Section 13C Practice

1. Determine if the following will be electrolytes or nonelectrolytes:

NaBr	H_2SO_4	CH_3CH_2COOH	CH_3CH_3	$MgCl_2$
$CuSO_4$	CH_3OH	$CaCl_2$	KI	HI
KNO_3	SiO_2 (sand)	CaF_2	$C_6H_{12}O_6$	

2. Calculate the concentrations of the following

a) 4.5 mol NaCl in 6.5 L	f) 0.58 mol HCl in 2.5 L
b) 2.0×10^{-3} mol HF in 200 mL	g) 5.0×10^{-4} mol KSCN in 1750 mL
c) 0.85 mol KI in 3.25 L	h) 7.5×10^{-4} mol $Pb(NO_3)_2$ in 25.0 mL
d) 50.0 g KCl in 50.0 mL	i) 50.0 g $C_{12}H_{22}O_{11}$ in 100 mL
e) 0.75 g $CuSO_4$ in 250 mL	j) 85 g ethanoic acid in 45.0 mL

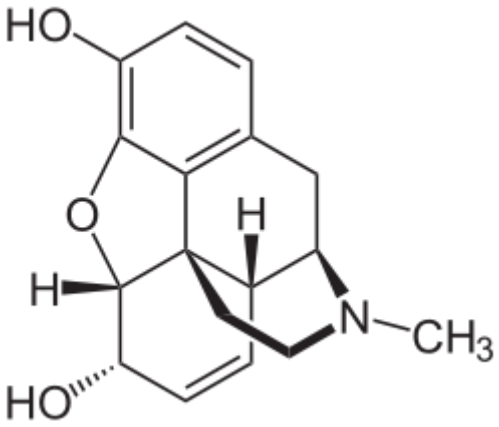
3. Answer the following questions about the #2

What is the concentration of Na^+ in (a)?
What is the conentratin of Cu^{+2} in (e)?
What is the conentration of H^+ in (f)?
What is the concentration of NO_3^- in (h)?

4. Answer the following questions about dilutions:

a) What volume of 5.0 M NaOH is needed to make 150 mL of 0.75 M NaOH?
b) What is the new concentration if 150 mL of water is added to 850 mL of 1.25 M hydrochloric acid?
c) What is the final concentration of sodium phosphate if 250 mL of 0.125 M is added to 500 mL of water?
d) How much water needs to be added to 500 mL of 1.35 M H_2SO_4 to lower the concentration to 0.35 M?
e) What is the concentration of Na^+ ions if 500 mL of 0.25 M NaOH is added to 500 mL of 0.50 M Na_2SO_4?

5. Answer the following questions about morphine



a) What is the formula for morphine?

b) What is the molar mass?

c) If the dose is 30 mg per 2 mL, what is the molarity of the dose?

d) What mass of morphine is needed to make 100 mL of 1.5×10^{-5} M solution?

6. Answer the following questions about solution stoichiometry:

a) 500 mL of 1.0M HCl reacts with 25.0 g of $Ca(OH)_2$, what is the concentration of $CaCl_2$ made, the other product is water and assume that the volume remains 500 mL?
b) What mass of $CuCO_3$ can be made from 50.0 mL 0.75M $CuSO_4$ and 100.0 mL 0.65 M Na_2CO_3? The other product is sodium sulfate
c) What mass of $NaHCO_3$ is needed to neutralize 500 mL of 1.35 M HCl? The products are water, sodium chloride, and carbon dioxide gas
d) From (c) what is the concentration of sodium chloride after the reaction?

7. ___$HCl_{(aq)}$ + ___$Mg(OH)_{2(s)}$ → ___$H_2O_{(L)}$ + ___$MgCl_{2(aq)}$

a) Balance the above equation

b) Write the net-ionic equation

c) What volume of 0.25M HCl is needed to react with 25.0 g of $Mg(OH)_2$?

d) What mass of $Mg(OH)_2$ is needed to neutralize 75.0 mL of 0.10M HCl?

e) What will be left, HCl or $Mg(OH)_2$, if 150 mL of 0.40 M HCl reacts with 2.50 g of magnesium hydroxie? How many moles of the excess reagent will be left?

f) If $Mg(OH)_2$ is leftover, what mass remains? If HCl is leftover, what is the concentration of the acid?