

Exam II – Chapters 6, 2B, 7 & 10

- (3 pts) For each group of ionic compounds, circle the one that will have the largest lattice energy.
 - MgO or CaO
 - NaF or NaBr
 - K₂S or CaS
- (3 pts) For each group of substances, circle the one with the highest boiling point.
 - HCN or KCN
 - HF or HCl
 - CH₂Cl₂ or CCl₄
- (3 pts) Circle the atom or ion in each group that has the larger atomic radius.
 - Sr or I
 - Cl⁻ or K⁺
 - Ba or Ba²⁺
- (3 pts) Which atom or ion in each of the following pairs has the larger electron affinity?
 - Na or Na⁺
 - C or O
 - Mg or Cl
- (3 pts) Circle the compound with the lowest vapor pressure.
 - BF₃
 - Br₂
 - HBr
 - CH₃Br
- (3 pts) Circle the compound with the higher surface tension.
 - CCl₄
 - CH₃Cl
 - H₂O
 - H₂S
- (3 pts) Which one of the following atoms has the largest ionization energy?
 - Mg
 - S
 - Ar
- (3 pts) Circle the compound with the lower viscosity.
 - NH₃
 - CH₂Br₂
 - H₂S
 - CCl₄
- (12 pts) Please name the following compounds (spelling counts!):
 - HClO₃ (aq) _____
 - PbS₂ _____
 - SrSO₄ _____
 - NO₃ _____
 - HF (aq) _____
 - P₂O₃ _____
- (12 pts) Please write the correct formula for the following:
 - nitrous acid _____
 - tin (II) carbonate _____
 - calcium acetate _____
 - carbon tetrachloride _____
 - zinc phosphate _____
 - hydrobromic acid _____

11. (36 pts) Please complete all requested information for the following three structures. Start by drawing ALL necessary Lewis structures.

a. SeI_5^-

ABE notation: _____

Molecular Geometry: _____

Bond angle(s): _____

Hybridization on the central atom: _____

Total # of σ bonds in molecule: _____

Total # of π bonds in molecule: _____

Is this structure polar? YES NO (circle one)

b. ClO_4^-

ABE notation: _____

Molecular Geometry: _____

Bond angle(s): _____

Hybridization on the central atom: _____

Total # of σ bonds in molecule: _____

Total # of π bonds in molecule: _____

Is this structure polar? YES NO (circle one)

c. SO_3

ABE notation: _____

Molecular Geometry: _____

Bond angle(s): _____

Hybridization on the central atom: _____

Total # of σ bonds in molecule: _____

Total # of π bonds in molecule: _____

Is this structure polar? YES NO (circle one)

12. (5 pts) Identify the strongest type of intermolecular force between the molecules of the following substances:

LDF : London Dispersion Forces

DDF : Dipole-Dipole Forces

HBF : Hydrogen-Bonding Forces

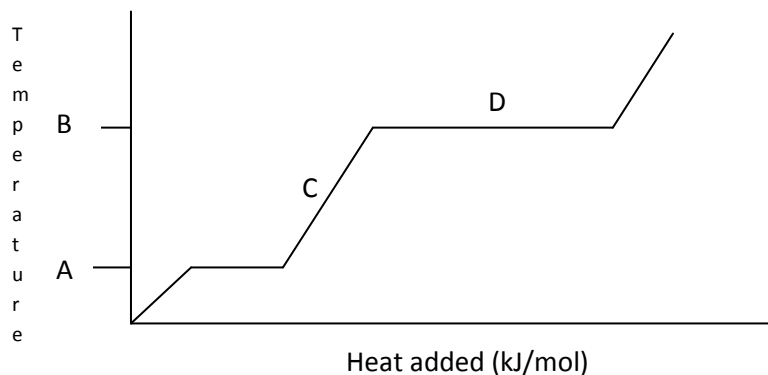
- a. $\text{CH}_3\text{CH}_2\text{Cl}$ _____
- b. $\text{CH}_3\text{CH}_2\text{NH}_2$ _____
- c. SeI_5^- _____
- d. ClO_4^- _____
- e. SO_3 _____

13. (5 pts) Consider the following and chose the correct **letter(s)** for each:

- a. metallic bonds
- b. ionic bonds
- c. nonpolar covalent bonds
- d. polar covalent bonds

- 1. The bond between the atoms in Al_2S_3 . _____.
- 2. The bond between the atoms in SO_3 . _____.
- 3. The bond between the atoms in Mg. _____.
- 4. The bonds between the atoms in N_2 . _____.
- 5. The bonds between the atoms in MgCO_3 . _____.

14. (6 pts) Identify the following on this heating-cooling curve for a liquid:



- a. The melting point _____.
- b. The phase change from liquid to gas _____.
- c. The boiling point _____.