

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

Department of Chemistry

Bankura Christian College

ACADEMIC YEAR: 2023-24 (Semester 2nd /4th /6th)

6th Semester (Hons) Theory (January,2023 to June, 2023)

Name of faculty member: Dr.Mahendra Ghosh

Subject: Chemistry
Core-T14, Physical Chemistry

Unit - 1

Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients; Laws of photochemistry, Stark-Einstein law of photochemical equivalence quantum yield, actinometry, examples of low and high quantum yields

Unit - 2

Photochemical Processes: Potential energy curves (diatomic molecules), Frank-Condon principle and vibrational structure of electronic spectra; Bond dissociation and principle of determination of dissociation energy (ground state); Decay of excited states by radiative and non-radiative paths; Pre-dissociation; Fluorescence and phosphorescence, Jablonskii diagram;

Unit - 3

Rate of Photochemical processes: Photochemical equilibrium and the differential rate of photochemical reactions, Photostationary state; HI decomposition, H₂-Br₂ reaction, dimerisation of anthracene; photosensitised reactions, quenching; Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence

Unit - 4

Surface tension and energy: Surface tension, surface energy, excess pressure, capillary rise and surface tension; Work of cohesion and adhesion, spreading of liquid over other surface; Vapour pressure over curved surface; Temperature dependence of surface tension

MONTH/YEAR	WEEK	PORTIONS
March 2023	2 nd	Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients;
	3 rd	Laws of photochemistry, Stark-Einstein law of photochemical equivalence quantum yield, actinometry, examples of low and high quantum yields
	4 th	examples of low and high quantum yields
	5 th	Revision of unit-1
April 2023	1 st	Potential energy curves (diatomic molecules), Frank-Condon principle and vibrational structure of electronic spectra;
	2 nd	Bond dissociation and principle of determination of dissociation energy (ground state);
	3 rd	Decay of excited states by radiative and non-radiative paths; Pre-dissociation; Fluorescence and phosphorescence, Jablonskii diagram;

	4 th	Class Test-1
May 2023	1 st	Photochemical equilibrium and the differential rate of photochemical reactions, Photostationary state;
	2 nd	HI decomposition, H ₂ -Br ₂ reaction, dimerisation of anthracene; photosensitised reactions,
	3 rd	quenching; Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence
	4 th	Revision of Unt-3
June 2023	1 st	Surface tension and energy: Surface tension, surface energy, excess pressure, capillary rise and surface tension;
	2 nd	Work of cohesion and adhesion, spreading of liquid over other surface; Vapour pressure over curved surface; Temperature dependence of surface tension
	3 rd	Class Test-2