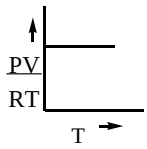
STATES OF MATTER

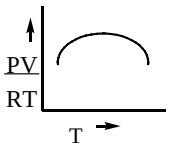
1. Volueme occupied by 7gm of Nitrogen at 27*C and 750mm Hg pressure is (BHU1997)

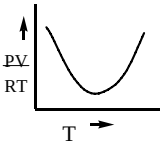
1)2.46litre 2) 4.24litre 3.)6.24litre 4)8.42litre

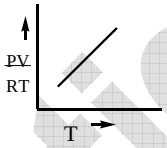
Hint:PV=(W/M)RT

2. For an ideal gas the graph between PV/RT and T is (M-1995)

1) 

2) 

3) 

4) 

3. One mole of argon will have least density at (E-1998)

1) STP 2) 0°C, 2atm

3) 273°C, 2atm 4) 273°C, 1atm

Hint: ‘d ‘is proportional to p/T

4. What are the conditions under which the relation between ‘V’ and ‘n’ are plotted (2001)

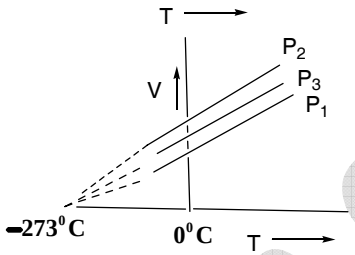
1) At constant P 2) At constant P, V

3) At constant T, V 4) At constant P, T

5. The volume-temperature graphs of a given mass of an ideal gas at constant pressures are shown below. What is the correct order of pressures? (2006)

1) $P_1 > P_3 > P_2$

2) $P_1 > P_2 > P_3$



3) $P_2 > P_3 > P_1$

4) $P_2 > P_1 > P_3$

6. At standard pressure and temperature conditions the density of a gas in $g.lit^{-1}$, whose molecular weight is 45 (1996)

1) 2 2) 22.4 3) 11.2 4) 1000

Hint: at STP, d=GMW/22.4

7. The volume of 2.8g of carbon monoxide at 27°C and 0.821 atm pressure is

(R= 0.0821 lit-atm mol^{-1} K^{-1}) (1998)

1) 1.5 lit 2) 0.3 lit 3) 3 lit 4) 30lit

8) 7.5 gr of a gas occupies a volume of 5.6 lit at NTP. The gas is (2001)

1) CO_2 2) CH_4 3) NO 4) SO_2

9. What is the density (in g lit^{-1}) of CO_2 at 400 K and exerting a pressure of 0.0821 atm (R = 0.0821 lit atm mol^{-1} k^{-1}) (2002)

1) 0.01 2) 0.11 3) 2.5 4) 44

10. The volume of a gas measured at 27°C and 1 atm pressure is 10 litres. To reduce the volume to 5 litres at 1 atm pressure, the temperature required is

(AFMC)

1) 75K 2) 150 K 3) 225 K 4) 300 K

11. The density of a gas 'S' at 2 atm and 27^0C is 1.3 gm / lit. Then the gas 'S' may be

1) CH_4 2) O_2 3) SO_2 4) CO_2

HINT: PM=dRT

12. The weight of 112 ml of oxygen at STP, on liquifaction would be (DPMT)

1) 0.32g 2) 0.64g 3) 0.16g 4) 0.96g

13. A gaseous mixture of three gases A, B and C has a pressure of 10atm. The total number of moles of all the gases is 10. The partial pressure of A and B are 3 and 1 atm respectively. If C has a molecular weight of 2, what is the weight of C in grams present in the mixture?

(1998)

1) 6 2) 3 3) 12 4) 8

14. The total pressure of a mixture of 6.4 grams of oxygen and 5.6 grams of nitrogen present in a 2 lit vessel is 1200mm. What is the partial pressure of nitrogen in mm?

(2000)

1) 1200 2) 600 3) 900 4) 200

15. At 27^0C, a closed vessel contains a mixture of equal weights of helium (mol. wt = 4), methane (mol.wt = 16) and sulphur dioxide (mol. wt = 64). The pressure exerted by the mixture is 210 mm. If the partial pressure of helium methane and sulphurdioxide are P_1, P_2 and P_3 respectively, which one of the following is correct? (E-2002)

1) $P_3 > P_2 > P_1$ 2) $P_1 > P_2 > P_3$ 3) $P_1 > P_3 > P_2$ 4) $P_2 > P_3 > P_1$

16. x gm of water is mixed with 69 gm of ethanol. The mole fraction of ethanol in the resulting solution is 0.6. What is the value of 'x' in gm (M-2004)

1) 54 2) 36 3) 180 4) 18

17. A and B are ideal gases. The molecular weights of A and B are in the ratio of 1 : 4. The pressure of a gas mixture containing equal weights of A and B is P atm. What is the partial pressure (in atm) of B in the mixture? (E-2005)

1) P/5 2) P/2 3) P/2.5 4) 3P/4

18. Gas eqation PV=nRT is obeyed by (BHU2000)

1)isothermal process only 2) adiabatic process only 3)both 1 and 2 4)none

19. The molecular weight of a gas which diffuses four times faster than O2 is (AFMC2002)

1) 2 2) 4 3) 8 4) 16

20) The rms speed of Hydrogen is $\sqrt{7}$ times the rms speed nitrozen. If Tis the temprature of the gas, then

1) $T_{H_2} = T_{N_2}$ 2) $T_{H_2} > T_{N_2}$ 3) $T_{H_2} < T_{N_2}$ 4)none

KEY:

1)3 2) 1 3) 4 4) 4 5) 1 6) 2 7) 1 8) 3 9) 3 10) 2

11) 2 12) 1 13) 3 14) 2 15) 2 16) 4 17) 1 18)3 19)2 20)3