Exam #8 Objectives

CHEM 1090 General Chemistry I

Text Reading

Chapter 10: sections 1-6
Chapter 11: sections 1-2

Homework Assignment

McGraw-Hill LearnSmart and Connect online assignments.

Concepts

1. Describe the concept of pressure.
2. Discuss how a barometer works.
3. Given the pressure conversion factors, convert between atm, pascal, Torr, and bar.
4. Discuss why gas law problems must use Kelvin for temperature and not Celsius.
5. Discuss how pressure, volume, temperature, and moles of gas relate to each other and how they change with respect to each other.
6. Demonstrate the ability to use the combined gas law and its various simplified forms to do calculations.
7. Demonstrate the ability to use the ideal gas constant to do basic calculations and those that involve density and molecular mass.
8. Demonstrate the ability to use Dalton's law of partial pressure in calculations.
9. Calculate mole fraction using both moles and partial gas pressures.
10. Discuss the differences between a real gas and an ideal gas.
11. Using a table of electronegativities and the shape, determine if a given molecule should have a permanent dipole.
12. Distinguish between dispersion forces, dipole-dipole forces, ion-dipole forces, and hydrogen bonding.
13. Determine the expected intermolecular forces for a given substance.
14. Relate boiling point and vapor pressure to intermolecular forces.
15. Demonstrate a working vocabulary of the following terms:

atm	ideal gas	pressure
bar	ideal gas law	real gas
barometer	intermolecular forces	STP
boiling point	ion-dipole forces	surface tension
combined gas law	Kelvin	Torr
Dalton's law of partial pressures	mole fraction	van der waals forces
dipole-dipole forces	nonpolar	vapor pressure
dipole moment	pascal	viscosity
dispersion forces	polar bond	
hydrogen bond	polarity	

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16. Memorize and demonstrate the ability to use the following equation(s):

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$$P_T = P_1 + P_2 + P_3 + \ldots \qquad \mathrm{X}_i = \frac{n_i}{n_T} \qquad \mathrm{X}_i = \frac{P_i}{P_T}$$