

Real Gases

1. Volume occupied by 7gm of Nitrogen at 27°C and 750mm Hg pressure is

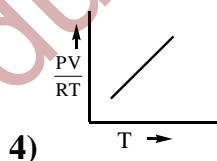
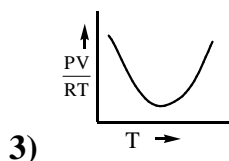
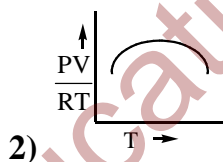
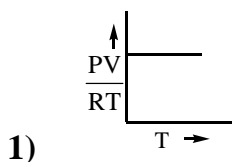
(BHU1997)

- 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)



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)

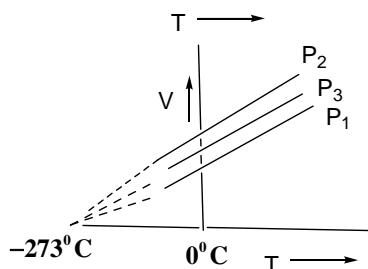
- 1) At constant P 2) At constant P, V
3) At constant T, V 4) At constant P, T

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) $P_1 > P_3 > P_2$ 3) $P_2 > P_3 > P_1$
 2) $P_1 > P_2 > P_3$ 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, $d = \text{GMW}/22.4$

7. The volume of 2.8g of carbon monoxide at 27°C and 0.821 atm pressure is ($R = 0.0821 \text{ lit-atm mol}^{-1} \text{ K}^{-1}$) (1998)

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

8. 7.5 g 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 0.0821atm ($R = 0.0821 \text{ lit atm mol}^{-1} \text{ k}^{-1}$) (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 27⁰C is 1.3 gm / lit. Then the gas 'S' may be

- 1) CH₄ 2) O₂ 3) SO₂ 4) CO₂

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 27⁰C, 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 P₁, P₂ and P₃ respectively, which one of the following is correct? (E-2002)

- 1) P₃ > P₂ > P₁ 2) P₁ > P₂ > P₃ 3) P₁ > P₃ > P₂ 4) P₂ > P₃ > P₁

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 equation $PV=nRT$ 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 O_2 is

(AFMC2002)

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

20. The rms speed of Hydrogen is $\sqrt{7}$ times the rms speed nitrogen. If T is the temperature 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