Chem11 Gases : Test - 100

1) The pressure of the atmosphere at sea level is _____ kPa.

2) S.T.P. means _____ °C and _____ atm. of pressure.

3)a) State Avogadro's law. _____

b) The volume of 1.0 mole of any gas at S.T.P. is _____ L.

4) Give the names of the following laws. (Choose from; Ideal, Charles, Dalton's Law of Partial Pressures, Boyle, Gay Lussac).

a) $V = kT$ _____

b) $P_t = P_1 + P_2 + P_3 + ...$ _____

c) PxV = constant _____

d) $P = kT$ _____

e) $PxV = nRT$ _____

5) Convert the following temperatures.

a) 25°C = _____ K. b) 200. K = _____°C

6) A brick has a weight of 47 N. Its dimensions are 12 cm by 7.0 cm by 18 cm. Find the largest pressure (in kPa) that the brick can exert.

7) In terms of the **Kinetic Molecular Theory** ;

a) Explain pressure -

b) Explain temperature -

8) A bicycle tire pump has a volume of 650 cm^3 at 101.3 kPa. Find the volume if the pressure is increased to 350 kPa.

9) A sample of gas has a volume of 3.5 L at a temperature of 53°C. Find the volume if the temperature is lowered to -27°C ?

10) The pressure in an aerosol can is 2.6 atm at 22°C. Find the new pressure if the temperature is increased to 79°C.

11) If 3.5 L of CO_2 gas at 210 kPa and 55°C is compressed to 350 kPa and heated to 95°C, find the new volume.

12) Find the number of moles of SO_2 gas that occupies 120 L at S.T.P.

13) Find the volume that 2.5 g of CO_2 gas will occupy at 22°C and a pressure of 110 kPa.

14) Find the density (g/L) of oxygen gas at S.T.P.

15) A sample of gas contains 0.25 mol of Ar, 0.10 mol of N_2, and 0.30 mol of He. The total pressure is 1.3 atm. Find the partial pressure of He in atm.

16) The world record for diving without a breathing apparatus is 125 meters. What is the pressure at this depth ?

17) If the absolute temperature of a quantity of gas is halved and the volume is tripled, what happens to the pressure?

Answers : 1) 101.3 kPa, 2) 0.0, 1.0, 3)a) Equal volumes of gases contain equal numbers of particles. (P, T constant), b) 22.4, 4)a) Charles', b) Dalton's Law of Partial Pressures, c) Boyle's, d) Gay-Lussac's, e) Ideal Gas Law., 5)a) 298, b) -73, 6) 5.6 kPa, 7)a) Pressure is due to the collisions of particles with the container walls., b) It is a measure of the average kinetic energy of the particles of a gas., 8) 190 cm^3, 9) 2.6 L, 10) 3.1 atm, 11) 2.4 L, 12) 5.4 mol, 13) 1.3 L, 14) 1.43 g/L, 15) 0.60 atm, 16) about 13.5 atm, 17) It is divided by a factor of six.