Chemistry 115 - Name KEY

Dr. Cary Willard

Quiz 5A (20 points) October 8, 2008

All work must be shown to receive credit.

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) How many grams of Fe2S3 will contain 7.28 x 1023 atoms of iron (Fe)?

$$?g Fe\_{2}S\_{3}=7.28×10^{23} atom Fe×\frac{1 unit Fe\_{2}S\_{3}}{2 atom Fe}×\frac{1 mol Fe\_{2}S\_{3}}{6.022×10^{23} unit Fe\_{2}S\_{3} }×\frac{207.9 g Fe\_{2}S\_{3}}{1 mol Fe\_{2}S\_{3}}=126 g Fe\_{2}S\_{3}$$

1. (2 points) What are two indicators of a chemical reaction (ie they are evidence that a chemical reaction has taken place.)
* Permanent color change
* Temperature change
* Formation of a precipitate
* Formation of a gas
1. (6 points) Balance the following chemical reactions by inspection.
	1. Cu + 2 AgC2H3O2 🡪 Cu(C2H3O2)2 + 2 Ag
	2. N2 + 3 H2 🡪 2 NH3
2. (8 points) Answerthe following questions using the balanced reaction shown below:

4 FeS2 + 11 O2 🡪 2 Fe2O3 + 8 SO2

* 1. How many molecules of O2 are required to react with 8 formula units of FeS2

$$?molec O\_{2}=8 units FeS\_{2}×\frac{11 molecules O\_{2}}{4 units FeS\_{2}}=22 molecules O\_{2}$$

* 1. How many moles of SO2 will be formed by the complete reaction of 55 moles of O2?

$?mol SO\_{2}=55 mol O\_{2}×\frac{8 mol SO\_{2}}{11 mol O\_{2}}=40 mol SO\_{2}$

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Quiz 5B (20 points) October 8, 2008

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Avogadro’s number = 6.022 x 1023/mol

1. (4 points) How many grams of Fe2S3 will contain 3.74 x 1023 atoms of iron (Fe)?

$$?g Fe\_{2}S\_{3}=3.74×10^{23} atom Fe×\frac{1 unit Fe\_{2}S\_{3}}{2 atom Fe}×\frac{1 mol Fe\_{2}S\_{3}}{6.022×10^{23} unit Fe\_{2}S\_{3} }×\frac{207.9 g Fe\_{2}S\_{3}}{1 mol Fe\_{2}S\_{3}}=64.5 g Fe\_{2}S\_{3}$$

1. (2 points) What are two indicators of a chemical reaction (ie they are evidence that a chemical reaction has taken place.)
* Permanent color change
* Temperature change
* Formation of a precipitate
* Formation of a gas
1. (6 points) Balance the following chemical reactions by inspection.
	1. K2SO4 + Ba(OH)2 🡪 BaSO4 + 2 KOH
	2. 4 Co + 3 O2 🡪 2 Co2O3
2. (8 points) Answerthe following questions using the balanced reaction shown below:

4 FeS2 + 11 O2 🡪 2 Fe2O3 + 8 SO2

* 1. How many molecules of O2 are required to react with 20 formula units of FeS2

$$?molec O\_{2}=20 units FeS\_{2}×\frac{11 molecules O\_{2}}{4 units FeS\_{2}}=55 molecules O\_{2}$$

* 1. How many moles of SO2 will be formed by the complete reaction of 77 moles of O2?

$$?mol SO\_{2}=77 mol O\_{2}×\frac{8 mol SO\_{2}}{11 mol O\_{2}}=56 mol SO\_{2}$$