non-metals\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3)\_\_\_\_\_metalloids\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f) Both neutron and proton have ~ the same mass. Electrons weigh:

(much more) (same) (much less) than either. [circle answer]

2) Fill in the table with the correct count of neutrons (no), protons (p+) and electrons (e-):

(6 pts total/ 2 pts per line)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Atomic # | Mass # | symbol | #p | #n | #e | Atom charge |
| 37 | 86 | Rb | 37 | 49 | 37 | 0 |
| 47 | 108 | Ag | 47 | 61 | 47 | 0 |
| 26 | 55 | Fe | 26 | 29 | 23 | +3 |

3) Put an `X’ beneath each Periodic trait assignable to the elements listed:

(4 pts total/ 1 pt for each entirely correct line)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Symbol | Main group element | Transition element | Metal | Metalloid | Alkali metal | Alkaline earth metal | Halogen | Noble Gas |
| At | X |  |  | X |  |  | X |  |
| Sr | X |  | X |  |  | X |  |  |
| Co |  | X | X |  |  |  |  |  |
| S | X |  |  |  |  |  |  |  |

4) A new post-lanthanide element, Mu, has three isotopes with the masses and % abundances below: (2 pts)

Mu Isotope mass (amu) % abundance

1 345 10

2 350 50 345\*10 + 350\*50 + 355\*40 = average atomic mass of Mu in amu

3 355 40 100

= 351.5 amu

Compute the average atomic mass of Mu to the nearest 0.1 amu:

Average Atomic mass of Mu= \_\_\_\_\_\_351.5\_\_\_\_\_\_\_\_\_\_\_\_\_ amu