



PHYSICS- SEMESTER I

Mechanics

Month-wise organizer for the academic year 2016-2017

Month	No. of classes scheduled	Topic proposed to be covered	Classes stipulated	Remarks
June	6	Vector analysis- Introduction Gradient of a scalar, Divergence and curl of a vector,	6	
July	12	Stokes. Gauss and green theorem. Newton's laws –Laws of motion. System of variable mass-Motion of rocket, Motion under different forces.	4 8	
August	12	Collisions- Collisions in two and three dimensions impact parameter, scattering cross – section, Rutherford scattering, Central Forces , characteristics, Keplers laws	6 6	
September	14	Mechanics of rigid bodies- Symmetric top and precessional motion, Gyroscope Mechanics of continuous media Stress and strain relation, Elastic constants, Uniform and non uniform strains with examples, Poisson's ratio Relation between ν , n , k and σ .	7 7	
October	10	Frames of reference and transformation: Frames of reference ,Galilean relativity, Michelson – Morley experiment, Consequences of relativistic transformations Lorentz transformation, time dilation, length contraction, addition of velocities, position and velocity as four vectors, four momentum, mass – energy relation	6 4	

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ACADEMIC ORGANIZER - 2016-2017

DEPARTMENT OF PHYSICS

PHYSICS- Semester II
Waves and Oscillations

Month-wise organizer for the academic year 2016-2017

Month	No. of classes scheduled	Topic proposed to be covered	Classes required	Remarks
November	12	Fundamental of vibration: SHM and characteristics, eq of motion, compound pendulum, measurement of 'g' and 'η'	8	
		Damped Oscillations Eq of motion, sol, logarithmic decrement, relaxation time and quality factor.	4	
December	14	Forced oscillations- Eq of motion, sol, amplitude and velocity resonance quality factor, sharpness and Band width for resonance.	9	
		Superposition of Harmonic motions mutually perpendicular waves 1:1	5	
January	10	Superposition of Harmonic motions mutually perpendicular waves 1:2, lissajous figures and application.	3	
		Fourier analysis of complex vibrations- square, saw tooth and triangular wave analysis.	7	
February	12	Ultrasonics –methods of production and applications.	5	
		Transverse & Longitudinal Waves in strings: Transverse wave in a stretched string, wave equation, solution, modes of vibration, energy transport, transverse impedance.	7	
March	5	Reflection and transmission of waves. Vibrations of bars Longitudinal vibrations in bars – wave equation, general solution.	5	

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DEPARTMENT OF PHYSICS

Semester III
PAPER 323-- OPTICS

Month-wise organizer for the academic year 2016-2017

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
June	12	Aberrations Spherical aberration and minimizing Chromatic aberration and minimizing Astigmatism and Coma	8	
		Interference by division of wave front Principle of superposition – coherence Interference by division of wave front- Young's double slit,	4	
July	13	Fresnels Biprism, Llyods mirror	3	
		Interference by division of amplitude Interference by division of amplitude Thin films, Plane and oblique incidence Wedge shaped film, Newton's rings	10	
August	13	Michelson interferometer	3	
		Fraunhofer Diffraction- Introduction and Types--Diffraction- single, double, N slit, Grating- Determination of λ & Resolving Power,	8	
		Fresnel diffraction- Fresnel's half period zones , Zone plate	2	
September	12	Straight edge, circular aperture	4	
		Polarization-- Methods of Polarization, Double refraction-Calcite crystal, Circular, elliptical polarized light. Nicol Prism, wave plate, Polarimeter- Optical activity, analysis	8	
October	5	Laser Spontaneous, Stimulated emission Laser principle, Einstein coefficients, Types of Lasers.	5	

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DEPARTMENT OF PHYSICS

Semester IV

PAPER 423-- THERMODYNAMICS

Month-wise organizer for the academic year 2015-2016

Month	No. of classes scheduled	Topic proposed to be covered	Classes scheduled	Remarks
November	14	Thermodynamic Laws – Introduction Carnot's engine and its efficiency Second law of thermodynamics	5 3 6	
December	14	Thermodynamic potentials and Maxwell's relations Low temperature physics - Production of low temperatures, Liquefaction of gases and Refrigeration	8 6	
January	10	Kinetic theory of gases - Elements of Kinetic theory of gases, Ideal and Vander wall's gases. Maxwell's law of distribution of speeds in ideal gas Statistical Mechanics – Elements of Statistical Physics	7 3	
February	12	Statistical Mechanics - Distribution laws Radiation Laws	5 7	
March	7	Measurement of Radiation - Pyrometers and Solar constant	7	

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DEPARTMENT OF PHYSICS

PAPER III --ELECTRICITY, ELECTROMAGNETISM & ELECTRONICS

Unit-wise Lesson Plan for the academic year 2016-2017

Unit	Topic	Classes stipulated	Remarks
I	Electrostatics	22	
	Dielectrics		
	Capacitance		
II	Magnetostatics	23	
	Moving charge in EM fields		
	EMI		
III	Alternating and Varying currents	22	
	Maxwell's equations		
IV	Basic Electronics	23	
	Digital principles		

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Month-wise organizer for the academic year 2016-2017

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
June	12	Electrostatics -Electric field and potential, relation between them Gauss law and its applications	8	
		Dielectrics Atomic view of dielectrics, Polarization and charge density, Relation between D,E, and P. Gauss law in dielectrics. Relation between dielectric constant and susceptibility.	4	
July	12	Capacitors Capacitance of parallel plate condenser with and without dielectric, spherical and cylindrical capacitors, Electric energy stored in a condenser force between plates-condenser	5	
		Magnetostatics :Magnetic induction (B) and field (H) permeability and susceptibility, Hysteresis loop	7	

August	12	Moving charge in EM fields Hall effect, cyclotron, synchrocyclotron and synchrotron Biot –Savart’s law B- straight long wire, circular current loop and solenoid. EMI-Faraday’s law –Lenz’s law Betatron –Ballistic galvanometer	8 4	
September	12	EMI -Self and Mutual inductance, Solenoid, toroid, energy in magnetic field, Transformer Maxwell’s equations : Maxwell’s eqs- Integral & differential form Maxwell’s wave equation, plane EM waves	4 8	
October	2	Varying currents Growth and decay of-current in RL, charge in RC, LCR circuits	2	
November	12	Alternating and Varying currents Growth and decay-LR, CR and LCR circuits. AC - pure R,C and L, RL, RC, LC. LCR series and parallel resonant circuit quality factor, bandwidth Introduction- Basic Electronics energy bands in solids, Intrinsic, extrinsic SC,p-n junction diode and Zener diode half and full wave rectifiers and filters	6 6	
December	10	Transistors -p n p and n p n, CB, CE and CC configurations, concept of negative and positive feed back, RC coupled amplifier, phase shift oscillator	10	
January	4	Digital principles (Boolean algebra , logic gates, Demorgans laws adders)	4	

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DEPARTMENT OF PHYSICS

Physics IV

Month-wise organizer for the academic year 2016-2017

Month	Total No. of classes scheduled	Topic proposed to be covered	classes scheduled	Remarks
June	12	Inadequacy of classical physics	3	
		Photo electric effect and Compton effect	5	
		De Broglie theory	4	
July	12	Heisenberg's Uncertainty Principle	2	
		Schrodinger Mechanics	10	
August	11	Nuclear structures and models	5	
		Alpha Beta Decay and Nuclear Reactions	6	
September	11	Crystal Structure and X-ray diffraction	6	
		Nano materials	5	
October	03	Nuclear Detectors	3	
November	11	Bonding in crystals,	2	
		Magnetism- properties	4	
		Superconductivity, BCS theory, HiT _c	5	
		Super Conductor		
December	14	Atomic Spectra,	6	
		Alkali and Alkaline earth spectra,	4	
		Molecular spectroscopy	4	
January	4	Raman effect – applications	4	

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Autonomous College
B.Sc. I Year Electronics Semester - I (Circuit Analysis)
Monthwise Lesson Plan for 2016 -17

Month	Number of Classes Scheduled	TOPIC	CLASSES STIPULATED	REMARKS
June	8	Wave forms - Peak, Average & RMS values, form factor	3	
		Phase - phasor and 'j' operator	1	
		V-I relationship in circuits containing R, L, C	2	
		Complex impedance and admittance, polar rectangular	2	
July	12	Circuit analysis using complex number representation	2	
		Exponential function, unit step, Ramp, Impulse functions.	2	
		series and parallel combinations of R, L and C	2	
		T and π networks, conversions between them.	2	
		KVL and KCL - problems using them	2	
		Node analysis.	3	
August	12	Mesh analysis.	2	
		Theorems	10	
September	12	Transient response of RC and RL Circuits.	6	
		Filter circuits - Low, High, Band pass & Band Rejection filters, cutoff frequency	5	
		Differentiator and Integrator	2	
October	10	Series Resonance	4	
		Parallel resonance	4	
		CRT and CRO block diagram, Applications	4	
		Phase measurement - Lissajous figures	2	

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Mr TVLNH Prasad
2016/12/06

Mr TVLNH Prasad

**B Sc I Year Electronics/Semester II
Semiconductor Devices**

Monthwise lesson plan for 2016-17

Month	Number of Classes Scheduled	Topics	Classes Required- Topicwise	Remarks
November	12	Semiconductor Physics: Review of basics of semiconductor physics-continuity equation	6	
		PN Junction: Depletion region – Junction capacitance – Diode equation (qualitative) – Effect of temperature on reverse saturation current – characteristics of (i) Junction diode (ii) Zener diode	6	
		(iii) Tunnel diode and (iv) Varactor diode	2	
December	14	Bipolar Junction Transistor (BJT): PNP and NPN transistors – current components in BJT, BJT static characteristics (Input and Output), Early effect, CB, CC, CE configurations (cut off, active, and saturation regions), transistor as an amplifier.	8	
		CE configuration as two port network, h-parameters, h-parameter equivalent circuit. determination of h-parameters from the characteristics-	4	
January	10	Load line analysis -Transistor Biasing – Fixed and self bias.	4	
		Field Effect Transistor (FET): Construction and working of JFET, output and transfer characteristics, determination of FET parameters, application of FET as Voltage Variable Resistor (VVR);	6	
February	12	MOSFET – depletion and enhancement mode, application of MOSFET as a switch, advantages of FET over BJT.	2	
		Uni Junction Transistor (UJT): Construction and working of UJT, characteristics - application of UJT as a relaxation	5	
		Silicon Controlled Rectifier (SCR): Construction and working of SCR - two transistor representation - characteristics of SCR - applications of SCR for power control.	5	
March	5	and characteristics of Light Dependent Resistor (LDR), photo voltaic cell, photo	5	
	53	Total	53	

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Sem III Electronics Paper-II

Analog Circuits

Unit-wise Lesson Plan for the academic year 2016-17

Unit	Topic	No. of classes Stipulated	Classes stipulated	Remarks
I	Introduction - Diodes	3	15	
	Rectifiers – half wave, full wave, bridge	5		
	Filters – Inductor, capacitor, L and π	5		
	Pspice	2		
II	Zener - regulation	2	15	
	Regulated power supplies – series and shunt	5		
	IC regulators - 78xx, 79xx	2		
	SMPS and UPS	4		
	Pspice	2		
III	Transistor basics	2	15	
	Classification of amplifiers	2		
	RC Coupled Amplifier	5		
	Feedback in amplifiers	4		
	emitter follower, darlington pair	2		
IV	Oscillators – Barkhausen criteria	2	15	
	RC and LC and crystal oscillators	4		
	Multivibrators –astable, monostable, bistable	4		
	Schmitt trigger	2		
	Revision	3		
			60	

Month-wise organizer for the academic year 2016-17

Month	No. of classes scheduled	Topic proposed to be covered	No. of classes required	Remarks
June	15	Introduction, diodes Rectifiers Filters	5 5 5	
July	15	Regulators- series, shunt IC regulators, SMPS & UPS Pspice	5 4 4 2	
August	13	Transistor basics, Amplifiers RC Coupled Amplifier Feedback	4 5 4	
September	14	emitter follower, darlington pair Oscillators Multivibrators, Schmitt trigger	2 6 4	
October	3	Revision	3	

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Sem IV Electronics Paper-II
Operational amplifiers and Analog Communications
Unit-wise Lesson Plan for the academic year 2016-17

Unit	Topic	No. of classes Stipulated	Classes stipulated	Remarks
I	Operational amplifiers – char.	5	15	
	Differential amplifier	3		
	Op amp applications	5		
	Pspice	2		
II	Op amp applications	3	15	
	Waveform generators – sine, square, triangular	5		
	IC 555 Timer & appl.s	5		
	Pspice	2		
III	Modulation	3	15	
	Amplitude Modulation	5		
	Demodulation	4		
	Pspice	3		
IV	Frequency modulation	3	15	
	FM Detection	3		
	AM and FM transmitter and receivers	4		
	Pulse modulation	5		
			60	

Month-wise organizer for the academic year 2016-17

Month	No. of classes scheduled	Topic proposed to be covered	No. of classes required	Remarks
November	10	Op amp - differential amplifier, characteristics, basic circuits	5 5	
December	15	Op amp applications – Int., diff., comp, wave generators IC 555 Timer & applications	3 5 7	
January	14	Pspice Modulation AM, AM modulator & detector	2 12	
February	15	Frequency modulation, Ratio detector, AM and FM transmitter and receivers Pulse modulation	6 4 5	
March	6	Pspice Revision	2 4	

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ELECTRONICS PAPER-III
Digital Electronics and Microprocessors
Month-wise organizer for the academic year 2016-17

Month	No. of classes scheduled (extra classes)	Topic proposed to be covered	No. of classes required	Remarks
June	10	Number systems & Logic gates	5	
		Boolean Algebra, Simplifications & Universal gates	5	
July	12	Logic Families & characteristics	5	
		Karnaugh maps, SOP, POS	4	
		Adders, Mux, Demux, Decoder	3	
August	12	Flip flops	5	
		Registers, Counters	8	
September	10	Registers	2	
		Semiconductor Memories	2	
		8085 Microprocessor Architecture, Pin Configuration, timing diagrams	4	
		Timing Diagrams	2	
November	12	Timing Diagrams	3	
		Instruction set of 8085	5	
		Instruction set & Addressing Modes	5	
		Assembly Language Programming	4	
December	12	Stacks & Subroutines Programming examples	2	
		Memory Organization & interfacing concepts	5	
		PPI(8255)	3	
		Keyboard(8279), Stepper motor, LED interfacing	3	
			2	
January	7	Stepper motor, LED interfacing	2	
		A/D & D/A converters	5	
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Electronics Paper IV				
Embedded Systems & Applications				
Monthwise lesson plan for 2016-17				
Month	Number of Classes Sheduled	Topics	Classes Required- Topicwise	Remarks
JUN	9	Introduction to μ P- Evolution and Classification of μ C	3	
		Architecture of 8051: PC and DPTR, memory organization, PSW register, register banks and stack, Oscillator clock	7	
JULY	12	Pin diagram, Port organization, I/O programming	4	
		Addressing modes, Instruction set and programming , Programming examples	10	
AUG	10	Time delay generation, Time delay Calculation, generation of rectangular wave	6	
		Compare instruction, program for picking smallest/largest, sorting of numbers	4	
SEPT	10	Interrupts, Timer/Counter modules	6	
		Interfacing parallel ports	3	
		Interrupt priority Controller	3	
OCT	6	Interfacing DAC and Generation of different types of wave forms	6	
NOV	12	Interfacing ADC and Temperature measurement	6	
		Serial Communication modes & Protocols	5	
DEC	10	LCD interfacing	3	
		Stepper motor fundamentals and interfacing	3	
		Keyboard interfacing	3	
JAN	6	Revision	6	
	72	Total	78	

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