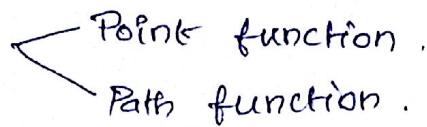


## Point & Path Function :-

(3)

Thermodynamics functions are classified into two types.

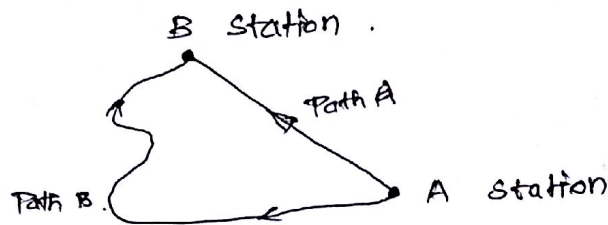


### Point function :-

In which the change depends on only the end states and not on the path followed.

### Path function :-

In which the change depends not only the end state but also on the path followed.



## Thermodynamic System :-

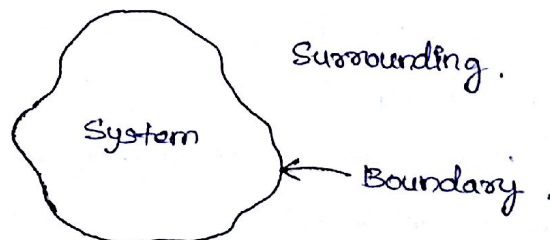
It is defined as a quantity of matter or a region in space whose behaviour is being investigated.

### Surroundings :-

Everything external to the system is defined as surroundings.

### Boundary :-

It is the surface which separates the system from its surroundings. It may be fixed and real or imaginary.

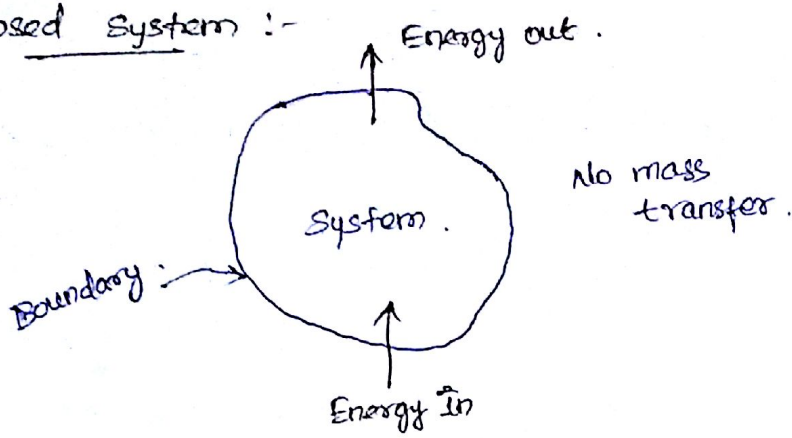


## Types of system :-

3 types of thermodynamics systems.

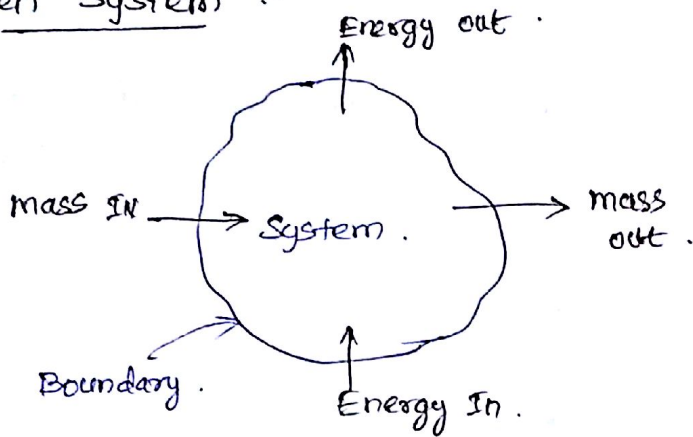
- a) closed system
- b) open system
- c) Isolated system.

### Closed System :-



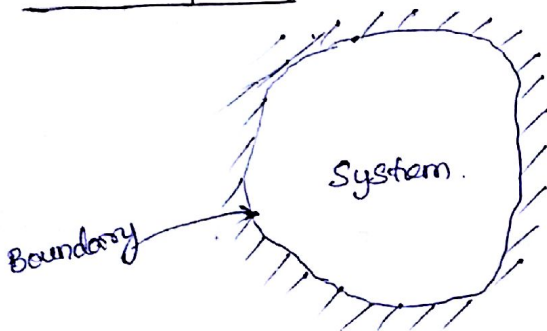
- i) No mass transfer.
- ii) Only energy transfer takes place.
- iii) control mass system.

### Open System :-



- i) Mass transfer.
- ii) Energy transfer.
- iii) control volume system.

### Isolated System :-



- i) No mass transfer.
- ii) No Energy transfer.

Eg :- Flask (tea)

### Thermodynamics Equilibrium and State

When a system does not undergo any change, all the <sup>macroscopic</sup> properties have fixed values. This condition is known as a thermodynamic state.

Equilibrium means balance.

An equilibrium state of a thermodynamic system is a state that can ~~be~~ not be changed without any interaction with its surroundings.

- i) Thermal equilibrium - No temperature difference.
- ii) Mechanical equilibrium - No mechanical / pressure difference.
- iii) chemical equilibrium - No chemical difference.

State :- When a system does not undergo any change, all the properties have fixed values.

It is the continuous of the system at any particular moment.

At given state, all the property of the system have fixed values.

If the value of one property changes, there will be a change in state called change of state.

Path :-

The succession of state crossed through the control volume during the change of state is called path.