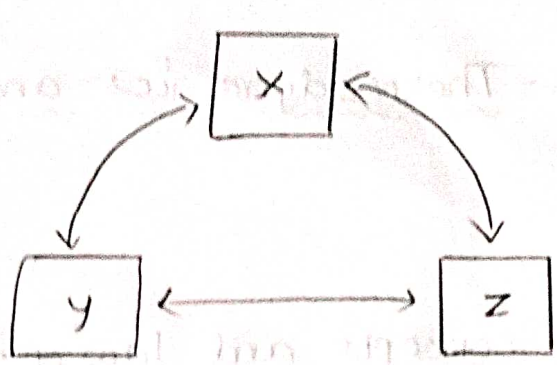

First law of Thermodynamics :-

It states that when a system undergoes a cyclic process then the net heat transfer is equal to the net work transfer.

$$\oint Q = \oint W$$

Flow and nonflow process :-

In a flow process the working fluid enters the system and leaves to atmosphere after doing work. In this system both the energy and mass cross the boundary.

Eg: Boiler, Turbine, compressor.

In a nonflow process the same working fluid is recirculated again and again. It does not leave the system after doing the work. in this system only energy crosses the boundary in the form of heat and work.

Eg: Engine oil, Refrigerator

First law of thermodynamics applied to closed system (nonflow process)

1. constant volume process. (or) Iso-choric process
2. constant pressure process (or) Iso-baric process.

3. constant Temperature process (or) Iso-thermal process.
4. Hyperbolic process.
5. Reversible adiabatic (or) Isentropic process.
6. polytrophic process.
7. Fire expansion process.
8. Throttling process.