Chemistry 141 Name KEY

Dr. Cary Willard

Quiz 1A (20 points) September 3, 2009

1. (4 points) A sample of an alloy has a density of 7.29 g/mL Calculate the density of the alloy in ounces/gal?

$$\frac{?oz}{gal}=\frac{7.29 g}{mL}×\frac{1 lb}{454 g }×\frac{16 oz}{1 lb}×\frac{946 mL}{1 qt}×\frac{4 qt}{1 gal}=\frac{972 oz}{gal}$$

2. (6 points) A 1.0 ounce piece of chocolate contains 15 g of caffeine, and a 6.0 oz cup of regular coffee contains 105 mg of caffeine. How many pieces of chocolate would you have to consume to get as much caffeine as you would from 2.0 cups of coffee?

$$?oz chocolate=2.0 cup coffee×\frac{105 mg caffeine}{1 cup coffee}×\frac{1 g caffeine}{1000 mg caffeine}×\frac{1 piece chocolate}{15 g caffeine}=1.4 ×10^{-2}pieces of chocolate$$

3. (6 points) A new temperature scale has been devised. In this temperature scale, the freezing point of water is 58oD and the boiling point of water is 308oD. Convert 25oC into oD.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 100oC |  | 308oD |  |
|  | 100 oC between bp and fp |  | 2 oD between bp and fp |
| 0oC |  | 58oD |  |

We know that we are 25oC above the fp of water and need to determine how many oD we are above the fp

$$25℃×\frac{250°D}{100℃}=63°D above freezing point$$

Now we need to adjust for the zero point

$$63°D+58°D=121°D$$

3. (4 points) Determine the number of protons, neutrons, and electrons and mass number for a 80Se--2 ion.

Protons 34

Neutrons 46

Electrons 36

Mass number 80

Chemistry 141 Name KEY

Dr. Cary Willard

Quiz 1B (20 points) September 3, 2009

1. (4 points) A sample of an alloy has a density of 5.64 g/mL Calculate the density of the alloy in ounces/gal?

$$\frac{?oz}{gal}=\frac{5.64 g}{mL}×\frac{1 lb}{454 g }×\frac{16 oz}{1 lb}×\frac{946 mL}{1 qt}×\frac{4 qt}{1 gal}=\frac{752 oz}{gal}$$

2. (6 points) A 1.0 ounce piece of chocolate contains 15 g of caffeine, and an 8.0 oz cup of regular coffee contains 140 mg of caffeine. How many pieces of chocolate would you have to consume to get as much caffeine as you would from 2.0 cups of coffee?

$$?oz chocolate=2.0 cup coffee×\frac{140 mg caffeine}{1 cup coffee}×\frac{1 g caffeine}{1000 mg caffeine}×\frac{1 piece chocolate}{15 g caffeine}=1.9 ×10^{-2}pieces of chocolate$$

3. (6 points) A new temperature scale has been devised. In this temperature scale, the freezing point of water is 58oD and the boiling point of water is 308oD. Convert 35oC into oD.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 100oC |  | 308oD |  |
|  | 100 oC between bp and fp |  | 250 oD between bp and fp |
| 0oC |  | 58oD |  |

We know that we are 35oC above the fp of water and need to determine how many oD we are above the fp

$$35℃×\frac{250°D}{100℃}=88°D above freezing point$$

Now we need to adjust for the zero point

$$88°D+58°D=146°D$$

3. (4 points) Determine the number of protons, neutrons, and electrons and mass number for a 65Cu+2 ion.

Protons 29

Neutrons 36

Electrons 27

Mass number 65