

EXERCISE 7

Chem 100

(Due in lab _____)

10 points

Name KEY
(last) (first)

Lab Section # _____ Lab Instructor _____

Answer the following questions, giving complete setups, including all units. If you do not show your work, you will receive no credit, even if your answer is correct.

1. What is the % (m/m) of a solution that contains 75 g of KNO_3 dissolved in 300 g of water?

1. 20 %

$$300\text{g} + 75\text{g} = 375\text{g soln}$$

$$\frac{75\text{g}}{375\text{g}} \times 100 = 20\%$$

2. How many mL of methanol, CH_3OH , are required to make 250 mL of an 8.0% (v/v) methanol solution?

2. 20 mL

$$250\text{ mL} \left(\frac{8.0\text{ mL}}{100\text{ mL}} \right) = 20\text{ mL}$$

3. What is the % (m/v) of a NaOH solution that contains 6.0 g of NaOH dissolved in enough water to make 150 mL of solution?

3. 4 %
3.84 or 3.85 NOT ok

$$\frac{6.0\text{ g}}{150\text{ mL}} \times 100 = 4\%$$

4. How many grams of sodium acetate are required to make 80 g of a 3.2% (m/m) sodium acetate solution?

4. 2.56 g

$$80\text{ g} \left(\frac{3.2\text{ g}}{100\text{ g}} \right) = 2.56\text{ g}$$

5. Calculate the % (v/v) of a solution that contains 15 mL of acetic acid dissolved in 350 mL of water.

5. 4.1 %
4.29 NOT ok

$$350\text{ mL} + 15\text{ mL} = 365\text{ mL}$$

$$\frac{15\text{ mL}}{365\text{ mL}} \times 100 = 4.1\%$$

6. How many grams of acetic acid would be needed to make 50 mL of a 12.0% (m/v) acetic acid solution?

6. 6 g

$$50\text{ mL} \left(\frac{12.0\text{ g}}{100\text{ mL}} \right) = 6\text{ g}$$

(over)

What is the molarity of a solution that was prepared by dissolving 7.4 g of KClO_3 (molar mass = 122.6 g/mole) in enough water to make 200 mL of solution?

$$\frac{7.4 \text{ g}}{(122.6 \text{ g/mole})(.200 \text{ L})} = 0.302 \text{ M}$$

7. $\frac{.302 \text{ M}}{.3 \quad .30 \quad .301 \quad \text{ok}}$

How many grams of KOH (molar mass = 56.1 g/mole) would be needed to prepare 300 mL of a 0.450 M KOH solution?

$$(.300 \text{ L})(0.450 \text{ M})(56.1 \text{ g/mole}) = 7.57 \text{ g}$$

8. $\frac{7.57 \text{ g}}{7.6 \text{ ok}$
 7.5735 etc
 ok

What is the molarity of a solution that contains 12.5 grams of sulfuric acid (molar mass = 98.1 g/mole) dissolved in enough water to make 150 mL of solution?

$$\frac{12.5 \text{ g}}{(98.1 \text{ g/mole})(.150 \text{ L})} = 0.849 \text{ M}$$

9. $\frac{0.85 \text{ M}}{.849 \quad .846 \quad .84 \quad \text{ok}$
 $.84 \dots \dots \text{ok}$

How many grams of sodium nitrate (molar mass = 85.0 g/mole) are required to prepare 3.0 liters of a 1.5 M sodium nitrate solution?

$$3.0 \text{ L}(1.5 \text{ M}) 85.0 \text{ g/mole} = 382.5 \text{ g}$$

10. $\frac{382.5 \text{ g}}{\quad \quad \quad}$

What is the molarity of a solution that contains 64 g of ammonium sulfate (molar mass = 132.1 g/mole) dissolved in enough water to make 80.0 mL of solution?

$$\frac{64 \text{ g}}{(132.1 \text{ g/mole})(.080 \text{ L})}$$

11. $\frac{6.06 \text{ M}}{6.0 \quad 6.1 \quad \text{ok}$
 $6.056 \quad \text{etc}$

How many grams of potassium carbonate (molar mass = 138.2 g/mole) would be required to prepare 2.0 L of a 0.15 M potassium carbonate solution?

$$(2.0 \text{ L})(0.15 \text{ M})(138.2 \text{ g/mole}) = 41.46 \text{ g}$$

12. $\frac{41.5 \text{ g}}{41.46 \text{ ok}$
 $\dots \dots \text{etc}$

(over)

DALLAS VAESA