
Homework 6. Chapter 6

1. **Which of the following does not accurately describe a characteristic of gases?**
 - a. Gas molecules can be "squeezed together" to fit into a container.
 - b. The gas we exhale expands out continuously into the atmosphere.
 - c. The vapors of two immiscible liquids (liquids that do not mix together, but form separate layers) will mix completely.
 - d. If a large container is filled with a small amount of gas, the gas will occupy only a portion of the container.
 - e. One must include the temperature, pressure, volume occupied and number of moles or molecules to completely describe a gas.
2. **Convert 699 torr to 1) atm, 2) mmHg and 3) kPa.**

	1) atm	2) mmHg	3) kPa
Option 1:	5.31×10^5	5.31×10^5	93.2
Option 2:	0.920	699	93.2
Option 3:	699	5.31×10^5	5.24×10^3
Option 4:	6.90	6.995×10^5	7.08×10^4
Option 5:	0.920	699	9.32×10^4

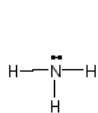
 - a. Option 1 b. Option 2 c. Option 3 d. Option 4 e. Option 5
3. **A given mass of oxygen at room temperature occupies a volume of 500.0 mL at 1.50 atm pressure. What pressure must be applied to compress the gas to a volume of only 150.0 mL?**
 - a. 500 atm b. 150 atm c. 5.00 atm d. 1.50 atm e. 0.500 atm
4. **How many moles of gas are there in a gas-filled balloon which has a volume of 67.0 L at a pressure of 742 mmHg and a temperature of 25.0°C?**
 - a. 2.24 mol b. 2.67 mol c. 2.81 mol d. 31.9 mol e. 1.71×10^3 mol
5. **Carbon dioxide acts as a greenhouse gas by**
 - a. absorbing visible radiation b. absorbing ultraviolet radiation c. absorbing infrared radiation
 - d. storing solar energy e. trapping sunlight during photosynthesis
6. **Which of the following does the Kinetic-Molecular Theory assume?**
 - a. A gas is composed of atoms or molecules whose size is proportional to the distance between them. (Large distance, large atom or molecule)
 - b. The average kinetic energy of a gas molecule increases as the temperature increases.
 - c. Gas molecules are moving randomly in various directions at one speed.
 - d. The forces of attraction and repulsion between gas molecules are proportional to the size of the molecule.
 - e. Small amounts of energy are lost with each collision of gas molecules.
7. **Of the following gases, which will behave most like an ideal gas?**
 - a. N₂ b. HF c. NH₃ d. H₂O e. CO
8. **Consider a gas mixture of 21% O₂, 78% N₂, 0.5% CO₂ and trace amounts of Ar. Which of the following represents the total pressure exerted by the mixture?**
 - a. $P(\text{O}_2) + P(\text{N}_2) + P(\text{CO}_2)$ b. $P(\text{O}_2) + P(\text{N}_2) + P(\text{CO}_2) + P(\text{Ar})$
 - c. $P(\text{O}_2) + P(\text{N}_2)$ d. $P(\text{N}_2)$
 - e. The pressure of the mixture is independent of the partial pressures of the individual gases.
9. **The best explanation for the existence of a meniscus observed when water is placed in a glass tube of small diameter is**
 - a. the viscosity of the water is greater than the viscosity of the glass.
 - b. surface tension of the water causes it to "bead up" inside the container.
 - c. the molecules are forced closer together because of London forces.
 - d. the adhesive forces between the water molecules and the walls are greater than the cohesive forces between the water molecules.
 - e. the hydrogen bonds between water molecules are greater than the attractions between the water molecules and the walls of the container.
10. **What is the term that describes a solid changing to a vapor at a temperature less than its melting point?**
 - a. evaporation b. Sublimation c. Dissociation d. Condensation e. supercooling

11. Which of the following statements concerning liquids is(are) true?

1. Liquids diffuse slowly when compared with solids.
2. Volatile liquids have higher vapor pressures at room temperature.
3. The volume of a liquid does not change with pressure.

- a. 1 only b. 2 only c. 3 only
d. 1 and 2 only e. 2 and 3 only

12. Which of the following molecule wouldn't show hydrogen bonding?



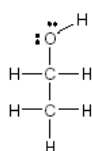
A. NH_3



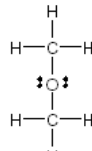
B. HF



C. H_2O



D. ethanol



E. diethyl ether

13. CaCl_2 , calcium chloride, is a

- a. polar molecular solid b. nonpolar molecular solid c. covalent network solid
d. ionic solid

14. Which of following solids does not have covalent network structure ?

- a. NaCl b. C (graphite) c. C (diamond) d. SiO_2 (quartz)

15. Which choice is an example of an polymeric amorphous solid?

- a. nylon
b. potassium sulfate
c. potassium
d. iodine
e. quartz