Problem Based on Intermolecular Forces Versus Thermal Energy

MENT OF MASS, VOLUME, PRESSURE & TEMPERATURE.

VERY SHORT ANSWER TYPE QUESTIONS :

VSA.1 Which model is used to explain the properties of gases ?

Sol. Microscopic model.

VSA.2 Who gave the absolute scale of temperature ?

Sol. Lord kelvin.

VSA.3 The temperature at which the volume of the gas is zero is.

Ans. O'K

VSA.4 What is the name of the instrument used for the measurement of pressure of a gas ?

Ans. Manometer.

VSA.5 What is the relationship between kelvin degree and Celsius degree.

Ans. $t^oC = t + 273.15$ K.

VSA.6 Why are aerated water bottles kept under water during summer ?

Sol. It is done so as to reduce temperature, which will reduce pressure inside, otherwise, the bottle may burst.

VSA.7 Liquid ammonia bottle is cooled before opening the seal. Why ?

Sol. NH_3 is liquified at high pressure. It is cooled so as to reduce pressure so that it does not burst.

VSA.8 The tyre of automobile is inflated to lesser pressure in summer than in winter. Why ?

Sol. Air expands more during summer than winter.

VSA.9 The size of weather balloon becomes larger and larger as it ascends up into higher altitudes. Why ?

Sol. At higher altitudes, atmospheric pressure is less, therefore, air inside balloon exerts pressure and it becomes larger and larger.

VSA.10 Name the S.I. unit of pressure and give its definition.

Sol. Pascal is SI unit of pressure. It is defined as pressure exerted when 1 newton force is acting per square metre area.

VSA.11 Why is air denser at lower level than at higher altitudes ?

Sol. Heavier air will come down and lighter air goes up. Air at lower level is denser since it is compressed by mass of air above it.

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SHORT ANSWER TYPE QUESTIONS :

SA.1 How do you convert.

(i) Pressures in atmosphere in to SI units ?

(ii) Temperature in ^oC to temperatures in ^oF.

Sol. (i) 1 atm.= 101, 325 Pa or N/m^2

$= 10^5$ Pa.

(ii) $^oC = \frac{5}{9}$ (^oF – 32).

SA.2 Arrange solid, liquid and gas in order of energy, giving reasons ?

Sol. Solid < Liquid < Gas.

This is because a solid absorbs energy to change in to a liquid which further absorbs energy to change in to a gas.

SA.3 Why are liquids like ether and acetone kept in cool places ?

Sol. It is because they are highly volatile i.e. have low boiling point. They will get vapourised even at room temperature.

SA.4 Tea or coffee is sipped from a saucer when it is hot. Why ?

Sol. It is done so as to increase surface area. Greater the surface area, more will be rate of evaporation and more cooling takes place.