

## CHEQ 1094 ATOMS AND ISOTOPES: ANSWERS

1. % of minor isotope =  $100 - 69.20 = 30.80\%$   
 fraction of major isotope = 0.6920  
 fraction of minor isotope = 0.3080

$$AW = (62.9296 \times 0.6920) + (64.9278 \times 0.3080) \text{ amu} = 63.55$$

Element is Cu (copper) whose AW = 63.55

2.  $AW = (69.9243 \times 0.205) + (71.9217 \times 0.274) + (72.9234 \times 0.078) + (73.9219 \times 0.365) + (75.9214 \times 0.078)$   
 $14.33 + 19.71 + 5.69 + 26.98 + 5.92 = 72.6 \text{ amu}$   
 Element is Ge (germanium) whose AW = 72.59

3. (a) number of protons = atomic number = 30  
 number of electrons = number of protons = 30 (no charge)  
 number of neutrons = mass number - atomic number = 36
- (b) number of protons = atomic number = 16  
 number of electrons = number of protons + 2 = 18 (2- charge)  
 number of neutrons = mass number - atomic number = 17
- (c) number of protons = atomic number = 26  
 number of electrons = number of protons - 3 = 23 (3+ charge)  
 number of neutrons = mass number - atomic number = 29

4. Complete the table for atoms:

Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
${}^{59}_{28}\text{Ni}$	28	59	28	28	31
${}^{31}_{15}\text{P}$	15	31	15	15	16
${}^{108}_{47}\text{Ag}$	47	108	47	47	61

5. Complete the table:

Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
${}^{65}_{29}\text{Cu}^{2+}$	29	65	29	27	36
${}^{52}_{24}\text{Cr}^{3+}$	24	52	24	21	28
${}^{127}_{53}\text{I}^{-}$	53	127	53	54	74