Points to Remember

Absolute temperature	The temperature measured in relation to absolute zero using the kelvin scale is known as ***absolute temperature (or) thermodynamic temperature***.
Thermal equilibrium	Two or more physical systems or bodies are said to be in thermal equilibrium if there is no net flow of thermal energy between the systems.
Thermal (or) Heat Energy	Energy which is transferred between any two bodies due to the difference in their temperatures. SI unit Joule.
Calorie	One calorie is defined as the amount of heat energy required to rise the temperature of 1 gram of water through 1°C.
Kilocalorie	One kilocalorie is defined as the amount of heat energy required to rise the temperature of 1 kilogram of water through 1°C.

Expansion in Liquid or Gas

❋ **Real expansion**	The expansion observed when a liquid is heated directly without a container. ★ ***Coefficient of real expansion*** : It is the ratio of the true rise in the volume of the liquid per degree rise in temperature to its unit volume.
❋ **Apparent expansion**	The expansion of a liquid apparently observed without considering the expansion of the container. ★ ***Coefficient of apparent expansion***: It is the ratio of the apparent rise in the volume of the liquid per degree rise in temperature to its unit volume**.**
Boyle's law	When the temperature of a gas is kept constant, the volume of a fixed mass of gas is inversely proportional to its pressure.
Charles's law	When the pressure of gas is kept constant, the volume of a gas is directly proportional to the temperature of the gas.
Avogadro's law	At constant pressure and temperature, the volume of a gas is directly proportional to number of atoms or molecules present in it.
Real gases	If the molecules or atoms of a gas interact with each other with a definite amount of intermolecular or inter atomic force of attraction, then the gases are said to be ***real gases*.**
Ideal gas (or) Perfect gas	If the atoms or molecules of a gas do not interact with each other, then the gas is said to be an ***ideal gas*** or a ***perfect gas*.**

Important Formulae

★ Linear expansion, $\frac{\Delta L}{L_0} = \alpha_L \Delta T$

★ Superficial expansion, $\frac{\Delta A}{A_0} = \alpha_A \Delta T$

★ Cubical expansion, $\frac{\Delta V}{V_0} = \alpha_V \Delta T$

Important Laws

★ Boyle's law, $P \propto \frac{1}{V}$ **(i.e)** PV = constant

★ Charles's law, $V \propto T$ **i.e.,** $\frac{V}{T}$ = constant

★ Avogadro's law, $V \propto n$ **i.e.,** $\frac{V}{n}$ = constant

★ Ideal gas equation, PV = RT

Important SI Units

★ Temperature - kelvin (K).

★ Heat energy - joule (J)

Important Values

★ Avogadro's number = 6.023×10^{23} /mol

★ Boltzmann constant = 1.38×10^{-23} JK^{-1}

★ Universal gas constant = 8.31 J $mol^{-1}K^{-1}$

Important Scale of Temperature

★ Fahrenheit to Celsius : $°C = \frac{5}{9}(°F - 32)$

★ Celsius to Fahrenheit : $°F = \frac{9}{5}°C + 32$

★ Kelvin to Celsius : $K = °C + 273.15$

★ Celsius to Kelvin : $°C = K - 273.15$

★ Fahrenheit to Kelvin : $K = (°F + 460) \times \frac{5}{9}$

★ Kelvin to Fahrenheit : $°F = \frac{9}{5} K - 460$