# CLASS – XI– STATES OF MATTER

1.What is absolute zero temperature & How Charles law leads to Absolute zero temperature?

2.Why R is called as Universal gas constant ? Give its significance?

3.Derive Ideal Gas equation?

4.Define (a)Boyle's constant (b) Charle's constant.

5.A vessel is 120 ml capacity contains certain amount of gas at 35$^{o}$C and 1.2 bar pressure .The gas is transferred to another vessel of volume 100 ml at 35$^{o}$C. What would be its pressure? Ans= 1.44 Bar

**6.** A balloon is filled with an ideal gas is taken from the surface of the sea deep to a depth of 100 m. What will be its volume in term of its original volume. Ans.= 9.3 % of its original volume.

7. Why Mountaineer's carry oxygen cylinder with them?

8.Why Hot air balloon rises up in the sky?

9.What volume of air will be expelled from a vessel containing 400 cc at 7$^{0}$C when it is heated to 27$^{0}$C at the same temperature. Ans = 28.6 cc

10. It is desired to increase of the volume of a gas by 20% without changing the pressure . To what temperature , the gas must be heated if the initial temperature of gas must be heated if the initial temperature of gas is 27$^{0}$ C. Ans = 360 K or 87$^{0}$ C

11. A steel tank containing air at 15 atm pressure at 15$^{0}$C is provided with a safety valve that will yield at a pressure 30 atm . To what minimum temp. must the air be heated to blow the safety valve ? Ans. 576K or 303$^{0}$ C

12. 2.9 g of a gas at 95 $^{o}$C occupied the same volume as 0.184 g of hydrogen at 17$^{o}$C at the same pressure .What is the molar mass of gas. Ans. . 40 g mol$^{-1}$

13.At 0$^{o}$C, the density of a gaseous oxide at 2 bar is the same as that of nitrogen at 5 bar . What is the molecular mass of oxide . Ans. 70 amu

14. 4. Pressure of 1 g of an ideal gas A at 27$^{o}$C is found to be 2 bar . When 2 g of another ideal gas B is introduced in the same flask at same temperature, the P be come 3 – bar. Find the relationship b/n their molecular masses? Ans. $M_B = 4\ M_A$

15. Why the size weather balloon increase as it go up in the sky **?**

16. A Ne – dioxygen mixture consist of 70.6 g & 167.5 g of Ne. If the Pressure of the mixture in cylinder is 25 bar , what will be the Partial Pressure of $O_2$ & Ne. ( Atomic Mass of Ne – 20).

17. Density of a gas is found to be 5.46 g/dm$^3$ at 27$^{0}$C at 2 bar Pressure. What will be its density at STP? Ans= ans = 3 g/dm$^3$

18.What is the difference b/n –

(a)Diffusion & Effusion (b)Evaporation & boiling (c) Critical temperature & boiling point.

19.Why Cooking of food is difficult on mountains?

20.Why hot soup is testier than cold?

21.Why rain drops are spherical?

22.Derive the relation b/n K.E. & T.

23.What are real gases. Give an equation which real gases follow at all the temperature & pressure?

24. Write the significance of vander waal's constant a & b?

25.Write the units of (a)Coefficient of viscosity (b)Surface energy.

26.Write a short note on Dispersion forces & which type of forces exist b/n following pair-

(a)$Na^+$ & $C_6H_6$ (b) HCl & $C_6H_6$ (c) HCl & $H_2O$ (d) HF & $H_2O$ (e) $CCl_4$ & $I_2$