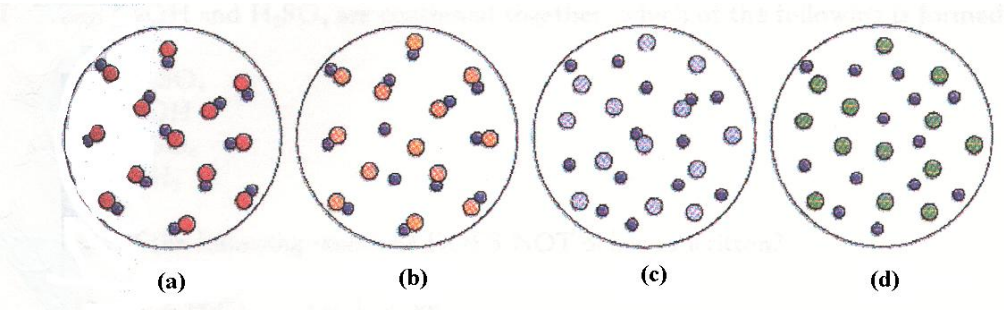
REVIEW QUESTIONS

Chapter 8

1. Identify each of the diagrams below as strong electrolyte, weak electrolyte or non-electrolyte:



2. Identify the predominant particles in each of the following solutions and write the equation for the formation of the solution:

   a) Li_2CO_3

   b) CCl_4

   c) H_2S

3. How many equivalents are present in 5.0 g of Al^{3+}?

4. An intravenous replacement solution contains 4.0 mEq/L of Ca^{2+} ions. How many grams of Ca^{2+} are in 3.0 L of the solution?

5. Calculate the mass percent (m/m or m/v)) for each of the following solutions:

    a) 25 g of KCl in 125 g H_2O

    b) 75 g of NaOH in 325 mL of solution

6. Calculate the molarity of the following solutions:

    a) 0.50 mol sugar in 270 mL of solution.

    b) 17.0 g of $AgNO_3$ in 0.500 L of solution.

7. Calculate the moles of solute needed to prepare each of the following solutions:

    a) 450 mL of 0.20 M KBr solution.

    b) 2.0 L of 1.5 M NaOH solution.

8. Calculate the mass of solute needed to prepare each of the following solutions:

    a) 2.0 L of 1.8 M NaOH solution.

    b) 250 mL of 1.0 M $CaCl_2$ solution.

    c) 750 mL of 3.5% (m/v) K_2CO_3 solution.

9. What volume (mL) of a 4.0 M solution of KCl contains 0.100 moles of solute?

10. What volume (mL) of a 1.5 M solution of NaCl contains 25.0 g of solute?

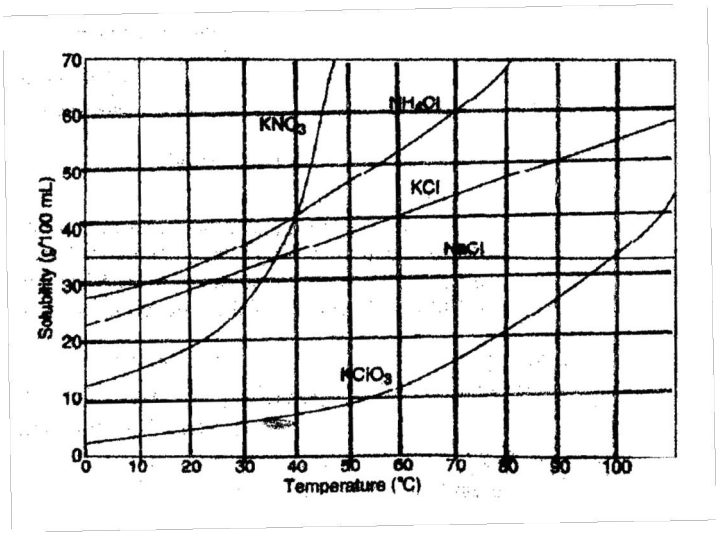
11. How many liters of a 5.0% (m/v) glucose solution would contain 75 g of glucose?

12. A patient receives an IV containing 2.5% (m/v) glucose solution at the rate of 35 mL in 1 hour. How many grams of glucose does this patient receive after 12 hours?

13. Use the solubility graph below to answer the following questions:

a) Which substance has the greatest solubility at 30°C?

b) What is the solubility of KCl at 60°C?



c) A sample of KNO_3 with a mass of 50.0 g is added to 150 mL of water at 40°C. Is this solution saturated or unsaturated. Give explanation or show calculations.

14. Indicate whether each of the following is soluble or insoluble in water:

a) $MgSO_4$ _____

b) KCl _____

c) $(NH_4)_2 CO_3$ _____

d) PbS _____

e) $Ca(OH)_2$ _____

f) Na_3PO_4 _____

g) $PbBr_2$ _____

h) $Al(OH)_3$ _____

15. For each reaction below, write the net ionic equation to show the formation of a precipitate. If no precipitate occurs, write "No Reaction" after the arrow.

a) $Pb(NO_3)_2\ (aq) + NaI\ (aq) \rightarrow$

b) $NaCl\ (aq) + (NH_4)_2SO_4\ (aq) \rightarrow$

c) $CaCl_2\ (aq) + Na_3PO_4\ (aq) \rightarrow$

d) $Ca(NO_3)_2\ (aq) + Na_2S\ (aq) \rightarrow$

16. Complete and balance the following chemical equations:

a) $HCl\ (aq) + Ca(OH)_2\ (aq) \rightarrow$

b) $CaCO_3\ (s) + HNO_3\ (aq) \rightarrow$

c) $H_2SO_4\ (aq) + LiOH\ (aq) \rightarrow$

17. How many mL of a 15 M NH_3 solution is needed to prepare 50. mL of a 6.0 M NH_3 solution?

18. Calculate the molarity of a solution prepared by mixing 250 mL of 0.75 M H_2SO_4 with 150 mL of water.

19. What is the final volume, in mL, when 5.00 mL of 12.0 M NaOH is diluted to 0.600 M?

20. Determine the osmolarity and tonicity of each of the following solutions:

a) 0.15 M KCl _____

b) 0.12 M sucrose _____

c) 0.080 M $FeCl_3$ _____

d) 0.10 M $Ca(NO_3)_2$ _____