Chemistry 115 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Quiz 4a

Dr. Cary Willard March 5, 2014

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) How many airplanes are in a fleet of 5.28 x 10-22 mol airplanes?

$$?airplanes=5.28×10^{-22}mol airplanes×\frac{6.022×10^{23}airplanes}{1 mol airplanes}=318 airplanes$$

1. (4 points) What is the mass in grams of 0.539 moles of tungsten(W)?

$$?g W=0.539 mol W×\frac{183.85 g W}{1 mol W}=99.1 g W$$

1. (4 points) If you have 5.25 x 1025 atoms of titanium(Ti), how many moles of Ti do you have?

$$?mol Ti=5.25×10^{25}atom Ti×\frac{1 mol Ti}{6.022×10^{23}atom Ti}=87.1 mol Ti$$

1. (4 points) What is the molar mass of chromium(II) nitrate, Cr(NO3)2?

$$Molar mass=Cr+2\left(N\right)+6\left(O\right)=52.00 amu+2\left(14.01 amu\right)+6\left(16.00 amu\right)=176.02 amu$$

1. (4 points) How many atoms of oxygen are in 16 formula units of chromium(II) nitrate?

$$?atom O=16 units Cr\left(NO\_{3}\right)\_{2}×\frac{6 atoms O}{1 unit Cr\left(NO\_{3}\right)\_{2}}=96 atom O$$

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Quiz 4b

Dr. Cary Willard March 5, 2014

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) How many airplanes are in a fleet of 6.84 x 10-22 mol airplanes?

$$?airplanes=6.84×10^{-22}mol airplanes×\frac{6.022×10^{23}airplanes}{1 mol airplanes}=412 airplanes$$

1. (4 points) What is the mass in grams of 0.364 moles of tungsten(W)?

$$?g W=0.364 mol W×\frac{183.85 g W}{1 mol W}=66.9 g W$$

1. (4 points) If you have 3.75 x 1025 atoms of titanium(Ti), how many moles of Ti do you have?

$$?mol Ti=3.75×10^{25}atom Ti×\frac{1 mol Ti}{6.022×10^{23}atom Ti}=62.3 mol Ti$$

1. (4 points) What is the molar mass of chromium(III) nitrate, Cr(NO3)2?

$$Molar mass=Cr+3\left(N\right)+9\left(O\right)=52.00 amu+2\left(14.01 amu\right)+6\left(16.00 amu\right)=238.03 amu$$

1. (4 points) How many atoms of oxygen are in 11 formula units of chromium(III) nitrate?

$$?atom O=11 units Cr\left(NO\_{3}\right)\_{3}×\frac{9 atoms O}{1 unit Cr\left(NO\_{3}\right)\_{2}}=99 atom O$$

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Quiz 4c

Dr. Cary Willard March 5, 2014

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) If you collect 7.24 x 104 seashells, how many moles of seashells do you have?

$$?mol seashells=7.24×10^{4}seashells×\frac{1 mol seashells}{6.022×10^{23}seashells}=1.20×10^{-19}mol seashells$$

1. (4 points) What is the mass in grams of 0.387 moles of osmium (Os)?

$$?g W=0.387 mol Os×\frac{190.2 g Os}{1 mol Os}=73.6 g Os$$

1. (4 points) How many atoms of selenium(Se) are in 8.20 mol of selenium?

$$?atom Se=8.20 mol Se×\frac{6.022×10^{23}atom Se}{1 mol Se}=4.94×10^{24}atom Se$$

1. (4 points) What is the molar mass of cobalt(III) chlorate, Co(ClO3)3?

$$Molar mass=Co+3\left(Cl\right)+9\left(O\right)=58.93 amu+3\left(35.45 amu\right)+9\left(16.00 amu\right)=309.28 amu$$

1. (4 points) How many atoms of oxygen are in 24.0 formula units of cobalt(III) chlorate?

$$?atom O=24.0 units Co\left(ClO\_{3}\right)\_{3}×\frac{9 atoms O}{1 unit Co\left(ClO\_{3}\right)\_{3}}=216 atom O$$

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Quiz 4d

Dr. Cary Willard March 5, 2014

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) If you collect 4.87 x 104 seashells, how many moles of seashells do you have?

$$?mol seashells=4.87×10^{4}seashells×\frac{1 mol seashells}{6.022×10^{23}seashells}=8.09×10^{-20}mol seashells$$

1. (4 points) What is the mass in grams of 0.834 moles of osmium (Os)?

$$?g W=0.834 mol Os×\frac{190.2 g Os}{1 mol Os}=158 g Os$$

1. (4 points) How many atoms of selenium(Se) are in 3.24 mol of selenium?

$$?atom Se=3.24 mol Se×\frac{6.022×10^{23}atom Se}{1 mol Se}=1.95×10^{24}atom Se$$

1. (4 points) What is the molar mass of cobalt(II) chlorate, Co(ClO3)2?

$$Molar mass=Co+2\left(Cl\right)+6\left(O\right)=58.93 amu+2\left(35.45 amu\right)+6\left(16.00 amu\right)=225.83 amu$$

1. (4 points) How many atoms of oxygen are in 17.0 formula units of cobalt(III) chlorate?

$$?atom O=17.0 units Co\left(ClO\_{3}\right)\_{3}×\frac{9 atoms O}{1 unit Co\left(ClO\_{3}\right)\_{3}}=153 atom O$$