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# THERMODYNAMICS BASICCONCEPTS PART-1

## Kerala PSC Expert

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# THERMODYNAMICS

It is the branch of engineering science which deals with the study of energy transfer and mass transfer and its interaction with system and surroundings.

# Macroscopic and Microscopic Approach of Thermodynamics

| MACROSCOPIC APPROACH | MICROSCOPIC APPROACH |
|---|---|
| In this individual molecular behavior is not taken into consideration and the average molecular behavior is studied. | In this the behavior of individual molecules is taken into consideration |
| It is also called Classical Thermodynamics | It is also called Statistical Thermodynamics |
| Continuum approach is used when the number of molecules is very large and the mean free path is very small as compare to the system dimensions. | This is used in very low temperature applications , space exploration etc. |

# Thermodynamic System

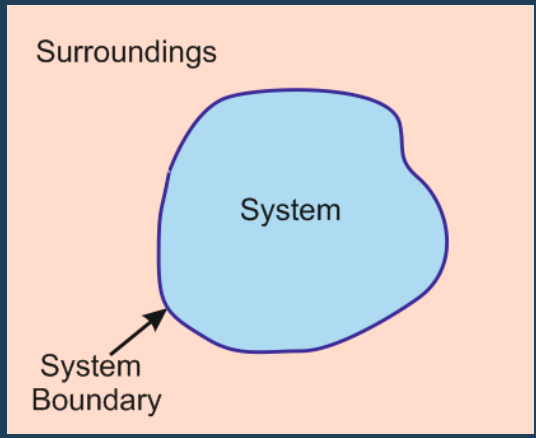
It is a fixed mass or region in space where the study is mainly focused.

## Surroundings

Everything external to the system is called surroundings

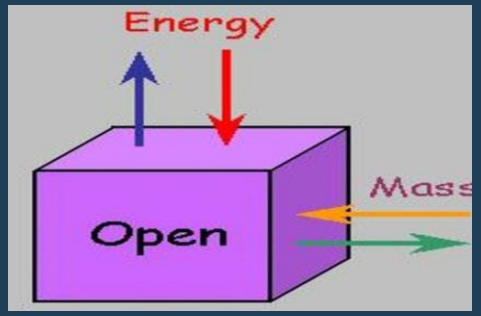
## Boundary

Partition which separates system from surroundings



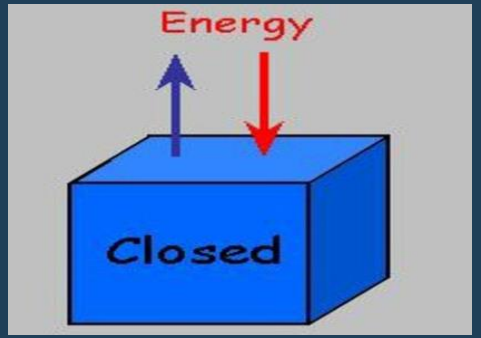
# TYPES OF SYSTEM

1. Open System : In this system both mass as well as energy crosses the boundary of the system
E.g.: Turbine, Compressor, Pump, IC Engine with valves.



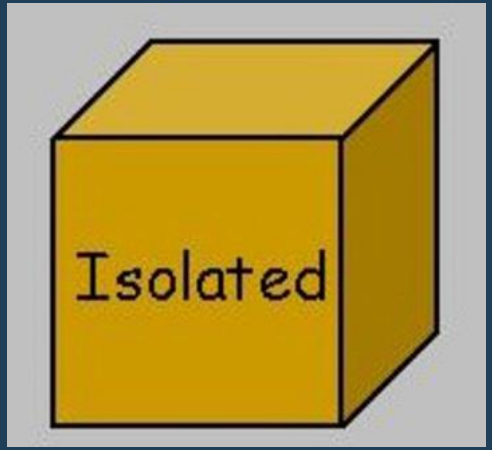

2. Closed System : In this system mass remain fixed but energy transfer takes place .

E.g: Automobile engine without valves.



## TYPES OF SYSTEM

3. Isolated System: There is no mass or energy transfer takes place between system and surroundings.
E.g.: Thermo flask , Universe



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# THANK YOU