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THERMODYNAMICS (UG)

- CONTENT
- Introduction
- First law of thermodynamics
- Second law of thermodynamics
- Entropy
- Free energy
- Third law
- Assignment
- Books:<i> physical chemistry-DR.J.N.GURTU VOL II,Pragati prakashan<ii> physical chemistry by sharma,puri and pathania

THERMODYNAMICS
L-01

- INTRQDUCTION:Thermodynamics is that branch of chemistry which deais with energy changes and its relationship with work.
- Thermodynamic terms
- Syestem: A thermdynamic system is that part of the physical universe which is under direct observation for the purpose of specific investigation.
- Types:
- <i>Isolated system:In such type of systems neither exchange of mass nor energy is allowed.
- <ii>Closed system:In this system the mass remains constant but the exchange of energy is allowed
- .<iii> Open system:In open system exchange of both mass and energy is allowed.
- Surroundings:Thermodynamic surrounding is the rest part of universe(excluding system) which can any way effect or can be effected by the system.
- Boundary:The part of the universe which separates the system from the surroundings is called boundary.
- :Impermeable,permeable,adiabatic and diathermic

Contd……..

- Impermeable wall:It prevents the passage of matter.
- Permeable wall:It allows the passage of mass and energy both.
- Adiabatic wall:It is the wall which neither allows passage of mass nor energy.e.g thermos bottie.
- Diathermic wall:It is the wall that is impermeable but not adiabatic.

Contd…….

- Process:The steps involved during change of state of a system collectively known as process.
- <i>Isothermal process:In this process temperature remains contant during various operation.
- <ii>Adiabatic process:There is no exchange of heat between system and surrounding.i.e change of temperature occurs.
- <iii.>Isobaric process:Pressure remains constant during period of change.
- <iv>Isochoric process:volume remains constat.

Contd……

- <v>cyclic process:when a system undergoing change returns to initial state then the process is called a cyclic process.
- <vi>Reversible process:It is an ideal case of process which occurs very slowly in ifinite steps.
- <vii>Irreversible process:It occurs rapidly in one step and dose not have chance to attain equilibrum.

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- State Variable:P,V,n,T
- State function: path independent
- Thermodynamic properties:
- <i>Extensive-mass dependent e.g volume,internal energy,enthalpy, free energy,entropy etc..
- Intensive;mass independent e.g density,pressure,temperature,Boiling point etc.