Chemistry 115 Name Key

Dr. Cary Willard

Quiz 10a (20 points) May 11, 2010

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

1. (5 points) What will be the molarity of the resulting solutions made by mixing 145 mL of 0.6875 M H3PO4 with 625 mL of water.

M1=0.6875 M V1=145 mL

M2 = ? V2 = 145 + 625 mL = 770 mL

$$M\_{1}V\_{1}=M\_{2}V\_{2}$$

$$M\_{2}=M\_{1}\left(\frac{V\_{1}}{V\_{2}}\right)=0.6875 M\left(\frac{145 mL}{770 mL}\right)=$$

1. (5 points) Use the equation to calculate the grams of calcium phosphate that can be produced from the reaction of 24.33 mL of 1.425 M calcium nitrate with excess sodium phosphate.

3 Ca(NO3)2(aq) + 2 Na3PO4(aq) → Ca3(PO4)2(s) + 6 NaNO3(aq)

$$¿g Ca\_{3}\left(PO\_{4}\right)\_{2}=24.33 mL Ca\left(NO\_{3}\right)\_{2}×\frac{1.425 mol Ca\left(NO\_{3}\right)\_{2}}{1000 mL Ca\left(NO\_{3}\right)\_{2}}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{3 mol Ca\left(NO\_{3}\right)\_{2}}×\frac{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}=$$

1. (5 points) Define an acid and a base using the Arrhenius and Bronsted-Lowry theories

|  |  |  |
| --- | --- | --- |
|  | Arrhenius definition | Bronsted-Lowry definition |
| Acid | Proton donor | Proton donor |
| Base | Hydroxide donor | Proton acceptor |

1. (5 points) Write the correct nuclear equation for the decay of At-218 $\left(\right)$ by alpha particle emission.

$$\rightarrow +$$

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Quiz 10b (20 points) May 11, 2010

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1. (5 points) What will be the molarity of the resulting solutions made by mixing 145 mL of 0.6875 M H3PO4 with 825 mL of water.

M1=0.6875 M V1=145 mL

M2 = ? V2 = 145 + 825 mL = 970 mL

$$M\_{1}V\_{1}=M\_{2}V\_{2}$$

$$M\_{2}=M\_{1}\left(\frac{V\_{1}}{V\_{2}}\right)=0.6875 M\left(\frac{145 mL}{970 mL}\right)=$$

1. (5 points) Use the equation to calculate the grams of calcium phosphate that can be produced from the reaction of 34.88 mL of 1.425 M calcium nitrate with excess sodium phosphate.

3 Ca(NO3)2(aq) + 2 Na3PO4(aq) → Ca3(PO4)2(s) + 6 NaNO3(aq)

$$¿g Ca\_{3}\left(PO\_{4}\right)\_{2}=34.88 mL Ca\left(NO\_{3}\right)\_{2}×\frac{1.425 mol Ca\left(NO\_{3}\right)\_{2}}{1000 mL Ca\left(NO\_{3}\right)\_{2}}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{3 mol Ca\left(NO\_{3}\right)\_{2}}×\frac{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}=$$

1. (5 points) Define an acid and a base using the Arrhenius and Bronsted-Lowry theories

|  |  |  |
| --- | --- | --- |
|  | Arrhenius definition | Bronsted-Lowry definition |
| Acid | Proton donor | Proton donor |
| Base | Hydroxide donor | Proton acceptor |

1. (5 points) Write the correct nuclear equation for the decay of Cs-137$\left(\right)$ by alpha particle emission.

$$\rightarrow +$$