Ch. 11 Practice Questions

1) Which of the following statements about pressure is FALSE?
   A) A deep well dug in the ground must have the pump located at the bottom of well in order to have the water come to the surface.
   B) The atmosphere has a pressure as the components of air collide with surfaces.
   C) Pressure is caused by gas molecules colliding with surfaces.
   D) After creating a pressure difference, the atmospheric pressure can push liquid up a straw.
   E) All of the above statements are true.

2) Which of the following is NOT part of the Kinetic Molecular Theory?
   A) The size of the actual gas particles is small compared to the volume of the whole gas.
   B) The average energy of the particles is dependent on the molecular mass of the particle.
   C) Gas particles do not repel each other.
   D) There is a large distance between gas particles as compared to their relative size.
   E) All of the above statements are part of the Kinetic Molecular Theory.

3) A barometer uses mercury because:
   A) it is the traditional substance used, water could be as easily used.
   B) the density of mercury is very large which allows the barometer to be short.
   C) it is a convenient, safe, lightweight material.
   D) it is the only liquid metal at room temperature.
   E) All of the above are true.

4) What is the equivalent pressure of 1520 torr in units of atm?
   A) 380.
   B) 203,000
   C) 2.00
   D) 1520
   E) none of the above

5) A balloon filled with 0.500 L of air at sea level is submerged in the water to a depth that produces a pressure of 3.25 atm. What is the volume of the balloon at this depth?
   A) 6.50 L
   B) 1.63 L
   C) 0.154 L
   D) 0.615 L
   E) none of the above

6) Which one of the following is impossible for an ideal gas?
   A) $V_1T_1 = V_2T_2$
   B) $V_2 = (\frac{T_2}{T_1})\, V_1$
   C) $\frac{V_1}{T_1} = \frac{V_2}{T_2}$
   D) $\frac{1}{V_2} = \frac{T_1}{T_2}\,(\frac{1}{V_1})$
   E) none of the above

7) When must temperature values in gas law calculations be expressed in kelvin units?
   A) only for the Combined Gas law
   B) only for Charles's law
   C) only for the Ideal Gas law
   D) never
   E) always

8) A 5.00 liter balloon of gas at 25°C is cooled to 0°C. What is the new volume (liters) of the balloon?
   A) 0 liters
   B) 22.4 liters
   C) 4.58 liters
   D) 5.46 liters
   E) none of the above

9) A balloon originally had a volume of 0.439 L at 44°C and a pressure of 729 torr. To what temperature must the balloon be cooled to reduce its volume to 378 mL if the pressure remained constant?
   A) 38°C
   B) 0°C
   C) 273°C
   D) 95°C
   E) none of the above

10) Gas density can be calculated by dividing the mass of gas by its volume. If you took a balloon of gas and then warmed the balloon in a sunny window, what can now be said about the density of the gas in the balloon?
   A) The gas density will increase.
   B) The gas density will remain the same.
   C) The gas density will decrease.
   D) The density of gases is independent of temperature.
   E) none of the above

11) A certain volume of gas was confined in a rigid container. If the pressure of the gas sample in the container was doubled, what happened to the temperature?
   A) The Kelvin temperature decreased one–third.
   B) The Kelvin temperature increased four times.
   C) The Kelvin temperature doubled.
   D) The Kelvin temperature decreased by one–half.
   E) not enough information

12) If the initial pressure of a system was 1.00 atm and the volume was halved and the kelvin temperature was tripled, what is the final pressure?
   A) 0.667 atm
   B) 2.00 atm
   C) 6.00 atm
   D) 1.50 atm
   E) not enough information

13) A sample of helium gas initially at 37.0°C, 785 torr and 2.00 L was heated to 58.0°C while the volume expanded to 3.24 L. What is the final pressure in atm?

A) 0.681
B) 1.79
C) 3.21
D) 517
E) none of the above

14) How many moles of gas were added to a balloon that started with 2.3 moles of gas and a volume of 1.4 L given that the final volume was 7.2 L?

A) 12
B) 0.085
C) 9.5
D) 4.4
E) none of the above

15) If each of the following gas samples have the same temperature and pressure, which sample has the greatest volume?

A) 1 gram of Ar
B) 1 gram of O_2
C) 1 gram of H_2
D) all have the same volume
E) not enough information

16) What is the temperature (°C) of 2.48 moles of gas stored in a 30.0 L container at 1559 mm Hg? (R= 0.0821 L atm/ mol K)

A) 29
B) 302
C) –84
D) 189
E) none of the above

17) A 3.76 g sample of a noble gas is stored in a 2.00 L vessel at 874 torr and 25°C. What is the noble gas? (R= 0.0821 L atm/ mol K)

A) He
B) Ne
C) Ar
D) Kr
E) not enough information

18) If a mixture of gases contained 78% nitrogen at a pressure of 984 torr and 22% carbon dioxide at 345 torr, what is the total pressure of the system?

A) 1.75 atm
B) 639 torr
C) 1,329 atm
D) 17.5 cm Hg
E) none of the above

19) The vapor pressure of water at 20.0°C is 17.5 mm Hg. If the pressure of a gas collected over water was measured to be 453.0 mm Hg. What is the pressure of the pure gas?

A) 0.573 atm
B) 0.596 atm
C) 0.0230 atm
D) 0.619 atm
E) none of the above

20) Which of the following gas law relationships is true?

A) $V \propto n$
B) $V \propto T$
C) $V \propto 1/P$
D) all of the above are true
E) none of the above are true

21) Suppose you had a balloon containing 1 mole of helium at STP and a balloon containing 1 mole of oxygen at STP. Which statement is TRUE?

A) The balloons will have the same volume.
B) The balloons will have the same mass.
C) Both A and B are true.
D) Neither A nor B are true.
E) not enough information

22) Ammonia gas decomposes according to the equation:

$$2NH_3(g) \rightarrow N_2(g) + 3H_2(g)$$

The produced gases are separated and stored at STP. If 15.0 L of nitrogen is formed at STP, how many liters of hydrogen will be produced (also measured at STP)?

A) 30.0 L
B) 15.0 L
C) 90.0 L
D) 45.0 L
E) not enough information

Answer Key
Testname: PRACTICEQ_CH11

1) E
2) B
3) B
4) C
5) C
6) A
7) E
8) C
9) B
10) C
11) C
12) C
13) A
14) C
15) C
16) A
17) C
18) A
19) A
20) D
21) A
22) D