BSc I Year Electronics
SEMESTER I
Circuit Analysis
Unit-wise Lesson Plan for the academic year 2017-18

Month	No. of classes scheduled (extra classes)	Topic proposed to be covered	No. of classes required	Remarks
June	5	Waveforms,peak,average,RMS value, form factor	2	
			1	
		Phasor and 'J' operator	2	
		V-I relationship in circuits containing R,L and C		
		Complex impedance, admittance		
July	15	Polar, and Rectangular forms Circuit Analysis using complex numbers	2	
		Series and parallel combinations of R,L and C	2	
		T and π networks and their conversions.	3	
		KVL,KCL-problems	3	
		Nodal Analysis mesh analysis	5	
August	12(2)	Theorems	10	
		Transient response of RC and RL circuits	4	
September	10	Types of filters, frequency response	3	
		Differentiator and Integrator	3	
		Series and parallel resonance	4	
October	6	Cathode Ray Oscilloscope	6	

Bhavan's Vivekananda College, Sainikpuri
Autonomous College
B.Sc. I Year Electronics Semester - II (Semiconductor Devices)
Monthwise Lesson Plan for 2017 -18

Month	Number of Classes Sheduled	TOPIC	CLASSES STIPULATED	REMARKS
Nov	12	Review of basics of semiconductor physics, Continuity equation	5	
		Diode equation - PN Junction Zener diode	7	
Dec	12	Varactor, Tunnel diodes PNP and NPN transistors	5	
		BJT static characteristics in CB, CC, CE configurations & transistor as an amplifier	4	
		h-parameters	3	
Jan	14	Load line analysis - Transistor Biasing	4	
		Construction and working of JFET, application as VVR	7	
		MOSFET - modes of operation	3	
Feb	14	Construction and working of UJT, characteristics UJT as a relaxation oscillator.	4	
		Construction and working of SCR - characteristicsapplications of SCR for power control	4	
		Construction and characteristics of LDR, LED photo diode and photo voltaic cell	6	

Sem III   Electronics - Analog Circuits

Unit-wise Lesson Plan for the academic year 2017-18

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 2017-18

Month	No. of classes scheduled	Topic proposed to be covered	No. of classes required	Remarks
June	10	Introduction, diodes	2	
		Rectifiers	4	
		Filters	4	
July	15	Regulators- series, shunt	5	
		IC regulators,	4	
		SMPS & UPS	4	
		Pspice	2	
August	13	Transistor basics, Amplifiers	4	
		RC Coupled Amplifier	5	
		Feedback	4	
September	12	emitter follower, Darlington pair	2	
		Oscillators	6	
		Multivibrators, Schmitt trigger	4	
October	2	Revision	2	

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Sem IV   Electronics Paper-II
Operational amplifiers and Analog Communications
Unit-wise Lesson Plan for the academic year 2017-18

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

Month-wise organizer for the academic year 2017-18

Month	No. of classes scheduled	Topic proposed to be covered	No. of classes required	Remarks
November	13	Op amp - differential amplifier, characteristics, basic applications	6 7	
December	14	Op amp applications – Int., diff., comp, wave generators	4 5	
		IC 555 Timer & applications	5	
January	14	Modulation	4	
		AM , AM modulator & detector	8	
February	13	Frequency modulation, Ratio detector, AM and FM transmitter and receivers	4 4	
		Pulse modulation	4	
March		Revision	2	

BSc III Year Electronics
SEMESTER V
Digital Electronics –Paper Code EL 524
Month-wise organizer for the academic year 2017-18

Month	No. of classes scheduled (extra classes)	Topic proposed to be covered	No. of classes required	Remarks
June	8	Boolean Algebra, De-Morgan's theorem Simplification Of Boolean Expressions	4	
		SOP ,POS and Karnaugh maps	4	
July	12(2)	Logic gates & Universal gates - multi level implementation	3	
		Adders, Subtractors, MUX	5	
		DEMUX,	4	
		Decoder &Encoder	2	
		Parity checker & Parity generators		
August	10(1)	Flip -flops-RS,D,JK,T and Master slave	3	
		Shift registers-Universal shift registers	3	
		Counters-Ring counter, Asynchronous and Synchronous counters	5	
September	8(1)	Logic families –TTL and CMOS	3	
		D/A and A/D converters	6	
October	2(1)	Memory-classification, RAM,ROM	3	

	Electronics Paper IV - Semester V			
	Elective Paper - 8051 Microcontroller - EL524A			
	Unitwise lesson plan for 2017-18			
Unit	Topic	No. of Classes required	Classes Stipulated	Remarks
1	**Architecture of 8051**			
	Introduction to microcontroller and overview	3	12	
	Architecture and Memory organization	4		
	Pindiagram, SFRs, Stack, I/O Ports	3		
	Timer/Counter/Interrupts	3		
2	**Instruction Set of 8051**			
	Addressing modes, Instruction set	2	11	
	Classification of instructions	4		
	Programming examples	4		
3	**Programs**			
	Programs using arithmeti instrutions	3	10	
	Largest/smallest, Ascending/ descending order	3		
	Code Conversions	2		
	Subroutines - Time delay routines	3		
4	**Inaterfacing of Peripherals to 8051 and applications**			
	serial Communication	3	12	
	Interfacing of ADC(ADC0804), temperature measurement	2		
	DAC(DAC0808) - waveform generation	2		
	LCD interfacing, stepper motor interfacing	4		

Electronics Paper IV - semester V
Elective Paper - 8051 Microcontroller - EL524A
Monthwise lesson plan for 2017-18

Month	Number of Classes Sheduled	Topics	Classes Required-Topicwise	Remarks
JUN	8	Introduction to microcontroller and overview	3	
		Architecture and Memory organization, Pindiagram	5	
JULY	12(1)	Stack and I/O Ports	2	
		Addressing modes, Instruction set	2	
		Classification of instructions, Programming examples	8	
AUG	10(1)	Programs, code conversions	7	
		subroutines and timedelays	4	
SEPT	8(1)	serial Communication	3	
		Interfacing of ADC(ADC0804), temperature measurement	2	
		DAC(DAC0808) - waveform generation, LCD interfacing,	3	
OCT	2	LCD programming, stepper motor interfacing	2	

B Sc III Year Electronics - Semester VI				
Core Paper - 8085 Microprocessor - EL624				
Unit wise lesson plan for 2017-18				
Month	Number of Classes Sheduled	Topics	Classes Required-Topicwise	Remarks
November	11	Introduction and Memory organization	5	
		Architecture of Intel 8085	3	
		Pin configuration of 8085	2	
		Instruction set and Addressing modes	5	
December	10	Addition, Subtraction, Multiplication and Division	4	
		Largest / Smallest , arranging the data in Ascending and Descending order	4	
January	10	Stack and Subroutines	2	
		Time delays	3	
		Software and Hardware Interrupts	2	
		Timing Diagrams	3	
February	11	Data transfer schemes, PPI 8255	4	
		Keyboard and Display interfacing (8279)	3	
		Seven segment LED interfacing	3	
		Stepper motor interfacing	2	

B Sc III Year Electronics - Semester VI				
Core Paper - 8085 Microprocessor - EL624				
Unitwise lesson plan for 2017-18				
Unit	Topic	No. of Classes required	Classes Stipulated	Remarks
1	**8085 Architecture**			
	Introduction and Memory organization	5	10	
	Architecture of Intel 8085	3		
	Pin configuration of 8085	2		
2	**Programming 8085**			
	Instruction set and Addressing modes	5	13	
	Addition, Subtraction, Multiplication and Division	4		
	Largest / Smallest , arranging the data in Ascending and Descending order	4		
3	**Counter and Time Delays**			
	Stack and Subroutines	2	10	
	Time delays	3		
	Interrupts			
	Software and Hardware Interrupts	2		
	Timing Diagrams	3		
4	**Interfacing Peripherals**			
	Data transfer schemes, PPI 8255	4	12	
	Keyboard and Display interfacing (8279)	3		
	Seven segment LED interfacing	3		
	Stepper motor interfacing	2		

BHAVAN'S VIVEKANANDA COLLEGE OF SCIENCE, HUMANITIES AND COMMERCE

Autonomous College - Affiliated to Osmania University

Department of Physics& Electronics

SEMESTER VI

Digital System Design with VHDL

Month-wise organizer for the academic year 2017-18

Month	No. of classes scheduled (extra classes)	Topic proposed to be covered	No. of classes required	Remarks
November	9	IntroductiontoVHDL,dataobjects,classes& Data types	5	
		Operators, types of delays, Entity and Architecture declaration	4	
December	11(1)	Introduction to behavioral, dataflow& structural model	2	
		Process statement, Assignment sequential statements &case :	4	
		Arrays &loops,packages&librarie	6	
		Statements, subprogram		
January	10(2)	Structural modeling, component declaration generics	2	
		VHDLmodels&simulationofMux,Demux, decoder, encoder	5	
		Implementation of Boolean functions	3	
		Code converters,	2	
February	11(1)	VHDL models simulation of comparators flip-flops	5	
		Registers	3	
		Counters	4	

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, SAINIKPURI, SECUNDERABAD
Autonomous College- (Accredited with A grade by NAAC)
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DEPARTMENT OF PHYSICS

PHYSICS- SEMESTER I
Mechanics
Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	Classes required	Remarks
June	3	**Vector analysis-** Introduction Gradient of a scalar,	3	
July	16	Divergence and curl of a vector. Stokes. Gauss and green theorem.	5	
		Newton's laws –Laws of motion. System of variable mass-Motion of rocket, Motion under different forces.	8	
		Collisions- Collisions in two and three dimensions	3	
August	15	**Collisions**- impact parameter, scattering cross – section, Rutherford scattering,	3	
		Central Forces, characteristics, Keplers laws	6	
		Mechanics of rigid bodies- Symmetric top and precessional motion, Gyroscope	6	
September	11	**Mechanics of continuous media** Stress and strain relation, Elastic constants, Uniform and non uniform strains with examples, Poisson's ratio Relation between y, n, k and σ.	6	
		Frames of reference and transformation: Frames of reference Galilean relativity, Michelson – Morley experiment,	5	
October	6	Energy momentum transformation **Consequences of relativistic transformations**	2	
		Lorentz transformation, time dilation, length contraction, addition of velocities, position and velocity as four vectors, four momentum, mass – energy relation	4	

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Mrs T Sai Santhoshi
Dr G S V R K Choudary

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DEPARTMENT OF PHYSICS

PHYSICS- Semester II
Waves and Oscillations-PH223

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	Classes required	Remarks
November	14	**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	
		Forced oscillations- Eq of motion, sol,	2	
December	11	**Forced oscillations-** amplitude and velocity resonance, quality factor, sharpness and Band width for resonance.	6	
		Superposition of Harmonic motions mutually perpendicular waves 1:1	5	
January	15	**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	
		Ultrasonics –methods of production and applications.	5	
February	14	**Transverse & Longitudinal Waves in strings:** Transverse wave in a stretched string, wave equation, solution, modes of vibration, energy transport, transverse impedance. Reflection and transmission of waves.	7	
		Vibrations of bars Longitudinal vibrations in bars – wave equation, general solution.	7	
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Mrs V R MANJULA
Mrs T Sai Santhoshi

Semester III
PAPER 323-- THERMODYNAMICS

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
June	10	Thermodynamic Laws-Introduction to thermodynamics and First Law	7	
		Second law of thermodynamics-	3	
July	14+2	Applications of Second Law of thermodynamics	3	
		Thermodynamic potentials and Maxwell's equations- Applications	7	
		Low temperature physics-Methods of production	6	
August	12+2	Kinetic theory of gases –Introduction, Ideal and Vanderwall's gases, transport phenomena	6	
		Statistical Mechanics- Classical and Quantum Statistics	6	
		Radiation Laws- Blackbody Radiation: Distribution of energy density	2	
September	8+2	Radiation Laws- Blackbody Radiation: Classical and Quantum theory	6	
		Measurement of Radiation- Pyrometers	4	
October	2	Solar constant and Estimation of temperature of Sun	2	

Bharatiya Vidya
Bhavan

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DEPARTMENT OF PHYSICS

Semester IV- PAPER PH423-- OPTICS
Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
November	14	**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, Fresnels Biprism, Llyods mirror	6	
December	11	**Interference by division of amplitude** Interference by division of amplitude Thin films, Plane and oblique incidence Wedge shaped film, Newton's rings Michelson interferometer	11	
January	15	**Fraunhoffer 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, Straight edge, circular aperture	4	
		Polarization--Methods of Polarization, Double refraction-	3	
February	14	**Polarization**-- Calcite crystal, Circular, elliptical polarized light. Nicol Prism, wave plate, Polarimeter- Optical activity, analysis	9	
		Laser Spontaneous, Stimulated emission Laser principle, Einstein coefficients, Types of Lasers.	5	

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Dr G S V R K CHOUDARY

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DEPARTMENT OF PHYSICS

SEMESTER – V   Paper code: 523, Electricity & Magnetism

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
June	8	**Electrostatics**-Electric field and potential, relation between them Gauss law and its applications	8	
July	12	**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.	5	
		Capacitance Capacitance of parallel plate condenser with and without dielectric, spherical and cylindrical capacitors, Electric energy stored in a condenser force between plates-condenser	4	
		Magnetostatics : Magnetic induction (B) and field (H) permeability and susceptibility, Hysteresis loop	3	
August	11	**Moving charge in EM fields** Hall effect, cyclotron, synchrocyclotron and synchrotron Biot –Savart's law B- straight long wire, circular current loop and solenoid.	6	
		EMI-Faraday's law –Lenz's law Betatron –Ballistic galvanometer	5	
September	8	**EMI** -Self and Mutual inductance, Solenoid, toroid, energy in magnetic field, Transformer	4	
		Maxwell's equations : Maxwell's eqs- Integral & differential form Maxwell's wave equation, plane EM waves	4	
October	3	Poynting theorem, production of EM waves (Hertz experiment)	3	
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ACADEMIC ORGANIZER - 2017-2018

DEPARTMENT OF PHYSICS

SEMESTER-V, Paper code: 523A, Solid State Physics & Spectroscopy.

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
June	8	**Bonding in Crystals** Types of bonding in crystals, Lattice energy, Medelung's Constant, Born's repulsive coefficient and exponent. Born – Haber cycle **Crystal Physics and diffraction** Amorphous and Crystalline nature of matter, Crystal systems, Bravais lattices. Miller indices. Simple crystal structures,	8	
July	12	Diffraction of X–rays by crystals-Bragg's law, Laue's and powder diffraction method **Magnetism (5)** Magnetic properties of materials-Langevin's theory-Quantum theory-Weiss' theory, Molecular field and exchange interactions. Magnetic domains, Antiferromagnetism.Ferrites -applications. **Superconductivity** Meissner effect. Type-I and Type-II superconductors. BCS theory: Cooper pairs and Phonons. Quantum Hall Effect, High T_c superconductors. Applications	2 5 5	
August	11	**Nanomaterials-** semi conductor nano particles, metal - carbon nanoparticle. Carbon nanoclusters and nanotubes. Quantum nano structures: nano dot, nanowire and quantum well. Size, dimensionality effect. Fabrication of quantum nanostructures. STM and AFM **Atomic Spectra** Atoms in Electric, Magnetic fields: angular momentum, space quantization. Stern Gerlach experiment. Vector atom model, quantum numbers associated with LS-JJ coupling schemes. Larmor's theorem - spin magnetic moment. Spectral terms and notations	5 6	
September	8	**One electron spectra** Alkali Spectra, doublet fine structure. Zeeman Effect, Paschen-Back Effect and Stark Effect. **Molecular Spectra** Types of molecular spectra, pure rotational energies and spectrum determination of inter nuclear distance. Vibrational energies - spectrum of diatomic molecule. fluorescence phosphorescence.	4 4	
October	3	**Raman Spectra** Raman Effect: Classical and quantum theory of Raman Effect. Raman's Spectrometer, Applications of Raman Effect.	3	

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Dr G S V R K CHOUDARY

Sem VI – Paper Code 625 – Modern Physics.

Month wise Lesson Plan for the academic year 2017-2018

	Total No. of classes stipulated	Topic proposed to be covered	classes scheduled	Remarks
November	9+2	Spectral Radiation Photoelectric Effect and Compton Effect Debroglie theory	3 6 2	
December	8+2	Experiments and applications Uncertainty Principle Wave mechanics	2 3 5	
January	10+2	Applications of Schrodinger equation Nuclear Structure and models Nuclear Detectors	2 6 4	
Febraury	9+1	Nuclear transformations Nuclear reactions	6 4	

V.R. Manjula

Bharatiya Vidya Bhavan

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DEPARTMENT OF PHYSICS

PAPER PH623A-- ELECTRONICS

Unit-wise Lesson Plan for the academic year 2017-2018

Unit	Topic	Classes stipulated	Remarks
I	Alternating and Varying currents	15	
	Kirchhoff's Laws		
II	Semiconductors and Diodes	10	
III	Transistors		
	Amplifiers	10	
IV	Digital principles	10	

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required	Remarks
November	11	Kirchhoff's laws, Alternating and	3	
		Varying currents, Growth and decay-LR, CR and LCR circuits.	6	
		Introduction- Basic Electronics energy bands in solids,	2	
December	10	Intrinsic, extrinsic SC, P-N junction diode and Zener diode half and full wave rectifiers and filters,	6	
		PNP and NPN transistors, CB,CE and CC configurations.	4	
January	10	Concept of negative and positive feed back, RC coupled amplifier, phase shift oscillator. Decimal, Binary and hexadecimal number systems:	7	
			3	
Febraury	11	**Digital principles**(gates, adders) Logic gates: OR, AND, NOT gates, truth tables, realization of these gates using discrete components. NAND, NOR as universal gates, Exclusive – OR gate, De Morgan's Laws– Statement and Proof, Half and Full adders.	11	

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Spandana 5/1/2018

Mrs P Spandana

Bharatiya Vidya Bhavan

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DEPARTMENT OF PHYSICS AND ELECTRONICS

PAPER SEC423 - RENEWABLE ENERGY AND ENERGY HARVESTING

Unit-wise Lesson Plan for the academic year 2017-2018

Unit	Topic	Classes stipulated
I	Fossil fuels and Alternate sources of energy, Hydro Energy, Wind Energy harvesting	15
II	Solar energy, Carbon captured technologies	15

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required
November	6	Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.	6
December	6	Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources. Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical	6
January	8	Solar energy: Solar energy, its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.	8
Febraury	6	Carbon captured technologies, cell, batteries, power consumption Environmental issues and Renewable sources of energy, sustainability.	6

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Mrs T Sai Santoshi

Bharatiya Vidya Bhavan

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DEPARTMENT OF PHYSICS AND ELECTRONICS
PAPER SEC424 - RENEWABLE ENERGY AND ENERGY HARVESTING
Unit-wise Lesson Plan for the academic year 2017-2018

Unit	Topic	Classes stipulated
I	Fossil fuels and Alternate sources of energy, Hydro Energy, Wind Energy harvesting	15
II	Solar energy, Carbon captured technologies	15

Month-wise organizer for the academic year 2017-2018

Month	No. of classes scheduled	Topic proposed to be covered	classes required
November	6	Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.	6
December	6	Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources. Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical	6
January	8	Solar energy: Solar energy, its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.	8
Febraury	6	Carbon captured technologies, cell, batteries, power consumption Environmental issues and Renewable sources of energy, sustainability.	6

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Mrs T Sai Santoshi