

Answer on Question #51928-Physics-Field Theory

The specific heat of a gas

Has only one value

No answer

Is proportional to the square root of its absolute temperature

Can have any value between 0 and infinity

Solution

The specific heat of the gas can have any value oscillating in between zero to infinity depending on the matter in which the gas is being heated.

Answer: Can have any value between 0 and infinity.

6 At constant volume temperature is increased then

Collision on walls will be less

Collision frequency will be increases

Collision will be in straight line

Collision will not change

Solution

At constant volume temperature is increased then collision frequency will be increases. It is because the collision frequency is proportional to square root of the temperature.

Answer: Collision frequency will be increases.

7 A sample of an ideal gas occupies a volume V at a pressure P and absolute temperature T , the mass of each molecules is m . the expression for the density of gas is (k = Boltzmann constant

mkT

P/kT

P/kTV

Pm/kT

Solution

The pressure is given by the formula

$$P = nkT,$$

where n is the concentration of molecules in the volume.

The expression for the density of gas is

$$\rho = mn = m \frac{P}{kT} = \frac{Pm}{kT}.$$

Answer: $\frac{Pm}{kT}$.

8 If for a gas $\frac{R}{C_V} = 0.67$ this gas is made up of molecules which are

Diatomic

Mixture of diatomic and polyatomic

Mono atomic

Polyatomic

Solution

$$\frac{R}{C_V} = 0.67 \rightarrow \frac{C_V}{R} = \frac{1}{0.67} = \frac{3}{2} \rightarrow C_V = \frac{3}{2}R.$$

Hence, this gas is made up of mono atomic molecules.

Answer: Mono atomic.

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