

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

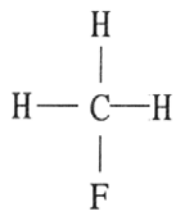
- 1) The principal source of the difference in the normal boiling points of ICl (97°C; molecular mass 162 amu) and Br₂ (59°C; molecular mass 160 amu) is _____.
 - A) ICl has greater strength of hydrogen bonding than Br₂
 - B) ICl has stronger dipole-dipole interactions than Br₂
 - C) ICl has stronger dispersion forces than Br₂
 - D) The I-Cl bond in ICl is stronger than the Br-Br bond in Br₂
 - E) ICl has a greater molecular mass than Br₂

- 2) Which one of the following derivatives of ethane has the highest boiling point?
 - A) C₂I₆
 - B) C₂Br₆
 - C) C₂F₆
 - D) C₂Cl₆
 - E) C₂H₆

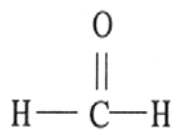
- 3) What is the predominant intermolecular force in CBr₄?
 - A) hydrogen-bonding
 - B) ion-dipole attraction
 - C) ionic bonding
 - D) dipole-dipole attraction
 - E) London-dispersion forces

4) Which one of the following substances will have hydrogen bonding as one of its intermolecular forces?

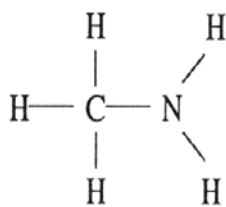
A)



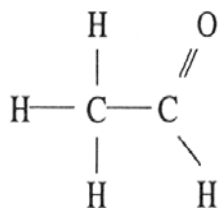
B)



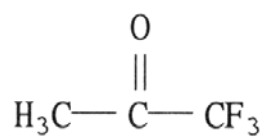
C)



D)



E)



5) Which one of the following should have the lowest boiling point?

A) HCl

B) H₂S

C) PH₃

D) H₂O

E) SiH₄

Answer Key

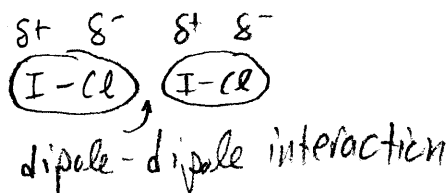
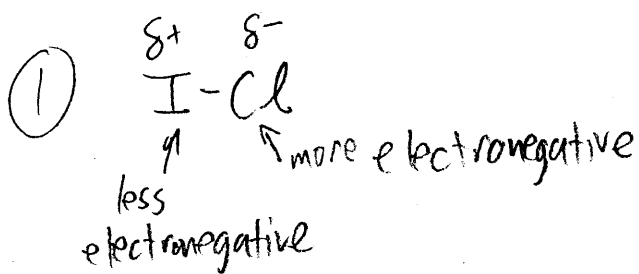
Testname: QUIZ_INTERMOLEC_FORCES_CH_10.TST

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) B
ID: chem9b 2.2-11
- 2) A
ID: chem9b 2.1-20
- 3) E
ID: chem9b 2.1-22
- 4) C
ID: chem9b 2.1-28
- 5) E
ID: chem9b 2.1-31

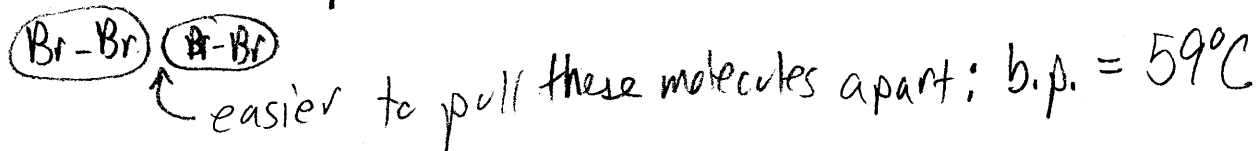
A.P. Chemistry
 Quiz: Intermolecular Forces
 Chapter 10

Group 17	decreasing electronegativity ↓
F	
Cl	
Br	
I	



ⓑ → answer

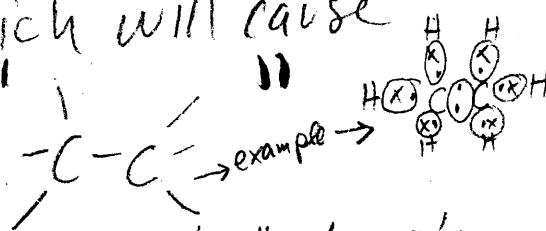
I-Cl is a polar bond
 ICl molecule is a polar molecule



Br-Br is a nonpolar bond
 Br₂ is a nonpolar molecule.

So, the dipole-dipole interactions between I-Cl molecules appear to be stronger than the dispersion forces which hold together Br₂ molecules, (The molar mass is, I believe, irrelevant here.)

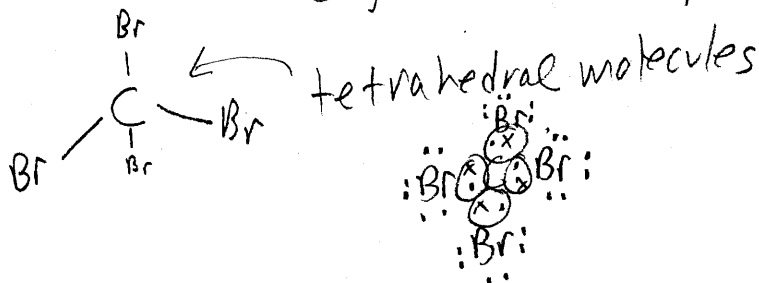
② They all have geometries which will cause the molecules to be nonpolar



Therefore the molecule with the greatest # of e⁻'s will have the greatest intermolecular forces (dispersion forces).

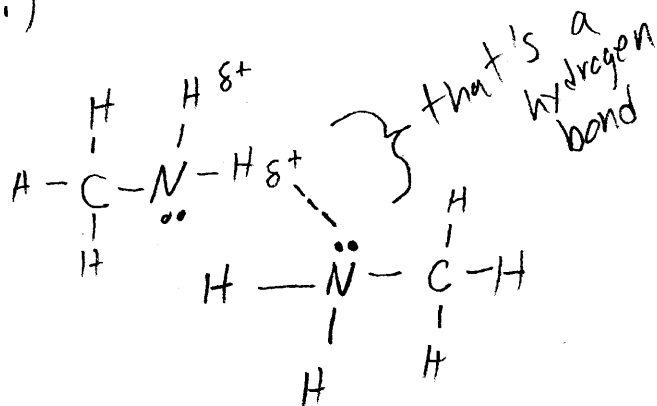
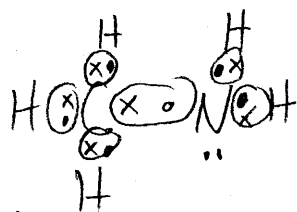
Ⓐ

③ CBr_4 is nonpolar (even though it has polar bonds), so the answer is (E), London dispersion forces.



④ A → no. C-H bond isn't polar enough (must be N-H, O-H, or F-H). No unshared pairs.
 B → no. C-H bond isn't polar enough. (Thus unshared pairs on oxygen are irrelevant.)

④ → yes
 ↳ ANSWER



D → no, same reason as "B"
 E → no, same reason as "B"

⑤ lowest B.P. = lowest temp needed to make a clump of these molecules in the liquid phase separate from one another to become gas molecules = substance with weakest intermolecular forces of attraction.

- (A) polar
- (B) polar
- (C) polar

- (D) polar and can do hydrogen bonding
- (E) nonpolar

Therefore, if the only info available is chemical formula, I would pick (E) because London disp. forces is the weakest intermolec. force (all things being equal).
 answer → (E)