BIOC 141 • ASHBURN MODULE 12 WORKSHEET

Behavior:

Question 1: Match each of the following electrolyte definitions.

Strong electrolyte Ionizes completely in water

Weak electrolyte Does not form ions in water

Non-electrolyte Forms some ions in water

Question 2: Which pairs of compounds are soluble when mixed?

- Potassium chloride (KCI) and water
- Octane (C₈H₁₈) and water

Name:

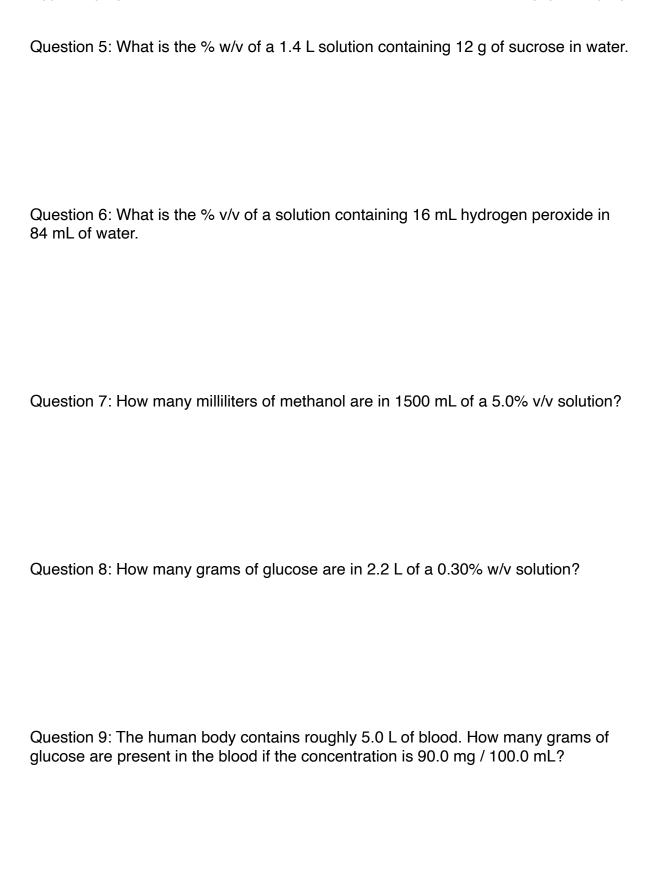
- Carbon tetrachloride (CCl₄) and hexane (C₆H₁₄)
- Drinking alcohol (C₂H₆O) and water
- Ammonia (NH₃) and benzene (C₆H₆)

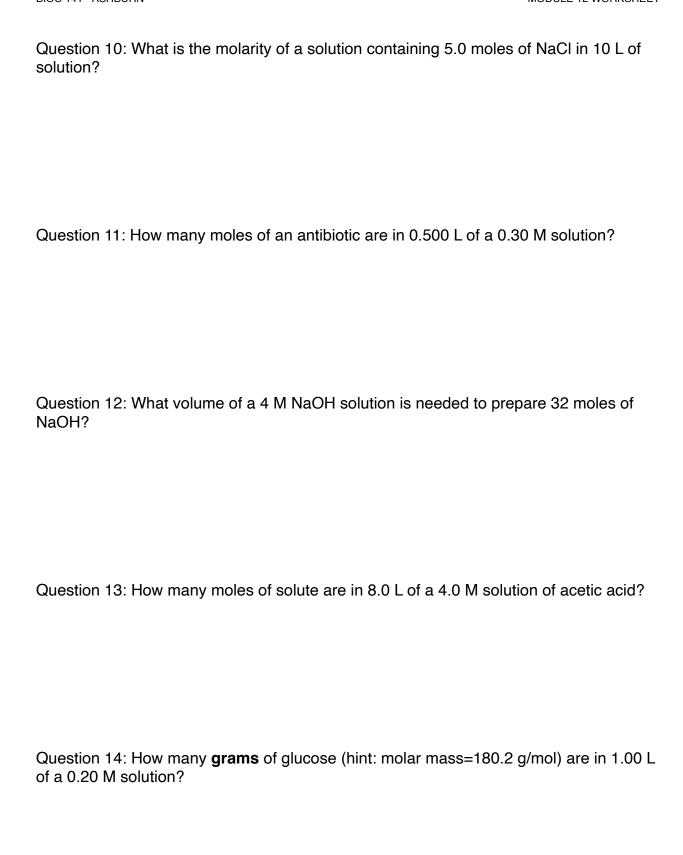
Question 3: Predict if the solubility of the solute increases or decreases in each situation below?

- A solution of sugar and water at room temperature is placed in the refrigerator.
- An open can of soda water (a solution of carbon dioxide gas and water) at room temperature is placed in the refrigerator.
- A solution of table salt (NaCl) and water is heated on the stove.
- A sealed bottle of soda water (a solution of carbon dioxide gas and water) is opened.

Question 4: What is the % w/v of a 152 mL saline solution containing 230 mg of NaCl dissolved in water?

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Question 15: Standard intravenous (IV) saline solution given to hospital patients has a concentration of 0.920% w/v of NaCl in water. If an IV bag contains 896 mL of saline solution remaining, calculate the amount (in grams) of NaCl that will be administered to the patient.

Question 16: A tired runner has just finished the Honolulu Marathon and drank lots of water before, during and after the race. She starts feeling ill and upon visiting the E.R., the doctor determines she has hyponatremia (low sodium level in the blood) caused from drinking too much water. The doctor orders a 1.38% w/v saline solution. You measure out 14.1 grams of NaCl then start adding water to obtain the correct concentration. What will be the final volume of the saline solution (in mL)?

Challenge Question: A study of 175 post-mortem cases (J. *Med. Sci. Law* **1990**, *30*, 101) determined the fatal concentration of ethanol (drinking alcohol) in your blood to be 355 mg/dL, significantly lower than previous studies. If a man has 4.7 L of blood his body, how many mL of ethanol would need be in man's blood to receive a fatal dose? The density of ethanol is 0.789 g/mL.

