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. (CH₃–O–CH₃)
B: Ethanol.
C: Water.
D: Ammonia.
E: Glucose. (C₆H₁₂O₆)

4: Which of the following molecules has the largest dipole?
A: H₂.
B: H–Cl.
C: H–F.
D: Cl–F.
E: F₂.

5: Which of the following would be most soluble in benzene (C₆H₆)?
A: Water.
B: Hydrogen chloride.
C: Ethanol.
D: Iodine.
E: Sugar.

6: Why is the boiling point of tetrachloromethane (CCl₄) lower than that of silicon tetrachloride (SiCl₄)?
A: The molecules in silicon tetrachloride are more polar than those in tetrachloromethane.
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) → H+(aq) + Cl-(aq).
B: HCl(g) → H⁺(aq) + Cl⁻(aq).
C: HCl(g) → H⁺(aq) + Cl⁻(aq).
D: HCl(g) → HCl (l)
E: HCl (g) → ½H₂(g) + ½ Cl₂(g).

8: Which of the following is a non-polar solvent?
A: Hexane.
B: Water.
C: Ethanol
D: Ammonia.
E: Liquid hydrogen chloride.