

# AP Chem Unit 2 - wkst Practice Opportunity B

$$1a. \left( \frac{5.623 \text{ g NaHCO}_3}{1} \right) \left( \frac{1 \text{ mole NaHCO}_3}{84.01 \text{ g NaHCO}_3} \right) \left( \frac{1}{0.2500 \text{ L}} \right) = \boxed{0.2677 \text{ mole/L NaHCO}_3}$$

$$c \left( \frac{0.1025 \text{ g Cu}}{1} \right) \left( \frac{1 \text{ mole Cu}}{63.55 \text{ g Cu}} \right) \left( \frac{1}{0.2000 \text{ L}} \right) \left( \frac{1 \text{ mole Cu}^{+2}}{1 \text{ mole Cu}} \right) = \boxed{0.008065 \text{ mole/L Cu}^{+2}}$$

$$2. \left( \frac{75.0 \text{ mL C}_2\text{H}_5\text{OH}}{1} \right) \left( \frac{.79 \text{ g C}_2\text{H}_5\text{OH}}{1 \text{ cm}^3} \right) \left( \frac{1}{0.2500 \text{ L}} \right) \left( \frac{1 \text{ mole C}_2\text{H}_5\text{OH}}{46.07 \text{ g C}_2\text{H}_5\text{OH}} \right)$$

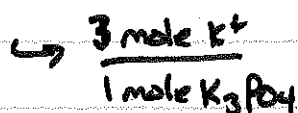
note: 1 ml = 1 cm<sup>3</sup>

$$= \boxed{5.1 \text{ mole/L C}_2\text{H}_5\text{OH}}$$

$$3b. \left( \frac{1.00 \text{ g K}_3\text{PO}_4}{1} \right) \left( \frac{1 \text{ mole K}_3\text{PO}_4}{212.27 \text{ g K}_3\text{PO}_4} \right) \left( \frac{1}{0.2500 \text{ L}} \right) = 0.0188 \text{ mole/L K}_3\text{PO}_4$$

$$[K^+] = 3 \times 0.0188 \text{ M K}_3\text{PO}_4$$

$$\boxed{[K^+] = 0.0564 \text{ M}}$$



$$[PO_4^{-3}] = 1 \times 0.0188 \text{ M K}_3\text{PO}_4$$

$$\boxed{[PO_4^{-3}] = 0.0188 \text{ M}}$$

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$$5. \left( \frac{10.9 \text{ g AgNO}_3}{1} \right) \left( \frac{1 \text{ mole AgNO}_3}{169.88 \text{ g AgNO}_3} \right) \left( \frac{1 \text{ L}}{.25 \text{ mole AgNO}_3} \right) = \boxed{0.24 \text{ L}}$$

6a.  $M_1 = 18 \text{ M H}_2\text{SO}_4$        $M_2 = .50 \text{ M H}_2\text{SO}_4$

$V_1 = ?$        $V_2 = 1.00 \text{ L}$

$M_1 V_1 = M_2 V_2$

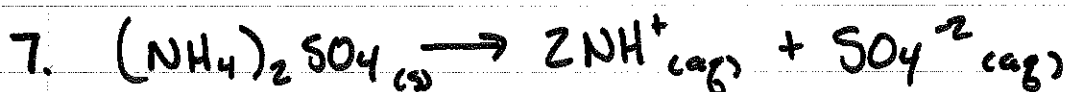
$(18 \text{ M}) V_1 = (.50 \text{ M})(1.00 \text{ L})$

$V_1 = 0.028 \text{ L}$

1. measure 28 ml of 18 M H<sub>2</sub>SO<sub>4</sub> into Volumetric FLASK

2. Fill to 1.00 L mark w/ distilled H<sub>2</sub>O

3. Stopper & Mix



$$\left( \frac{10.8 \text{ g } (\text{NH}_4)_2\text{SO}_4}{1} \right) \left( \frac{1 \text{ mole } (\text{NH}_4)_2\text{SO}_4}{132.14 \text{ g } (\text{NH}_4)_2\text{SO}_4} \right) \left( \frac{1}{0.1000 \text{ L}} \right) = .817 \text{ M } (\text{NH}_4)_2\text{SO}_4$$

Stock  
original

$M_1 = .817 \text{ M } (\text{NH}_4)_2\text{SO}_4$        $M_2 = ?$

$V_1 = 10.00 \text{ mL}$        $V_2 = 60.00 \text{ mL } (10.00 \text{ mL} + 50.00 \text{ mL})$

$M_1 V_1 = M_2 V_2$   
 $M_2 = \frac{M_1 V_1}{V_2} = \frac{(.817 \text{ M})(10.00 \text{ mL})}{60.00 \text{ mL}}$

$M_2 = 0.136 \text{ M } (\text{NH}_4)_2\text{SO}_4$  dilute stock

$\frac{1 \text{ mole } \text{SO}_4^{2-}}{1 \text{ mole } (\text{NH}_4)_2\text{SO}_4}$

$[\text{SO}_4^{2-}] = 1 \times 0.136 \text{ M} = \boxed{0.136 \text{ M } [\text{SO}_4^{2-}]}$

$\frac{2 \text{ mole } \text{NH}_4^+}{1 \text{ mole } (\text{NH}_4)_2\text{SO}_4}$

$[\text{NH}_4^+] = 2 \times 0.136 \text{ M} = \boxed{.272 \text{ M } [\text{NH}_4^+]}$  page 2

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$$10) \left( \frac{0.2000 \text{ moles KIO}_3}{1\text{L}} \right) \left( \frac{1.000\text{L}}{1} \right) \left( \frac{214.01 \text{ g KIO}_3}{1 \text{ mole KIO}_3} \right) = 42.80\text{g KIO}_3$$

Equip: 1.000L Volumetric Flask, Scoopula, Balance w/  
0.00g Capacity,

1. Use Balance to measure 42.80g KIO<sub>3</sub>
2. Place in <sup>Volumetric</sup> FLASK, Add enough Distilled H<sub>2</sub>O to dissolve
3. Fill Flask to 1.000L mark
4. Stopper & Mix