ELECTRICAL & ELECTRONICS ENGINEERING
21SCHEME

COURSE CODE	21ELE13 BASIC ELECTRICAL ENGINEERING
CO1	Analyse basic DC and AC electric circuits.
CO2	Explain the working principles of transformers and electrical machines
CO3	Explain the concepts of electric power transmission and distribution of power
CO4	Understand the wiring methods, electricity billing, and working principles of circuit protectivedevices and personal safety measures.

COURSE CODE	21ELE23 BASIC ELECTRICAL ENGINEERING
CO1	Analyse basic DC and AC electric circuits.
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COURSE CODE	21MAT31 Transform Calculus, Fourier Series and Numerical Techniques (Common to all Branches)
CO1	To solve ordinary differential equations using Laplace transform.
CO2	Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
CO3	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations
CO4	To solve mathematical models represented by initial or boundary value problems involving partial differential equations
CO5	Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

COURSE CODE	21EE32 Analog Electronic Circuits and Op - Amps
CO1	Obtain the output characteristics of clipper and clamper circuits
CO2	Design and compare biasing circuits for transistor amplifiers & explain the transistor switching.
CO3	Explain the concept of feedback, its types and design of feedback circuits

CO4	Design and analyse the power amplifier circuits and oscillators for different frequencies.
CO5	Design and analysis of FET and MOSFET amplifiers.
CO6	Demonstrate the application of Op-amps.
COURSE CODE	**21EE33 Electric circuit Analysis**
CO1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting, source transformation and network reduction using transformations.
CO2	Solve complex electric circuits using network theorems.
CO3	Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation.
CO4	Synthesize typical waveforms using Laplace transformation.
CO5	Solve unbalanced three phase systems and also evaluate the performance of two port networks.
COURSE CODE	**21EE34 Transformer and generators**
CO1	Understand the construction and operation of 1-phase, 3-Phase transformers, and Autotransformer.
CO2	Analyze the performance of transformers by polarity test, Sumpner's Test, phase conversion, 3-phase connection, and parallel operation.
CO3	Understand the construction and working of AC and DC Generators
CO4	Analyze the performance of the AC Generators on infinite bus and parallel operation
CO5	Determine the regulation of AC Generator by Slip test, EMF, MMF, and ZPF Methods.
COURSE CODE	**21EEL35 Electrical Machines Laboratory - 1**
CO1	Evaluate the performance of transformers from the test data obtained.
CO2	Connect and operate two single phase transformers of different KVA rating in parallel.
CO3	Connect single phase transformers for three phase operation and phase conversion.
CO4	Compute the voltage regulation of synchronous generator using the test data obtained in the laboratory
CO5	Evaluate the performance of synchronous generators from the test data and assess the performance of synchronous generator connected to infinite bus.

COURSE CODE	**21EEL381 Scilab for Transformers and Generators**
CO1	Analyse in an intelligent manner, think better, and perform better.

COURSE CODE	21EEL382 Circuit Laboratory using Pspice
CO1	Analyse in an intelligent manner, think better, and perform better.

COURSE CODE	21EEL383 555 IC Laboratory
CO1	Analyse in an intelligent manner, think better, and perform better.

COURSE CODE	21EEL384 Scilab for Mathematics
CO1	Analyse in an intelligent manner, think better, and perform better.

COURSE CODE	21MAT41 Complex Analysis, Probability and Statistical Methods
CO1	Use the concepts of an analytic function and complex potentials to solve the problems arising in electromagnetic field theory. Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
CO2	Obtain Series Solutions of Ordinary Differential Equation.
CO3	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
CO4	Apply discrete and continuous probability distributions in analysing the probability models arising in the engineering field.
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

COURSE CODE	21EE42 Digital System Design
CO1	Develop simplified switching equation using Karnaugh Maps and QuineMcClusky techniques.
CO2	Design Multiplexer, Encoder, Decoder, Adder, Subtractors and Comparator as digital combinational control circuits
CO3	Design flip flops, counters, shift registers as sequential control circuits.
CO4	Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits.
CO5	Explain the functioning of Read only and Read/Write Memories, Programmable ROM, EPROM and Flash memory.
CO6	Realize Boolean expressions, adders and subtractors using gates.
CO7	Design and test Ring counter/Johnson counter, Sequence generator and 3 bit counters.

COURSE CODE	21EE43 Microcontroller
CO1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
CO2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming.
CO3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
CO4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial data communication and interrupt programming.
CO5	Program 8051to work with external devices for ADC, DAC, Stepper motor control, DC motor control.

COURSE CODE	21EE44 Electric Motors
CO1	Explain the construction, operation and classification of DC Motor, AC motor and special purpose motors.
CO2	Describe the performance characteristics and applications of Electric motors.
CO3	Demonstrate and explain the methods of testing of DC machines and determine losses and efficiency.
CO4	Control the speed of DC motor and induction motor.
CO5	Explain the starting methods, equivalent circuit and phasor diagrams, torque angle, effect of change in excitation and change in load, hunting and damping of synchronous motors.

COURSE CODE	21EEL46 Electrical Machines Laboratory - 2
CO1	Test DC machines to determine their characteristics and also to control the speed of DC motor.
CO2	Pre-determine the performance characteristics of DC machines by conducting suitable tests.
CO3	Perform load test on single phase and three phase induction motor to assess its performance.
CO4	Conduct test on induction motor to pre-determine the performance characteristics.
CO5	Conduct test on synchronous motor to draw the performance curves

COURSE CODE	21EEP481 Microcontroller Based Projects
CO1	Analyse in a systematic way, think better, and perform better.

COURSE CODE	21EEL482 Scilab for Electric Motors
CO1	Analyse in a systematic way, think better, and perform better.

COURSE CODE	21EEL483 Scilab for Electrical and Electronic Measurements
CO1	Analyse in a systematic way, think better, and perform better.

COURSE CODE	21EEL484 Simulation of Op-Amp Circuits
CO1	Analyse in a systematic way, think better, and perform better.

COURSE CODE	21EE51 Transmission and Distribution
CO1	Explain transmission and distribution scheme, identify the importance of different transmission systems and types of insulators.
CO2	Analyze and compute the parameters of the transmission line for different configurations.
CO3	Assess the performance of overhead lines.
CO4	Interpret corona, explain the use of underground cables.
CO5	Classify different types of distribution systems; examine its quality & reliability.

COURSE CODE	21EE52 Control Systems
CO1	Analyze and model electrical and mechanical system using analogous.
CO2	Formulate transfer functions using block diagram and signal flow graphs
CO3	Analyze the stability of control system, ability to determine transient and steady state time response.
CO4	Illustrate the performance of a given system in time and frequency domains, stability analysis using Root locus and Bode plots.
CO5	Discuss stability analysis using Nyquist plots, Design controller and compensator for a given specification.
CO6	Utilize software package and discrete components in assessing the time and frequency domain response of a given second order system.
CO7	Design, analyze and simulate Lead, Lag and Lag – Lead compensators for given specifications.
CO8	Determine the performance characteristics of ac and DC servomotors and synchro-transmitter receiver pair used in control systems.
CO9	Simulate the DC position and feedback control system to study the effect of P, PI, PD and PID controller and Lead compensator on the step response of the system.
CO10	Develop a script files to plot Root locus, Bode plot and Nyquist plot to study the stability of a system using software package.

COURSE CODE	21EE53 Power System Analysis - 1
CO1	Model the power system components & construct per unit impedance diagram of power system.
CO2	Analyze three phase symmetrical faults on power system.
CO3	Compute unbalanced phasors in terms of sequence components and vice versa, also develop sequence networks.
CO4	Analyze various unsymmetrical faults on power system.
CO5	Examine dynamics of synchronous machine and determine the power system stability.
Course Code	**21EE54 Power Electronics**
CO1	To give an overview of applications power electronics, different types of power semiconductor devices, their switching characteristics, power diode characteristics, types, their operation and the effects of power diodes on RL circuits.
CO2	To explain the techniques for design and analysis of single phase diode rectifier circuits.
CO3	To explain different power transistors, their steady state and switching characteristics and limitations.
CO4	To explain different types of Thyristors, their gate characteristics and gate control requirements.
CO5	To explain the design, analysis techniques, performance parameters and characteristics of controlled rectifiers, DC- DC, DC -AC converters and Voltage controllers.
Course Code	**21EEL55 Power Electronics Laboratory**
CO1	Obtain static characteristics of semiconductor devices to discuss their performance.
CO2	Trigger the SCR by different methods
CO3	Verify the performance of single phase controlled full wave rectifier and AC voltage controller with R and RL loads.
CO4	Control the speed of a DC motor, universal motor and stepper motors.
CO5	Verify the performance of single phase full bridge inverter connected to resistive load.
Course Code	**21EEL581 Scilab for Analysis of Power Systems**
CO1	Analyse in an intelligent manner, think better, and perform better.
Course Code	**21EEL582 Scilab for Power Electronics**
CO1	Analyse in an intelligent manner, think better, and perform better.
Course Code	**21EEP583 Energy Audit Project**
CO1	To analyze the data collected for energy audit of a building or industry or organization.
CO2	To perform comparative analysis with and without energy audit.
CO3	To analyze the energy saving measures to be considered with economy considerations.

CO4	Analyse in a systematic way, think better, and perform better.
Course Code	**21EEP584 Renewable Energy Projects**
CO1	Analyse in a systematic way, think better, and perform better.
Course Code	**21EE61 Management and Entrepreneurship**
CO1	Explain the field of management, task of the manager, planning and steps in decision making.
CO2	Discuss the structure of organization, importance of staffing, leadership styles, modes of communication, techniques of coordination and importance of managerial control in business.
CO3	Explain the concepts of entrepreneurship and a businessman's social responsibilities towards different groups.
CO4	Show an understanding of role of SSI's in the development of country and state/central level institutions/ agencies supporting business enterprises.
CO5	Discuss the concepts of project management, capital budgeting, project feasibility studies, need for project report and new control techniques.
Course Code	**21EE62 Power System Analysis - 2**
CO1	Formulate network matrices and models for solving load flow problems.
CO2	Perform steady state power flow analysis of power systems using numerical iterative techniques.
CO3	Solve issues of economic load dispatch and unit commitment problems.
CO4	Analyze short circuit faults in power system networks using bus impedance matrix.
CO5	Apply Point by Point method and Runge Kutta Method to solve Swing Equation.
CO6	Develop a program in suitable package to assess the performance of medium and long transmission lines.
CO7	Develop a program in suitable package to obtain the power angle characteristics of salient and non-salient pole alternator.
CO8	Develop a program in suitable package to assess the transient stability under three phase fault at different locations in a of radial power systems.
Course Code	**21EE63 Signals and Digital Signal Processing**
CO1	Discuss classification and basic operations that can be performed on both continuous and discrete time signals.
CO2	Evaluate Discrete Fourier Transform of a sequence and the convolution of two sequences to determine the output sequence.
CO3	Evaluate Discrete Fourier Transform of a sequence by using fast methods.
CO4	Design Butterworth and Chebyshev IIR digital filters and FIR filters using different techniques.
CO5	Develop different structures for IIR and FIR filters.

Course Code	21EE641 Sensors and Transducers
CO1	Classify the transducers and explain the need of transducers, their classification, advantages and disadvantages.
CO2	Explain the working of various transducers and sensors.
CO3	Outline the recent trends in sensor technology and their selection
CO4	Analyze the signal conditioning and signal conditioning equipment.
CO5	Illustrate different configuration of Data Acquisition System and data conversion.
CO6	Show knowledge of data transmission and telemetry.
CO7	Explain measurement of non-electrical quantities -temperature, flow, speed, force, torque, power and viscosity.

Course Code	21EE642 Electromagnetic Field Theory
CO1	Use different coordinate systems, Coulomb's Law and Gauss Law for the evaluation of electric fields produced by different charge configurations.
CO2	Calculate the energy and potential due to a system of charges & Explain the behavior of electric field across a boundary conditions
CO3	Explain the Poisson's, Laplace equations and behavior of steady magnetic fields.
CO4	Explain the behavior of magnetic fields and magnetic materials.
CO5	Asses time varying fields and propagation of waves in different media.

Course Code	21EE643 Electrical Machine Design
CO1	Identify and list, limitations, modern trends in design, manufacturing of electrical machines and properties of materials used in the electrical machines.
CO2	Derive the output equation of DC machine, discuss selection of specific loadings and magnetic circuits of DC machines, design the field windings of DC machine, and design stator and rotor circuits of a DC machine.
CO3	Derive the output equations of transformer, discuss selection of specific loadings, estimate the number of cooling tubes, no load current and leakage reactance of core type transformer.
CO4	Develop the output equation of induction motor, discuss selection of specific loadings and magnetic circuits of induction motor, design stator and rotor circuits of a induction motor.
CO5	Formulate the output equation of alternator, design the field windings of Synchronous machine, discuss short circuit ratio and its effects on performance of synchronous machines, design salient pole and non-salient pole alternators for given specifications.

Course Code	**21EE644 Electrical Engineering Materials**
CO1	Discuss electrical and electronics materials, their importance, classification and operational requirement
CO2	Discuss conducting, dielectric, insulating and magnetic materials used in engineering, their properties and classification.
CO3	Explain the phenomenon superconductivity, super conducting materials and their application in engineering.
CO4	Explain the plastic and its properties and applications.
Course Code	**21EE651 Utilization of Electrical Power**
CO1	Discuss different methods of electric heating & welding.
CO2	Discuss the laws of electrolysis, extraction, refining of metals and electro deposition process.
CO3	Discuss the laws of illumination, different types of lamps, lighting schemes and design of lighting systems.
CO4	Analyze systems of electric traction, speed time curves and mechanics of train movement.
CO5	Explain the motors used for electric traction, their control & braking and power supply system used for electric traction.
Course Code	**21EE652 Renewable Energy Resources**
CO1	Discuss causes of energy scarcity and its solution, energy resources and availability of renewable energy.
CO2	Outline energy from sun, energy reaching the Earth's surface and solar thermal energy applications.
CO3	Discuss types of solar collectors, their configurations, solar cell system, its characteristics and their applications.
CO4	Explain generation of energy from hydrogen, wind, geothermal system, solid waste and agriculture refuse.
CO5	Discuss production of energy from biomass, biogas.
CO6	Summarize tidal energy resources, sea wave energy and ocean thermal energy.
Course Code	**21EE653 Industrial Servo Control Systems**
CO1	Explain the evolution and classification of servos, with descriptions of servo drive actuators, amplifiers, feedback transducers, performance, and troubleshooting techniques.
CO2	Discuss system analogs, vectors and transfer functions of differential equations.
CO3	Discuss mathematical equations for electric servo motors, both DC and brushless DC servo motors.
CO4	Discuss mathematical equations for electric servo motors, both DC and brushless DC servo motors.
Course Code	**21EE654 Advanced Control Systems**
CO1	Discuss state variable approach for linear time invariant systems in both the continuous and discrete time systems.
CO2	Develop of state models for linear continuous–time and discrete–time systems.
CO3	Apply vector and matrix algebra to find the solution of state equations for linear continuous–time and discrete–time systems.

CO4	Define controllability and observability of a system and test for controllability and observability of a given system.
CO5	Design pole assignment and state observer using state feedback.
CO6	Develop the describing function for the nonlinearity present to assess the stability of the system.
CO7	Develop Lyapunov function for the stability analysis of nonlinear systems
Course Code	**21EEL66 Digital Signal Processing Laboratory**
CO1	Conduct sampling of signals in time and frequency domains.
CO2	Evaluate the impulse response of a system.
CO3	Obtain convolution of given sequences to evaluate the response of a system.
CO4	Compute DFT and IDFT of a given sequence using the basic definition and/or fast methods.
CO5	Provide a solution for a given difference equation.
CO6	Design and implement IIR and FIR filters.
Course Code	**21EE71 High Voltage and Power System Protection**
CO1	Apply the knowledge of dielectric property for insulation, it's performances as per Standards and High voltage application in power system Equipment's.
CO2	Analyze the circuits of high voltages, high currents in Generation and Measurements.
CO3	Apply relays to the power system protection.
CO4	Discuss the construction, operating principles and performances of circuit breaker.
CO5	Discuss protection of generators, motors, Transformer and Bus Zone Protection.
CO6	Describe the causes of over voltages and their remedial measures.
CO7	Analyze the spark over characteristics using High voltages for checking the breakdown phenomenon and dielectric strength of dielectric materials
CO8	Experimentally verify the characteristics of over current, over voltage, under voltage using electromagnetic, static, distance and impedance relays.
CO9	Demonstration of protective schemes for motor and feeders.

Course Code	**21EE72 Power System Operation and Control**
CO1	Describe various levels of controls in power systems, architecture and configuration of SCADA.
CO2	Develop and analyze mathematical models of Automatic Load Frequency Control.
CO3	Develop mathematical model of Automatic Generation Control in Interconnected Power system.
CO4	Discuss the Control of Voltage, Reactive Power and Voltage collapse.

CO5	Explain security, contingency analysis, and state estimation of power systems.
Course Code	**21EE721 Power System Planning**
CO1	Discuss primary components of power system planning, planning methodology for optimum power system expansion and load forecasting.
CO2	Understand economic appraisal to allocate the resources efficiently and appreciate the investment decisions
CO3	Discuss expansion of power generation and planning for system energy in the country, evaluation of operating states of transmission system, their associated contingencies and the stability of the system.
CO4	Discuss principles of distribution planning, supply rules, network development and the system studies
CO5	Discuss reliability criteria for generation, transmission, distribution and reliability evaluation and analysis, grid reliability, voltage disturbances and their remedies
CO6	Discuss planning and implementation of electric –utility activities, market principles and the norms framed.
Course Code	**21EE722 Smart Grid**
CO1	Discuss the progress made by different stakeholders in the design and development of smart grid.
CO2	Explain measurement techniques using Phasor Measurement Units and smart meters
CO3	Discuss tools for the analysis of smart grid and design, operation and performance
CO4	Discuss classical optimization techniques and computational methods for smart grid design, planning and operation.
CO5	Explain predictive grid management and control technology for enhancing the smart grid performance
CO6	Develop cleaner, more environmentally responsible technologies for the electric system.
CO7	Discuss the computational techniques, communication, measurement, and monitoring technology tools essential to the design of the smart grid.
CO8	Explain methods to promote smart grid awareness and making the existing transmission system smarter by investing in new technology.
Course Code	**21EE723 ANN with Applications to Power Systems**
CO1	Develop Neural Network and apply elementary information processing tasks that neural network can solve.
CO2	Develop Neural Network and apply powerful, useful learning techniques.
CO3	Develop and Analyze multilayer feed forward network for mapping provided through the first network layer and error back propagation algorithm.
CO4	Analyze and apply algorithmic type problems to tackle problems for which algorithms are not available.
CO5	Develop and Analyze supervised/unsupervised, learning modes of Neural Network for different applications.
Course Code	**21EE724 Electrical Vehicle Technologies**
CO1	Explain the working of electric vehicles and recent trends.

CO2	Analyze different power converter topology used for electric vehicle application.
CO3	Develop the electric propulsion unit and its control for application of electric vehicles.
CO4	Design converters for battery charging and explain transformer less topology.
Course Code	**21EE725 PLC and SCADA**
CO1	Discuss history of PLC and describe the hardware components of PLC: I/O modules, CPU, memory devices, other support devices, operating modes and PLC programming.
CO2	Describe field devices Relays, Contactors, Motor Starters, Switches, Sensors, Output Control Devices, Seal-In Circuits, and Latching Relays commonly used with I/O module.
CO3	Analyze PLC timer and counter ladder logic programs and describe the operation of different program control instructions
CO4	Discuss the execution of data transfer instructions, data compare instructions and the basic operation of PLC closed-loop control system.
CO5	Describe the operation of mechanical sequencers, bit and word shift registers, processes and structure of control systems and communication between the processes.
Course Code	**21EE731 Computer Aided Electrical Drawing**
CO1	Develop armature winding diagram for DC and AC machines.
CO2	Develop a Single Line Diagram of Generating Stations and substation using the standard symbols.
CO3	Construct sectional views of core type and shell type transformers using the design data.
CO4	Construct sectional views of assembled DC and AC machine and their parts using the design data or the sketches.
Course Code	**21EE732 Micro- and Nano-Scale Sensors and Transducers**
CO1	Understand the differences between the sensor and transducer technology based on nanotechnology and nanofabrication and the classical sensor technologies
CO2	Make an informed selection of a sensor or transducer for a particular application
CO3	Become knowledgeable about the technologies that are available commercially at the present time.
Course Code	**21EE733 Big Data Analytics in Power Systems**
CO1	Discuss role of big data and machine-learning methods applicable to power systems and in particular to Smart Grid communications.
CO2	Discuss optimization methods which are suitable for big data models in power systems.
CO3	Discuss various cyber security issues, electricity theft detection and mitigation that exist in IoT-enabled future power systems.

CO4	Discuss renewable energy planning concerns associated with planned future power systems that have high renewable penetration.
Course Code	**21EE734 Industrial Drives and Applications**
CO1	Explain the advantages, choice and control of electric drive
CO2	Explain the dynamics, generating and motoring modes of operation of electric drives
CO3	Explain the selection of motor power rating to suit industry requirements
CO4	Analyze the performance & control of DC motor drives using controlled rectifiers
CO5	Analyze the performance & control of converter fed Induction motor, synchronous motor & stepper motor drives.
Course Code	**21EE735 FACTS and HVDC**
CO1	Discuss transmission interconnections, flow of Power in an AC System, limits of the loading capability, dynamic stability considerations of a transmission interconnection and controllable parameters.
CO2	Explain the basic concepts, definitions of flexible ac transmission systems and benefits from FACTS technology.
CO3	Describe shunt controllers, Static Var Compensator and Static Compensator for injecting reactive power in the transmission system in enhancing the controllability and power transfer capability.
CO4	Describe series Controllers Thyristor-Controlled Series Capacitor (TCSC) and the Static Synchronous Series Compensator (SSSC) for control of the transmission line current.
CO5	Explain advantages of HVDC power transmission, overview and organization of HVDC system.
CO6	Describe the basic components of a converter, the methods for compensating the reactive power demanded by the converter.
CO7	Explain converter control for HVDC systems, commutation failure, control functions.
Course Code	**21EE741 Carbon Capture and Storage**
CO1	Discuss the impacts of climate change and the measures that can be taken to reduce emissions.
CO2	Discuss carbon capture and carbon storage.
CO3	Explain the fundamentals of power generation.
CO4	Explain methods of carbon capture from power generation and industrial processes.
CO5	Explain different carbon storage methods: storage in coal seams, depleted gas reservoirs and saline formations.
CO6	Explain Carbon dioxide compression and pipeline transport.
Course Code	**21EE742 Electric Vehicles**
CO1	Explain the roadway fundamentals, laws of motion, vehicle mechanics and propulsion system design.
CO2	Explain the working of electric vehicles and hybrid electric vehicles in recent trends.
CO3	Model batteries, Fuel cells, PEMFC and super capacitors

CO4	Analyze DC and AC drive topologies used for electric vehicle application.
CO5	Develop the electric propulsion unit and its control for application of electric vehicles.
Course Code	**21EE743 Disasters Management**
CO1	Discuss disaster management plan, cyclones and their hazard potential
CO2	Understand the role of IMD and cyclone prediction and cyclone warning system in India
CO3	Understand the role of different institutions defence and other services in natural disaster management.
CO4	Understand the role of Central Water Commission in river water sharing, Draught, its assessment and draught management plan
CO5	Understand occurrence of earth quake, Tsunamis and thunderstorms.
Course Code	**21EE744 Electrical Power Quality**
CO1	Define Power quality; evaluate power quality procedures and standards.
CO2	Estimate voltage sag performance; explain principles of protection and Sources of transient over voltages.
CO3	Identify various sources of harmonics, explain effects of harmonic distortion.
CO4	Evaluate harmonic distortion, control harmonic distortion.
CO5	Estimate power quality in distribution planning. Identify power quality issues in utility system.
Course Code	**21EE745 Energy Conservation and Audit**
CO1	Analyze about energy scenario nationwide and worldwide , also outline Energy Conservation Act and its features.
CO2	Discuss load management techniques and energy efficiency.
CO3	Understand the need of energy audit and energy audit methodology.
CO4	Understand various pillars of electricity market design.
CO5	Conduct energy audit of electrical systems and buildings.
CO6	Show an understanding of demand side management and energy conservation.