

S.T.D.G.D. COLLEGE SHAHPUR

CHEMISTRY — SEM - 3 MIC - 3

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SIGNIFICANCE OF 1st LAW Thermodynamics in Chemistry

In chemistry, 1st law thermodynamics is deeply significant because it governs all chemical reactions and energy changes.

(1) Conservation in Reaction: - It proves that the total energy of reactants before a reaction equals the total energy of products plus or minus any heat or work exchanged with the surroundings.

(2) Define enthalpy (ΔH) and internal energy (ΔU): - It introduces the internal energy as a state function allowing chemists to measure energy changes as heat at constant volume ($\Delta U = q_v$) or constant pressure ($\Delta H = q_p$).

p-(1)

(3) Foundation for Hess's law:- It P-2
validates Hess's law of constant Heat
Summation, which lets chemist
Pathways using simpler, known
Steps.

(4) Quantifying Bond energy:- It
helps track how chemical bond
energy converts into thermal
energy (exothermic rec^n) or
how thermal/electric energy
stores into chemical bonds (endo-
thermic rec^n).

(5) impossibility of perpetual motion:-
It confirms that chemical system
cannot produce work out of
nothing without a corresponding
change in internal energy
or fuel input.

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