

## Law of Equipartition of Energy.

For any system in thermal equilibrium, the total energy is equally distributed among its various degree of freedom. And the energy associated with each molecule of the system per degree of

freedom of the system is  $\frac{1}{2}kT$ .

Where  $k = 1.38 \times 10^{-23} \text{ J/K}$ ,  $T$  = absolute temperature of the system.

If the system possess degree of freedom  $f$  then

Total energy associated with each molecule	$\frac{f}{2}kT$
Total energy associated with $N$ molecules	$N \frac{f}{2}kT$
Total energy associated with each mole	$\frac{f}{2}RT$
Total energy associated with $\mu$ mole	$\frac{\mu f}{2}RT$
Total energy associated with each gram	$\frac{f}{2}rT$
Total energy associated with $M_0$ gram	$M_0 \frac{f}{2}rT$