Chemistry 115 - Name

Dr. Cary Willard

Quiz 4A (20 points) September 30, 2008

All work must be shown to receive credit.

Avogadro’s number = 6.022 x 1023/mol

1. (4 points) Calculate the number of moles of molybdenum that have a mass of 4.82 g.

$$?mol Mo=4.82g Mo×\frac{1 mol Mo}{95.94 g Mo}=0.0502 g Mo$$

1. (4 points) Calculate the number of molecules of hexane, C6H14, in a 6.52 mol sample of hexane.

$$?molecules C\_{6}H\_{14}=6.52 mol C\_{6}H\_{14}×\frac{6.022×10^{23}molec C\_{6}H\_{14}}{1 mol C\_{6}H\_{14}}=3.92×10^{24}molec C\_{6}H\_{14}$$

1. (4 points) Calculate the number of moles of hydrogen atoms in a 16.4 mol sample of hexane.

$$?mol H=16.4 mol C\_{6}H\_{14}×\frac{14 mol H}{1 mol C\_{6}H\_{14}}=230 mol H$$

1. (8 points) Calculate the empirical formula of a compound that is composed or 63.6% nitrogen and 36.4% oxygen.

$$63.6 g N×\frac{1 mol N}{14.01 g N}=4.54 mol N$$

$$36.4 g O×\frac{1 mol O}{16.00 g O}=2.28 mol O$$

$$N\_{\frac{4.54}{2.28}}O\_{\frac{2.28}{2.28}}=N\_{2}O$$

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Quiz 4B (20 points) September 30, 2008

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Avogadro’s number = 6.022 x 1023/mol

1. (4 points) Calculate the number of moles of molybdenum that have a mass of 3.75 g.

$$?mol Mo=3.75 g Mo×\frac{1 mol Mo}{95.94 g Mo}=0.0391 g Mo$$

1. (4 points) Calculate the number of molecules of hexane, C6H14, in a 4.93 mol sample of hexane.

$$?molecules C\_{6}H\_{14}=4.93 mol C\_{6}H\_{14}×\frac{6.022×10^{23}molec C\_{6}H\_{14}}{1 mol C\_{6}H\_{14}}=2.97×10^{24}molec C\_{6}H\_{14}$$

1. (4 points) Calculate the number of moles of hydrogen atoms in a 31.8 mol sample of hexane.

$$?mol H=31.8 mol C\_{6}H\_{14}×\frac{14 mol H}{1 mol C\_{6}H\_{14}}=445 mol H$$

1. (8 points) Calculate the empirical formula of a compound that is composed or 47.2% Cu and 52.8% chlorine.

$$47.2 g Cu×\frac{1 mol Cu}{63.5 g Cu}=0.743 mol Cu$$

$$52.8 g Cl×\frac{1 mol Cl}{35.45 g Cl}=1.49 mol Cl$$

$$Cu\_{\frac{0.743}{0.743}}Cl\_{\frac{1.49}{0.743}}=CuCl\_{2}$$