CHE 101 - Homework - Ch 9a

p. Lecture/Chemhaven **Intermolecular Forces and Physical Properties** Score: _____/50

Name: _____ Date: _____

[5 pt] 1. Complete the table below illustrating the differences between Chemical Bonds and Intermolecular Forces (IMF's)?

Property	Chemical Bonds	Intermolecular Forces
Attraction between:		
Relative Strength:		
Represented by (in LS):		
Determine Properties like:		
List Different Types:		

[10 pt] 2. Define each of the Intermolecular Forces (IMF) discussed in class, **AND** provide an example **NOT USED IN CLASS** showing the interaction between **TWO** molecule(s). Properly label all charges (+/-) and partial charges (δ^+/δ^-).

(a) London Dispersion Forces (LDF)

(b) Dipole-Dipole Forces (DD)

(c) Hydrogen Bonding (HB)

(d) Ion-Dipole (ID)

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[4 pt] 3. Discuss (using sentences) the relative magnitude of the IMF vs. the Kinetic Energy (Temperature) in solids, liquids and gases.

[4 pt] 4. Draw a picture showing how water molecules would hydrogen bond to ethanol (CH_3CH_2OH). Pay careful attention to the bond angles in ethanol. (Remember your Lewis Structures)

[3 pt] 5. Explain why the Boiling point of a substance is Directly Proportional (BP $\propto$ IMF) to the strength of the IMF's between molecules.

[4 pt] 6. The boiling point for compound A is 50℃ and for compound B is 75 ℃. From this 6. _____ data, which compound is more likely to be able to form hydrogen bonds. Explain.

[4 pt] 7. The melting point for compound A is -25℃ and for compound B is -50 ℃. From this 7. _____ data, which compound is more likely to be able to form hydrogen bonds. Explain.

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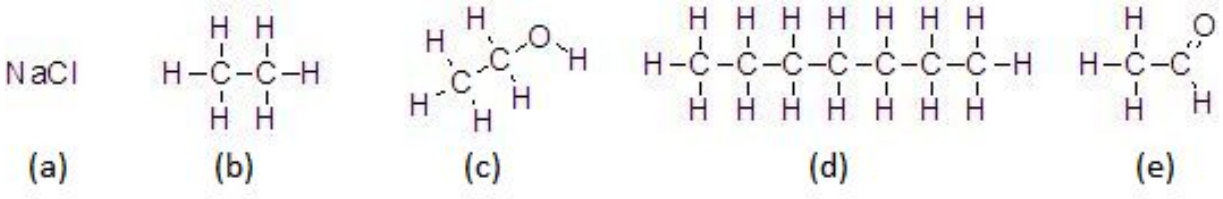
[8 pt] 8. List the IMF present in a pure sample of each of the molecules below. Order the following molecules from lowest Boiling Point to highest Boiling Point (A < B < C etc). Explain.



[8 pt] 9. List the IMF present in a pure sample of each of the molecules below. Order the following molecules from lowest Boiling Point to highest Boiling Point (A < B < C etc). Explain.