Chapter 12 Lecture Worksheet 2

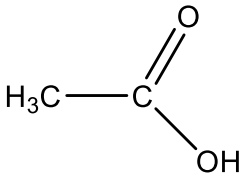
Name: _____ UGA ID: _____

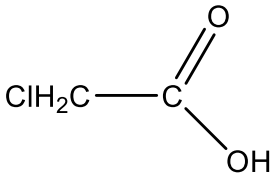
Instructions:

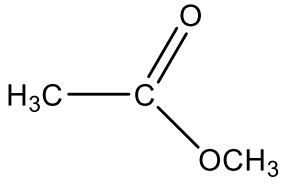
- Please enter your first and last name as it appears on the eLC roster (do not use a nickname).
- Your UGA myID is a combination of letters and numbers (example: mine is sre13137). **Do not use your 81x number.**
- If you do not have a printer, type your answers in the boxes then upload the worksheet template to Gradescope by Friday, August 28 at 11:59 p.m. Write your work on separate sheets of paper, convert to a PDF and upload to the dropbox on eLC.
- If you have a printer download the worksheet, write your answers and show your work on the worksheet template, convert it to a PDF and upload to Gradescope by Friday, August 28 at 11:59 p.m. You do not need to upload anything to eLC.

1. Rank the boiling points from lowest to highest:

_____

A. 

B. 

C. 

2. As the intermolecular forces increase between particles, the vapor pressure _____ and the normal boiling point _____.

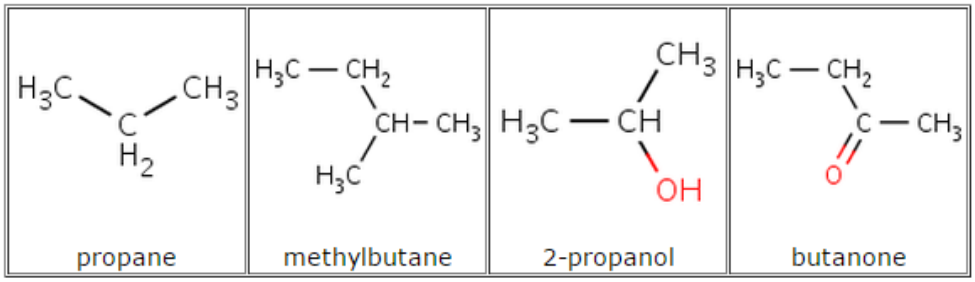
A. increases, increases

B. increases, decreases

C. decreases, increases

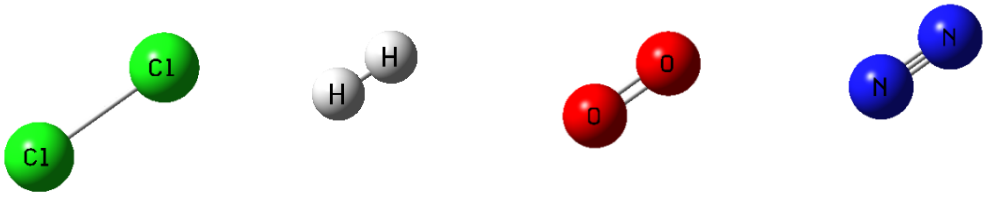
D. decreases, decreases

3. Rank the following compounds in order of increasing viscosity.



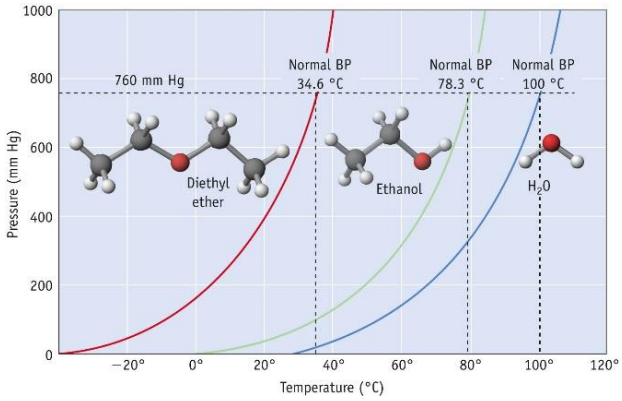
A B C D

4. Which row do you think has the correct heats of vaporization associated with the compound (in its liquid form)?



A.	0.5	10.4	2.8	3.4
B.	10.4	0.5	3.4	2.8
C.	2.8	3.4	0.5	10.4

5. According to this plot increasing the temperature will _____ the vapor pressure:



A. increase

B. not change

C. decrease

6. The normal boiling point of a liquid

A. is the temperature at which liquid and vapor are in equilibrium.

B. varies with atmospheric pressure.

C. is the temperature at which the vapor pressure is 1 atm.

D. is the temperature at which the vapor pressure equals the external pressure.

7. Solutions of benzene (C_6H_6) and toluene (C_7H_8) are ideal. At 30 °C, the vapor pressure of pure benzene is 125 mm Hg while that of pure toluene is 39.0 mm Hg. If a solution is prepared by mixing 1 mol of benzene and 2 mol of toluene at 30 °C, the vapor at equilibrium will have

A. more moles of benzene than toluene.

B. more moles of toluene than benzene.

C. the same number of moles of toluene as of benzene.

8. The equilibrium vapor pressure of a given liquid will decrease if

A. the liquid is moved to a container in which its surface area is much smaller.

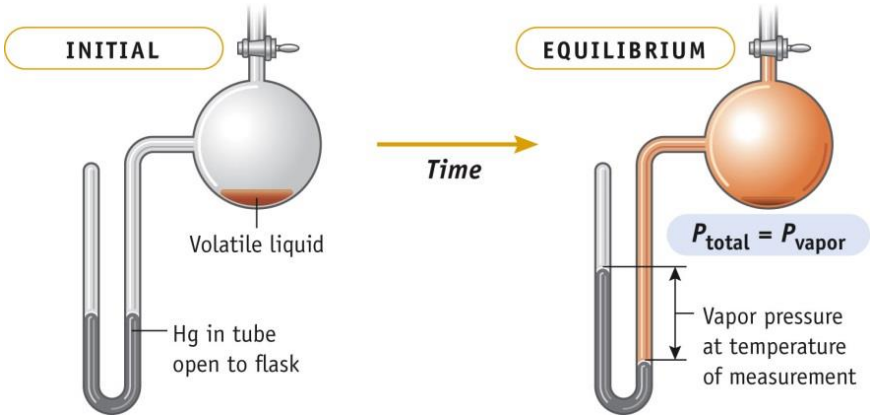
B. the volume of liquid in the container is decreased.

C. the volume of the vapor phase is increased.

D. the temperature is decreased.

9. The vapor pressure of liquid bromine at room temperature is 168 torr. Suppose that bromine is introduced drop by drop into a closed system containing air at 775 torr and room temperature. (The volume of liquid bromine is negligible compared to the volume of the system.) If the bromine is added until no more vaporizes and a few drops of liquid are present in the flask, what would be the total pressure?

Torr



What would be the total pressure if the volume of this closed system were decreased to one half its original value at the same temperature?

Torr

10. Gasoline is a mixture of hydrocarbons, a major component of which is octane ($CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_3$). Octane has a vapor pressure of 13.95 torr at 25 °C and a vapor pressure of 144.78 torr at 75 ℃. Calculate the heat of vaporization of octane in kJ/mol.

[ ] kJ/mol

11. Carbon tetrabromide is more volatile than carbon tetrachloride.

[ ]
A. True
B. False

12. The normal boiling point of benzene is 80.1 ℃, and the heat of vaporization is 30.7 kJ/mol. What is the boiling point of benzene in ℃ on top of Mt. Everest where the pressure is 260 mm Hg?

[ ] °C

13. We have three sealed flasks with liquid methanol in each one (a non-volatile dye was added in order to make the solution visible).

Which one has the greater number of moles of methanol vapor?

[ ]
A. blue
B. red
C. yellow
D. all are the same.
E. Not enough information.

Which one has the greater pressure on the inside?

A. blue

B. red

C. yellow

D. all are the same.

E. Not enough information.

14. The boiling point of water is about 200°C higher than one would predict from the boiling points of hydrogen sulfide and hydrogen selenide. One may explain this apparent anomaly by which of the following?

A. The H-O covalent bond is much stronger than the H-S and H-Se bonds.

B. Water has the lowest molecular weight.

C. Water is less polar than hydrogen sulfide and hydrogen selenide.

D. The water molecule is lighter than the other two molecules.

E. The intermolecular attractive forces are much greater in water than in hydrogen sulfide and hydrogen selenide.

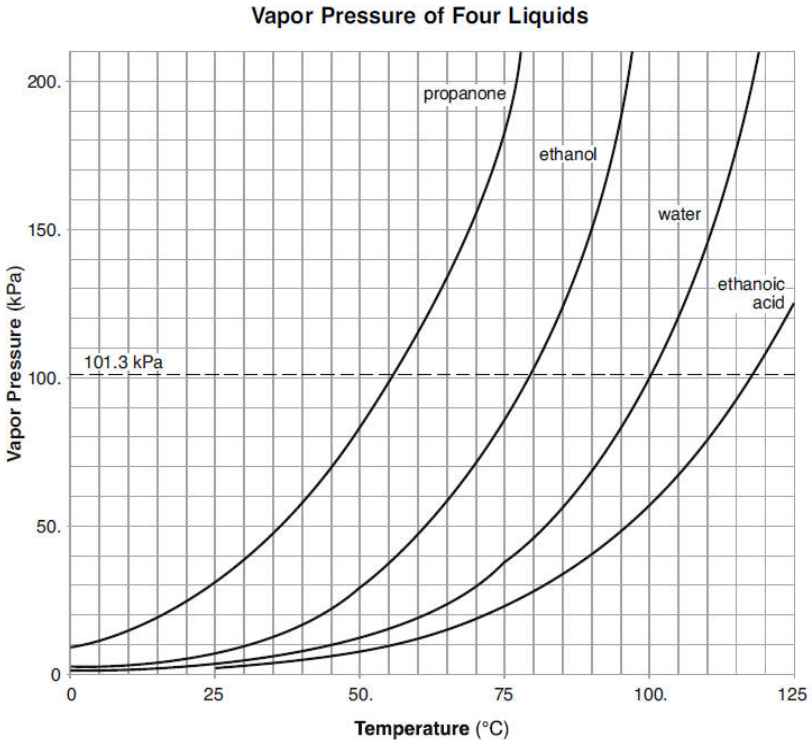
15. Which of these species has the weakest intermolecular forces?

A. Ethanol

B. Propanone

C. Ethanoic acid

D. Water



What is the approximate normal boiling point for ethanol?

°C

Match the IMF to the substances below.

A. dipole-dipole forces
B. H_2 + H_2O
C. hydrogen bonding
D. ion-dipole forces
E. dispersion forces
F. ionic bond

16. LiI

17. CH_3OH

18. CH_3CH_3

19. CH_2F_2

20. LiI and H_2O