**Quiz 11A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Calculate the hydroxide ion concentration in a 20.00 mL sample of an unknown if 14.75 mL of 0.248 M sulfuric acid is used in a neutralization reaction (8 points).

2 OH- (aq) + H2SO 4 (aq) → 2 ­H­2O (l) + SO42- (aq)

$$14.75 mL H\_{2}SO\_{4} soln×\frac{0.248 mmol H\_{2}SO\_{4} }{1 mL H\_{2}SO\_{4} soln}×\frac{2 mmol OH^{-}}{1 mmol H\_{2}SO\_{4} }=\frac{7.316 mmol OH^{-}}{20.00 mL OH^{-} soln }=0.3658 M OH^{-}≈0.366 M OH^{-}$$

1. Which of the following solutes do you expect to be more soluble in water than in cyclohexane, C6H12, , and why (4 points)?
	1. Methylamine 

water, because they can form hydrogen bonds.

* 1. Tetrafulormethane cyclohexane, because they are both nonpolar molecules
1. Distinguish between the solute and solvent in each of the following solutions (4 points):
	1. Saltwater, NaCl (aq) NaCl solute, H2O solvent
	2. Sterling silver (92.5% Ag, 7.5% Cu) Cu solute, Ag solvent

**Quiz 11B**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Distinguish between the solute and solvent in each of the following solutions (4 points):
	1. Sugar water sugar solute, H2O solvent
	2. 80-proof vodka (40% ethanol) ethanol solute, H2O solvent
2. Which of the following solutes do you expect to be more soluble in water than in cyclohexane, C6H12, , and why (4 poinst)?
	1. Formic acid 

water, because they can form hydrogen bonds.

* 1. Benzene cyclohexane, because they are both nonpolar molecules
1. Calculate the hydroxide ion concentration in a 20.00 mL sample of an unknown if 11.75 mL of 0.543 M phosphoric acid is used in a neutralization reaction (8 points).

3 OH- (aq) + H3PO 4 (aq) → 3 ­H­2O (l) + PO43- (aq)

$$11.75 mL H\_{3}PO\_{4} soln×\frac{0.543 mmol H\_{3}PO\_{4} }{1 mL H\_{3}PO\_{4} soln}×\frac{3 mmol OH^{-}}{1 mmol H\_{3}PO\_{4} }=\frac{19.14075 mmol OH^{-}}{20.00 mL OH^{-} soln }=0.9570375 M OH^{-}≈0.957 M OH^{-}$$