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class B.Sc semester IIIrd
Session 2024 to 2028

Subject - MJC-411 Physical Chemistry

Topic Name! $\rightarrow$ Thermodynamics

1st Law of thermodynamics: -

The study of the ~~law~~ flow of heat or any other form of energy into or out of a system as it undergoes a physical or chemical transformation, is called thermodynamics.

The three empirical laws.

The study of thermodynamics is based on three broad generalisations derived from well established experimental results. These generalisations are known as the 1st, second and third law of thermodynamics.

Scope of thermodynamics.

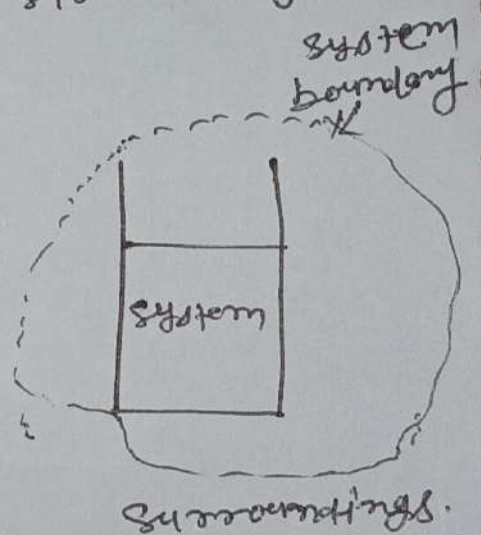
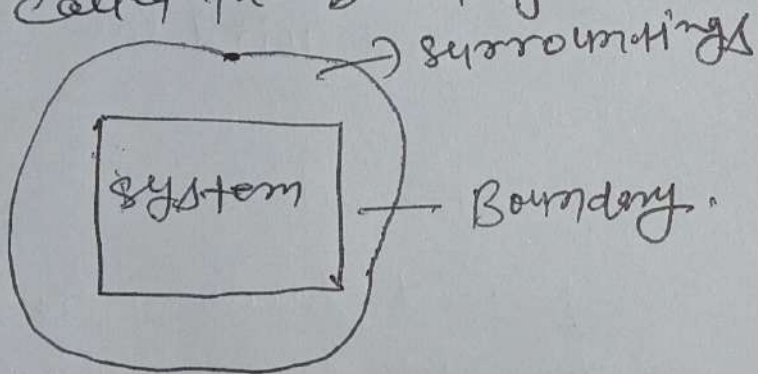
- (1) most of important laws of physical or chemical change can occur under a given set of conditions of temperature, pressure and concentrations.
- (2) It also helps in predicting how far a physical or chemical change can proceed until the equilibrium conditions are established.

Page ②: Limitation of Thermodynamics.

- (i) Thermodynamics is applicable to macroscopic system: - consisting of matter in bulk and not to microscopic systems of individual atoms or molecules.
- (ii) Thermodynamics does not bother about the time factor. That is it does not tell anything regarding the rate of a physical change or a chemical reaction. It is concerned only with the initial and the final state of the system, Boundary, Surroundings.

A system is the part of the universe which is under thermodynamics study and the rest of the universe is surroundings -

The real or imaginary surface separating the system from surroundings is called the boundary.



In experimental work, a specific amount of one or more substances constitutes the system. Thus 200g of water contained in a beaker constitutes a thermodynamics system. The beaker and the air in contact, are the surroundings.