UNIT 6 REVIEW SOLUTIONS

~~Unit 5 Review~~

1. What mass of $KClO_3$ can dissolve in 400 g of water at 60 ^{0}C? See chart.

$\frac{X}{400} = \frac{28}{100} =$ 112 g

2. How much ammonium chloride can be dissolved in 725 g of water at 60 ^{0}C?

$\frac{X}{725} = \frac{66}{100}$ X = 479 g

3. How many grams of sodium sulfate will 2000g of water dissolve at 20 ^{0}C?

$\frac{X}{2000} = \frac{55}{100}$ 1100 g

4. At a temperature of 10 ^{0}C a gas has a solubility of 7.3 g/L in water at a pressure of 100 kPa. What pressure is necessary to produce an aqueous solution containing 10.1 g/L of the same gas at the same temperature?

$\frac{7.3\ g/L}{100} = \frac{10.1}{X}$ X = 138 kPa

5. What is the molarity of a solution having 67.3 g of phosphoric acid in 500 mL of solution?

67.3 g | 97.99 = 0.687 mol $M = \frac{n}{L} = \frac{0.687}{0.5} =$ 1.37 M

6. Calculate the molarity of a solution containing 21 g of ~~LiBr~~ LiBr in 500 mL of solution.

21 g LiBr | 86.845 = 0.242 $\frac{0.242}{0.500} =$ 1.21 M

7. What mass, in grams, would be needed to prepare 2.5 L of a 0.45 M sodium hydroxide solution.

$M = \frac{n}{L}$

$n = 0.45(2.5) = 1.125$

1.125 mol NaOH | 40.0 g / 1 mol = 45.0 g NaOH

8. Calculate the mass of NaOH needed to prepare 480 mL of a 1.5 M solution.

$n = MV$

$1.5(0.480) = 0.72$ mol

0.72 mol | 40.0 g NaOH = 28.8 g NaOH

9. Calculation the concentration (% m/m) of a solution composed of 12 g of glucose in 785 g of solution.

10. Calculation the concentration (% v/v) of a solution composed of 45 mL of ethanol and 689 mL of solution.

11. Calculate the mass of NaCl needed to prepare 200 mL of a 2.6 M solution.

$n = MV = 2.6(0.200) = 0.52 \text{ mol} \mid 58.44 = 30.39 \text{ g}$

12. How many moles of solute are in 500 mL of a 2.6 M solution of $NaNO_3$?

$2.6(0.500) = 1.30 \text{ mol}$

13. Calculate the number of grams of solute needed in problem #13?

$1.3 \text{ g } NaNO_3 \mid 84.997 \text{ g} = 110.5 \text{ g } NaNO_3$

14. How many grams of $CuSO_4$ would you need to prepare 2.5 L of a 1.6 M solution?

$n = 2.5(1.6) = 4 \text{ mol} \mid 159.55 = 638.2 \text{ g } CuSO_4$

15. A salt solution has a volume of 650 mL and contains 0.5 moles of $CaCl_2$. What is its molarity?

$$M = \frac{\text{mol}}{\text{L}} = \frac{0.5}{0.650} = 0.769$$

16. An aqueous solution has a volume of 6.0 L and contains 105 g of glucose ($C_6H_{12}O_6$). What is the molarity?

$$105 \text{ g} \mid 180 = 0.583 \text{ mol} \quad \frac{0.583 \text{ mol}}{6.0 \text{ L}} = 9.7 \times 10^{-2} \text{ M}$$

17. How many grams of solute are in 500 mL of a 3.0 M solution of sulfuric acid?

$n = 3(0.500) = 1.5 \text{ mol} \mid 98.016 = 147 \text{ g } H_2SO_4$

18. How many grams of sodium hydroxide are needed to make a 6 M solution? * Assume 1L.

$n = 6(1) = 6 \text{ mol NaOH} \mid 40.01 = 240 \text{ g NaOH}$

19. Write the net ionic equation for the reaction:

$BaBr_2 (aq) + Na_2SO_4 (aq) \longrightarrow BaSO_4 (s) + 2\,NaBr (aq)$

$Ba^{2+} + SO_4^{2-} \longrightarrow BaSO_4 (s)$

20. Write the net ionic equation for the reaction:

$Pb(NO_3)_2 (aq) + 2\,HCl (aq) \longrightarrow PbCl_2 (s) + 2\,HNO_3 (aq)$

$Pb^{2+} + 2Cl^- \rightarrow PbCl_2$

21. Predict the products and write the net ionic equation for:

$MgCl_2 (aq) + Cu(NO_3)_2 (aq) \longrightarrow ?$ $CuCl_2 (aq) + Mg(NO_3)_2 (aq)$

No Rxn