Chemistry 115 Name KEY

Dr. Cary Willard

Quiz 9a (20 points) May 4, 2010

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

1. (5 points) Name and distinguish between the two components of a solution.

Solvent– t he portion of a solution that is present in greater quantity

Solute – the portion of a solution that is present in lesser quantity.

1. (5 points) At a particular temperature, the solubility of krypton gas in water is 0.00523 g/L at 350 torr. What would the solubility of krypton gas be at 832 torr?

 $S\_{1}= \frac{0.00523 g}{L} P\_{1}=350 torr$

 $S\_{2}= ? P\_{2}=832 torr$

$$\frac{S\_{1}}{P\_{1}}=\frac{S\_{2}}{P\_{2}} \rightarrow \rightarrow \rightarrow S\_{2}= S\_{1}\left(\frac{P\_{2}}{P\_{1}}\right)=\left(\frac{0.00523 g}{L}\right)\left(\frac{832 torr}{350 torr}\right)=\frac{0.0124 g}{L}$$

1. (5 points) Calculate the mass percent of sodium nitrate in a solution that is prepared by dissolving 25.0 g of NaNO3 in 125.0 g of H2O.

$$\% NaNO\_{3}=\left(\frac{mass NaNO\_{3}}{mass solution}\right)×100\%=\left(\frac{25.0 g NaNO\_{3}}{25.0 g NaNO\_{3}+125.0 g H\_{2}O}\right)×100\%$$

$$=\left(\frac{25.0g}{150.0g}\right)×100\%=16.7\% NaNO\_{3}$$

1. (5 points) Calculate the mass of potassium chromate present in 2.5 L of 0.75 M K2CrO4.

$$?g K\_{2}CrO\_{4}=2.5 L K\_{2}CrO\_{4}×\frac{0.75 mol K\_{2}CrO\_{4}}{1 L K\_{2}CrO\_{4}}×\frac{194.2 g K\_{2}CrO\_{4}}{1 mol K\_{2}CrO\_{4}}=364 g K\_{2}CrO\_{4}$$

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

1. (5 points) Name and distinguish between the two components of a solution.

Solvent– t he portion of a solution that is present in greater quantity

Solute – the portion of a solution that is present in lesser quantity.

1. (5 points) At a particular temperature, the solubility of krypton gas in water is 0.00523 g/L at 350 torr. What would the solubility of krypton gas be at 967 torr?

 $S\_{1}= \frac{0.00523 g}{L} P\_{1}=350 torr$

 $S\_{2}= ? P\_{2}=967 torr$

$$\frac{S\_{1}}{P\_{1}}=\frac{S\_{2}}{P\_{2}} \rightarrow \rightarrow \rightarrow S\_{2}= S\_{1}\left(\frac{P\_{2}}{P\_{1}}\right)=\left(\frac{0.00523 g}{L}\right)\left(\frac{967 torr}{350 torr}\right)=\frac{0.0144 g}{L}$$

1. (5 points) Calculate the mass percent of sodium nitrate in a solution that is prepared by dissolving 45.0 g of NaNO3 in 125.0 g of H2O.

$$\% NaNO\_{3}=\left(\frac{mass NaNO\_{3}}{mass solution}\right)×100\%=\left(\frac{45.0 g NaNO\_{3}}{25.0 g NaNO\_{3}+125.0 g H\_{2}O}\right)×100\%$$

$$=\left(\frac{45.0g}{170.0g}\right)×100\%=26.5\% NaNO\_{3}$$

1. (5 points) Calculate the mass of potassium chromate present in 2.5 L of 0.95 M K2CrO4.

$$?g K\_{2}CrO\_{4}=2.5 L K\_{2}CrO\_{4}×\frac{0.95 mol K\_{2}CrO\_{4}}{1 L K\_{2}CrO\_{4}}×\frac{194.2 g K\_{2}CrO\_{4}}{1 mol K\_{2}CrO\_{4}}=461 g K\_{2}CrO\_{4}$$