

Name: _____

Date: _____

- [10 pt] 1. Define (using words) each of the following Intermolecular Forces (IMF's). In addition draw an example illustrating the attractive force between **TWO** molecules. Properly label all charges (+/-) and partial charges (δ^+ / δ^-).
- (a) Ionic (technically not an IMF, its a chemical bond!)

 - (b) Ion-Dipole (ID)

 - (c) Hydrogen Bond (HB)

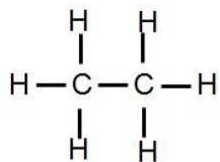
 - (d) Dipole-Dipole (DD)

 - (e) London Dispersion Forces (LDF)
- [3 pt] 2. Explain why the Boiling point of a substance is Directly Proportional ($BP \propto IMF$) to the strength of the IMF's between molecules.
- [3 pt] 3. Explain why the Vapor Pressure of a substance is Inversely Proportional ($P_{vap} \propto 1/IMF$) to the strength of the IMF's between molecules.

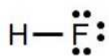
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[3 pt] 4. What common phrase is often used to describe solubility and how does this relate to Intermolecular forces and the solubility of molecules?

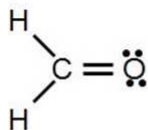
[11 pt] 5. Answer the following questions about the molecules pictured below. **Explain ALL answers!**



(A)



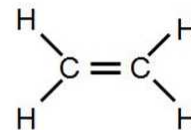
(B)



(C)



(D)



(E)

(a) Below each molecule list the IMF's present.

(b) Arrange the molecules from lowest to highest Boiling Point (ie A < B etc.). Explain.

(c) Arrange the molecules from lowest to highest Vapor Pressure (ie A < B etc.). Explain.

(d) Which molecules are more likely to dissolve in water? Explain.

5(d) _____

(e) Which molecules are more likely to dissolve in pentane? Explain.

5(e) _____