Chemistry - 11th Class Chemistry Short Questions Chapter 3 Preparation

Q1. The amount of pressure which is decreased due to the forces of attraction is given by a/V_2 where 'a' is the van der Waal's constant and V is the volume of the vessel.

Ans 1:   The pressure p is proportional to the number of molecules which are hitting on the walls of the vessel/area/sec. The number of molecules/area/sec. Is proportional to the density of the gas. P' (lessened pressure) depends upon the number of molecules which are attracting each other.

Q2. Justify that 1 cm^3 of H$_2$ 1 cm^3 of CH$_4$ at STP will have same number of molecules. When one molecule of CH$_4$ is 8 times heavier that of hydrogen.

Ans 1:   According to Avogadro's law, equal volumes of the ideal gases at same temperature and pressure have equal number of molecules. So 1cm^3 of H$_2$ and 1 cm^3 of CH$_4$ at STP will have an equal number of molecules. No doubt, the molecule of methane is eight times heavier than H2, but the sizes of the gas molecules and their masses don't disturb the volumes. The reason is that at STP, one molecule of the gas is at a distance of three hundred times than its diameter.

Q3.

Gases deviate more from the general gas equation at 0° C and deviate to less extent at 100° C. why?

Ans 1:   At 0° C, the forces of attractions are dominant and gases become non-ideal. At high temperature attractive forces become less dominant and gases behave ideally.

Q4. How the density of an ideal gas doubles by doubling the pressure or decreasing the temperature on Kelvin scale by 1/2?

Ans 1:

Q5. Justify that the volume of given mass of a gas becomes theoretically zero at -273°C.

Ans 1:

Q6. Lighter gases diffuse more rapidly than heavier gases. Give reason.

Ans 1:   At a given temperature the average. K.E. of different gas molecules are same. Since their masses are different, so their velocities will also be different. The lighter molecules will have greater velocities and so they WI diffuse rapidly.

Q7. How the behavior of real gases is given by van der waal's equation?

Ans 1:   The constant 'a' and 'b' called van der Waal's constants give the quantitative measurements of attractive forces and sizes of the gas molecules. These parameters are very important for the real gases.

Q8. In Joule-Thomson effect sudden expansion of the gas molecules needs energy. Why?

Ans 1: In the compressed state, there are sufficient attractive forces among. The molecules of the gas. During sudden expansion, the energy is required to overcome the intermolecular attractions. Moreover, the molecules need extra energy to run away in vacuum.

Q9. What are various scales of thermometry?

Ans 1:

Q10. Charles's law is not obeyed when the temperature is measured on Celsius scale. Justify it.

Ans 1: