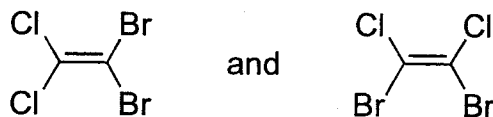


F. What is the relationship between these molecules:



- (a) they're identical, damn it! (b) they are enantiomers
 (c) they are diastereomers (d) they are structural isomers
 (e) they have different molecular formulas

G. Which of the following statements about phases and states of matter is true?

- (a) Increasing the temperature of a liquid decreases the percentage of molecules whose kinetic energy exceeds the enthalpy of vaporization of that liquid.
 (b) Water will boil at a higher temperature in Saint Paul, Minnesota (barometric $P \cong 740$ Torr) than in Fresno, California (barometric $P \cong 760$ Torr).
 (c) A solid sample of a substance cannot sublime at pressures below its triple point.
 (d) The meniscus separating the liquid and vapor phases will disappear if a substance is heated and pressurized above its critical point.
 (e) Diamond is an excellent conductor of electricity due to its sp^3 -hybridized atoms.

2. In the Fall of 1987, a freshman (not a first year—this was a politically less correct time) at Harvey Mudd College studied the phase transitions of Br_2 . He recorded a set of enthalpy changes, but neglected (the fool!) to label which phase transitions they corresponded to.

(a) (6 points) Match the enthalpy change with the correct process.

Condensation _____	(i) -10.6 kJ/mol
Deposition _____	(ii) -29.5 kJ/mol
Freezing _____	(iii) -40.1 kJ/mol

(b) (6 points) Briefly justify your assignments.

- 1 saying these processes require energy
 (they release energy!)
- 5 something
- 2 merely re-stating your assignments (eg. "condensation is (i) because it releases the least energy")
 (only -1 if deposition is interpreted as condensation + freezing)
- 3 some basic error