Chemistry 115 Name

Dr. Cary Willard

Quiz 10a (20 points) May 13, 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 354.0 mL of 0.6875 M H3PO4 with 955.0 mL of water.

M1=0.6875 M V1=354.0 mL

M2 = ? V2 = 354.0 + 955.0 mL = 1309.0 mL

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

$$M\_{2}=M\_{1}\left(\frac{V\_{1}}{V\_{2}}\right)=0.6875 M\left(\frac{354.0 mL}{1309.0 mL}\right)=$$

1. (5 points) Use the equation to calculate the volume(mL) of 0.5322 M calcium nitrate required to produce 4.322 grams of calcium phosphate.

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

$$¿mL Ca\left(NO\_{3}\right)\_{2}==4.322 g Ca\_{3}\left(PO\_{4}\right)\_{2}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{3 mol Ca\left(NO\_{3}\right)\_{2}}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{1000 mL Ca\left(NO\_{3}\right)\_{2}}{0.5322 mol Ca\left(NO\_{3}\right)\_{2}}=$$

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 Mg-29 $\left(\right)$ by beta particle emission.

$$\rightarrow +$$

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Quiz 10b (20 points) May 13, 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 287.0 mL of 0.6875 M H3PO4 with 955.0 mL of water.

M1=0.6875 M V1=354.0 mL

M2 = ? V2 = 287.0 + 955.0 mL = 1242.0 mL

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

$$M\_{2}=M\_{1}\left(\frac{V\_{1}}{V\_{2}}\right)=0.6875 M\left(\frac{287.0 mL}{1242.0 mL}\right)=$$

1. (5 points) Use the equation to calculate the volume(mL) of 0.5322 M calcium nitrate required to produce 3.814 grams of calcium phosphate.

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

$$¿mL Ca\left(NO\_{3}\right)\_{2}==3.814 g Ca\_{3}\left(PO\_{4}\right)\_{2}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{3 mol Ca\left(NO\_{3}\right)\_{2}}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{1000 mL Ca\left(NO\_{3}\right)\_{2}}{0.5322 mol Ca\left(NO\_{3}\right)\_{2}}=$$

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 Sr-90 $\left(\right)$ by beta particle emission.

$$\rightarrow +$$