CfE Higher Chemistry Unit1: Intermolecular Forces.

1: Which of the following molecules is polar?

A: Methane.
B: Tetrachloromethane .
C: Carbon dioxide.
D: Hydrogen chloride.
E: Hydrogen gas.

2: Between which of the following molecules can hydrogen bonding take place?

A: Ammonia.
B: Hydrogen chloride.
C: Methane.
D: Carbon monoxide.
E: Benzene.

3: Between which of the following molecules does hydrogen bonding NOT take place ?

A: Methoxymethane. ($CH_3–O–CH_3$)
B: Ethanol.
C: Water.
D: Ammonia.
E: Glucose. ($C_6H_{12}0_6$)

4: Which of the following molecules has the largest dipole ?

A: H_2.
B: H-Cl.
C: H- F.
D: Cl -F.
E: F_2.

5: Which of the following would be most soluble in benzene(C_6H_6)?

A: Water.
B: Hydrogen chloride.
C: Ethanol.
D: Iodine.
E: Sugar.

6: Why is the boiling point of tetrachloromethane (CCl_4) lower than that of silicon tetrachloride ($SiCl_4$)?

A: The molecules in silicon tetrachloride are more polar than those in tetrachl oromethane.
B: Silicon tetrachloride can hydrogen bond unlike tetrachloromethane.
C: Silicon tetrachloride is ionic whereas tetrachloromethane is covalent.
D: The silicon chlorine bond is stronger than the carbon chlorine bond.
E: The London dispersion forces between silicon tetrachloride molecules are stronger than those between molecules of tetrachloromethane.

7: Which of the following is the correct equation for hydrogen chloride dissolving in water?

A: $HCl(g) \rightarrow H(aq) + Cl(aq)$.
B: $HCl(g) \rightarrow H^+(aq) + Cl^-(aq)$.
C: $HCl(g) \rightarrow H^-(aq) + Cl^+(aq)$.
D: $HCl(g) \rightarrow HCl(l)$
E: $HCl(g) \rightarrow \frac{1}{2}H_2(g) + \frac{1}{2}Cl_2(g)$.

8: Which of the following is a non-polar solvent?

A: Hexane.
B: Water.
C: Ethanol
D: Ammonia.
E: Liquid hydrogen chloride.