

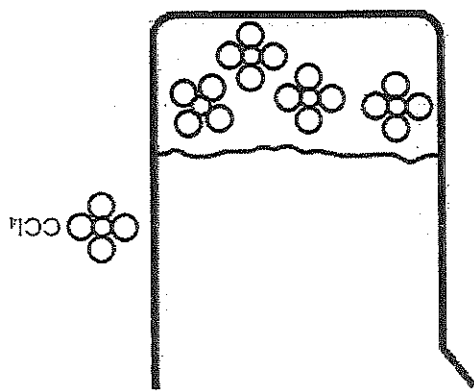
Liquids 4C

_____ #7-2a: _____ #7-2b: _____ #7-2c: _____

Q4d Liquids (states of matter)

Multiple Choice

Identify the choice that best completes the statement or answers the question.



Displayed here is a beaker of liquid CCl_4 at STP. The boiling point of $\text{CCl}_4 = 76.5^\circ\text{C}$.

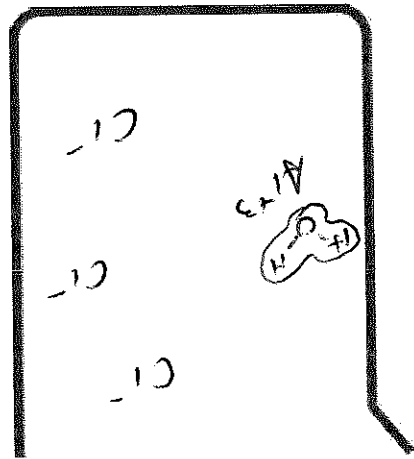
1. (#7-2a) Which of the following statements is true.
- I. The vapor pressure of this solution is less than 1 atm.
 - II. The vapor pressure will increase if the temperature is increased.
 - III. The predominant intermolecular force maintaining the state of matter is hydrogen bonding.

- a. I only
- b. I and II only
- c. II and III only
- d. I, II, and III

2. (#7-2b) Which of the following is correct relative to the properties of Carbon tetrachloride.
- I. It is a good conductor of electricity.
 - II. I would expect CCl_4 to dissolve nicely in water.
 - III. It can evaporate breaking covalent bonds.
 - a. I only
 - b. II only
 - c. I and II only
 - d. none listed is correct

3. CCl_4 (153g/mol) dissolves nicely in hexane (C_6H_{12} 84g/mol). If 15.3g of CCl_4 dissolves in 0.5L of hexane, the molarity of the solution is
- a. 5 M
 - b. 0.2M
 - c. 50 M
 - d. 15M

$$15.3\text{g} \cdot \frac{1\text{ mol}}{153\text{g}} = 0.1\text{ mol} = 0.2\text{ M}$$



1. (#7-2b) 0.5 moles of Aluminum Chloride is dissolved in 100mL of water.
 - a) Write the dissolving equation for Aluminum chloride (balanced)

$$AlCl_3 \rightarrow Al^{+3} + 3Cl^-$$
 - b) $Al^{+3} \cdot 5 \times 1 = 5M$
 - c) $Cl^- \cdot 5 \times 3 = 1.5M$
- (#7-2c) Determine the concentration [M] of the following?

$$\frac{.5}{.1} = 5$$
2. (#7-2c) An additional 50 mL of water is added to the beaker in #1. EXPLAIN how this will affect all of the concentration of the chloride ion?

! + will reduce. to 1M. (no partons)
3. (#7-2b) Draw the solution provided, including relative concentrations of cations and anions and at least 1 water molecule showing orientation of hydrogen bonding.