

CHAPTER 3: (GASES)

Short Questions:

1. Define pressure. Give its different units.
2. Write down the value of atmospheric pressure in four different units.
3. The plot of PV Vs P is a straight line at constant temperature and with a fixed number of moles of an ideal gas. Justify.
4. Explain Boyle's law with the help of KMT.
5. Justify that volume of gas becomes theoretically zero at -273°C .
6. What do you mean by absolute zero temperature of gases?
7. What are isotherms?
8. Why lighter gases diffuse more rapidly than heavier gases?
9. Calculate the density of methane at STP.
10. Define Avogadro's Law.
11. Calculate number of molecules and number of atoms in 20 cm^3 of CH_4 at 0°C and 700mm .
12. State Joule-Thomson Effect. Write its application.
OR Define Joule-Thomson Effect.
13. Hydrogen and Helium are ideal at room temperature but SO_2 and Cl_2 are non-ideal.
14. Some of the postulates of Kinetic Molecular Theory are faulty. Justify
OR Write down two faulty assumptions of KMT of gases.
15. Calculate the value of R in S.I units.
16. Calculate the value of R in units' $\text{atm}\cdot\text{dm}^3\cdot\text{k}^{-1}\cdot\text{mol}^{-1}$.
17. Derive expression for the molecular mass of the gas using general gas equation.
18. Derive expression for the density of the gas using general gas equation.
19. Give four fundamental postulates of KMT of gases.
20. Derive Graham's law of diffusion in the light of KMT of gases.
21. Prove that $P_A = P_t \cdot X_A$
22. Why regular air can't be used in diver's tanks?
23. Calculate fraction of total pressure exerted by Oxygen when equal masses of CH_4 and O_2 are mixed into an empty container at 25°C .
24. What do you mean by critical temperature of gases?
25. H_2 and He behave ideally while Cl_2 and SO_2 do not. Why?
26. SO_2 is comparatively non-ideal at 273K but behave ideally at 373K .
27. Rate of diffusion of ammonia is more than that of HCl. Why?
28. Pressure of ammonia gas at given conditions is less as calculated by Vander Waal equation than that calculated by general gas equation. Why?
29. Where do natural and artificial plasma exist?
30. Write two characteristics of plasma.
31. Define Plasma. Give its one application.
32. Give two applications of Plasma.
33. What is physical significance of Vander Waal's constants 'a' and 'b'.
34. What are the units of Vander Waal's constants 'a' and 'b'.
35. What are Neon advertisement signs?
36. How is fluorescent light bulb different from ordinary light bulb?

Long Questions:

1. Describe Dalton's law of partial pressures. Write its three applications.
2. State and explain Graham's law of diffusion of gases.
3. Calculate the density of methane at STP. What happens to...(Example#4).
4. 250 cm^3 of hydrogen effuses 4 times more(Example#7)
5. Write a note on Linde's method of liquefaction.

6. 1 mole of methane gas.....(Example# 08)
7. Calculate the mass of 1dm^3 of ammonia at.....(Example# 5)
8. How pressure and volume were corrected by vander Waal?
9. Derive Boyle's law and Charle's law from kinetic equation of gases.