

RADHEY HARI GOVERNMENT PG COLLEGE KASHIPUR (US NAGAR) AISHE CODE: C-2191
TEACHING PLAN-DEPARTMENT OF Physics

CLASS : M. Sc. SEMESTER: 3rd

SESSION:2024-25

NAME OF PAPER : LEC1. Communication Electronics

MONTH	Week	TOPICS	NO OF Lectures	Remarks
August	1	AM and FM (Transmission and reception): Modulation, AM generation, Power consideration	4	offline
	2	Balanced modulator, SSB transmission, AM detection, AGC, Radio receiver characteristics	4	offline
	3	signal to noise ratio, FM analysis, noise considerations, generation, direct method and reactance tube method	4	offline
	4	FM transmitter, AFC, FM Propagation, phase discriminator.	4	offline
September	1	Ground wave, sky wave and space wave propagation	4	offline
	2	Ionosphere (Ecclr- larmer theory, magneto ionic theory	4	offline
	3	Antenna, HF antenna, Yagi antenna, loop antenna	4	offline
	4	Satellite communication, parabolic reflector, dish antenna,	4	offline
October	1	Fundamentals of image transmission, vestigial transmission, TV camera tubes, image orthicon	4	offline
	2	vidicon, TV transmitter, TV receiver and picture tubes	4	offline
	3	Voltage and current relations on transmission line, propagation constant	4	offline
	4	characteristic impedance, impedance matching, quarter wave T/L as impedance transformer,	4	offline
November	1	attenuation along coaxial cable, cables of low attenuation	4	offline
	2	propagation of radio waves between two parallel lines, wave guide modes	4	offline
	3	TE ₁₀ mode and cut off wavelength, cavity resonator,	4	offline
	4	light propagation in cylindrical wave guide	4	offline
December	1	step index and graded index fibers	4	offline
	2	attenuation and dispersion in fibers	4	offline
	3	Test		offline
	4	Revision		



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RADHEY HARI GOVERNMENT PG COLLEGE KASHIPUR (US NAGAR) AISHE CODE: C-2191
TEACHING PLAN-DEPARTMENT OF Physics

CLASS : M. Sc. SEMESTER: 1st

SESSION:2024-25

NAME OF PAPER : LCC5. Atomic and Molecular Physics

MONTH	Week	TOPICS	NO OF Lectures	Remarks
August	1	Fine structure of hydrogen spectrum	4	offline
	2	L-S and J-J coupling, Spectroscopic terms	4	offline
	3	Hund's rule and time reversal, Pauli's exclusion principle	4	offline
	4	Alkali spectra	4	offline
September	1	spin-orbit interaction and fine structure in alkali Spectra	4	offline
	2	Equivalent and non-equivalent electrons	4	offline
	3	Normal and anomalous Zeeman effect, Paschen Back effect	4	offline
	4	Stark effect, Hyperfine structure (qualitative)	4	offline
October	1	Molecular spectra of diatomic molecules, Born Oppenheimer approximation	4	offline
	2	elementary idea of quantization of rotational and vibrational energy	4	offline
	3	rotational spectra for rigid and non rigid rotations,	4	offline
	4	vibrational spectra (harmonic and an-harmonic)	4	offline
November	1	intensity and selection rules and molecular constants	4	offline
	2	Atomic Polarizability, Raman spectra	4	offline
	3	Quantum theory of Raman spectra, Determination of molecular structure	4	offline
	4	Electronic spectra, band system, Progression and sequences	4	offline
December	1	band head formation, Condon parabola	4	offline
	2	Franck Condon Principle dissociation energy and its determination	4	offline
	3	Test		offline
	4	Revision		offline



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RADHEY HARI GOVERNMENT PG COLLEGE KASHIPUR (US NAGAR) AISHE CODE: C-2191

TEACHING PLAN-DEPARTMENT OF Physics

CLASS : B. Sc. SEMESTER: 5th

SESSION:2024-25

NAME OF PAPER : Basic Electronics

MONTH	Week	TOPICS	No of Lectures	Remarks
August	1	Superposition Theorem, Constant voltage source and constant current source, Conversion of voltage source into current source	4	offline
	2	Thevenin's Theorem and procedure for finding thevenin equivalent circuit, Norton's Theorem and procedure for finding Norton equivalent circuit	4	offline
	3	Maximum power transfer theorem, Applications of Network Theorems	4	offline
	4	Semiconductor diode: P-N Junction diode	4	offline
September	1	Diode circuits with DC and AC Voltage sources, Diode as a rectifier: Half and Full wave rectifiers	4	offline
	2	Bridge rectifiers, Peak inverse voltage, Efficiency, Ripple factor, Filters: Low pass and High pass filters	4	offline
	3	Band pass and Band stop filters, L and π – filters (Series inductor, Shunt capacitor, LC, CLC filters)	4	offline
	4	Zener diode, its characteristics, Voltage regulation	4	offline
October	1	Special Diodes Tunneling effect, Tunnel diode	4	offline
	2	Varactor diode, Point contact diode, V-I characteristic of these diodes	4	offline
	3	Optoelectronic devices: Light emitting diode (LED), Photo emissive devices, Photodiodes	4	offline
	4	P-N Junction Photodiodes, PIN photodiode. Avalanche Photodiode	4	offline
November	1	Bipolar junction transistor, Transistor operation and its Biasing rule, Transistor currents	4	offline
	2	Transistor circuit configuration, CB configuration, CE configuration, Relations between α and β , CC configuration	4	offline
	3	Relations between transistor currents in various configuration. Leakage currents in a Transistor	4	offline
	4	Transistor static characteristics in common Base, common Emitter and common Collector configuration, cut-off and saturation points,	4	offline
December	1	Active region, h Parameters, Junction FET, Static Characteristics of JFET, JFET Drain Characteristic with $V_{GS} = 0$, JFET Characteristic with External Bias	4	offline
	2	Transfer Characteristic, Small Signal JFET Parameters, DC Biasing of a JFET, DC load line, Advantages of FETs, MOSFET or IGFET, Depletion-enhancement (DE) MOSFET, Construction	4	offline
	3	working and Static Characteristics of a DE MOSFET, Enhancement only N-channel MOSFET, Transfer Characteristics, FETs as Switches, FET Applications, MOSFET Handling	4	offline
	4	Revision		

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