Chemistry 115 Name

Dr. Cary Willard

Quiz 4a (20 points) February 25, 2010

Must show all work to receive credit. Use proper significant figures.

Avogadro’s number – 6.022 x 1023 particles/mol

1. (4 points) How many atoms of copper are in a 0.423 mol sample of copper?

$$?atoms Cu=0.423 mol Cu×\frac{6.022×10^{23}atom Cu}{1 mol Cu}=2.55 ×10^{23}atom Cu$$

1. (4 points) A piece of zirconium contains 5.25 x 1025 atoms. How many moles of zirconium are there in the sample?

$$?mol Zr=5.25×10^{25}atom Zr×\frac{1 mol Zr}{6.022×10^{23}atom Zr}=87.2 mol Zr$$

1. (4 points) What is the mass of a 2.18 mol sample of sulfur in grams?

$$?g S=2.18 mol S×\frac{32.07 g S}{1 mol S}=69.9 g S$$

1. (4 points) How many atoms of silicon are there in a 3.00 g sample of silicon?

$$?atom Si=3.00 g Si×\frac{1 mol Si}{28.09 g Si}×\frac{6.022×10^{23}atom Si}{1 mol Si}=6.43×10^{22}atom Si$$

1. (4 points) What is the molar mass of aluminum nitrate, Al(NO3)3?

$$molar mass=Al+3N+9 O=26.98 amu+3\left(14.01 amu\right)+ 9\left(16.00 amu\right)$$

$$=26.98 amu+42.03amu+144.00 amu$$

$$=213.01 amu or 213.01 g/mol$$

Chemistry 115 Name

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Quiz 4b (20 points) February 25, 2010

Must show all work to receive credit. Use proper significant figures.

Avogadro’s number – 6.022 x 1023 particles/mol

1. (4 points) How many atoms of copper are in a 0.657 mol sample of copper?

$$?atoms Cu=0.657 mol Cu×\frac{6.022×10^{23}atom Cu}{1 mol Cu}=3.96 ×10^{23}atom Cu$$

1. (4 points) A piece of zirconium contains 3.93 x 1025 atoms. How many moles of zirconium are there in the sample?

$$?mol Zr=3.93×10^{25}atom Zr×\frac{1 mol Zr}{6.022×10^{23}atom Zr}=65.3 mol Zr$$

1. (4 points) What is the mass of a 4.26 mol sample of sulfur in grams?

$$?g S=4.26 mol S×\frac{32.07 g S}{1 mol S}=137 g S$$

1. (4 points) How many atoms of silicon are there in a 4.00 g sample of silicon?

$$?atom Si=3.00 g Si×\frac{1 mol Si}{28.09 g Si}×\frac{6.022×10^{23}atom Si}{1 mol Si}=8.58×10^{22}atom Si$$

1. (4 points) What is the molar mass of ferric nitrate, Fe(NO3)3?

$$molar mass=Fe+3N+9 O=55.85 amu+3\left(14.01 amu\right)+ 9\left(16.00 amu\right)$$

$$=55.85 amu+42.03amu+144.00 amu$$

$$=241.88 amu or 241.88 g/mol$$