Statements of Program Outcomes (POs) and Program Specific Outcomes

(PSOS):

PROGRAM OUTCOMES (POs)

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, research literature, and analyses complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: The problems that cannot be solved by straight forward application of knowledge, theories and technique applicable to the engineering discipline that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions that require consideration of appropriate constraints/requirements not explicitly given in the problem statement. (Like: cost, power requirement, durability, product life, etc.).Which need to be defined (modeled) within appropriate mathematical framework that often requires use of modern computational concepts and tools.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
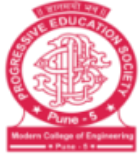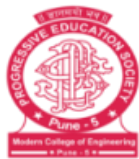
PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Students will have skill set in Energy Audit, Design of Solar System, Automation in PLC and SCADA Applications, Microcontroller, Electric Vehicles and analysis for power quality in Power System.

PSO2: Students will be capable of dealing with techno-commercial aspect in Electrical Engineering.

Statements of Course Outcomes (COs):

Course Outcome No.	Course Name	Course Outcomes
		S.E. (AY:2019-20)
C201.1	**POWER GENERATION TECHNOLOGIES**	Students will be able to define and explain the fundamental concepts of thermodynamic cycles.
C201.2		Students will be able to outline the Nuclear, Diesel & Gas power plant.
C201.3		Students will be able to explain basic concepts of non-conventional energy systems.
C201.4		Students will be able to compare energy conversion techniques
C201.5		Students will be able to classify various new technologies with non-conventional energy system.
C201.6		Students will be able to identify energy conversion related to social aspects
C202.1	**Engineering Mathematics-III**	Students will be able to solve higher order Linear Differential Equations and model L-C-R electrical circuits
C202.2		Students will be able to evaluate Laplace, Fourier and Z-transforms and applications to Control systems and Signal processing
C202.3		Students will be able to apply vector differential operator on scalar and vector point functions to deal with Directional Derivatives, Solenoidal, Irrotational, Scalar Potential function and Conservative vector fields.
C202.4		Students will be able to apply Greens, Gauss divergence, Stokes theorem to evaluate Line integral, Surface integral, volume integrals and solve problems in Electromagnetic fields
C202.5		Students will be able to check analyticity of the functions using Cauchy- Riemann Theorem, evaluate bilinear transformation and apply Cauchy's integral theorem, residue theorem to evaluate line integrals in the complex plane
C203.1	**MATERIAL SCIENCE**	Student will be able to classify and list dielectric properties of different insulating material
C203.2		Students will understand and execute test on Dielectric, Insulating, conducting, resistive materials as per IS Specification to decide quality of materials
C203.3		Students will get brief idea and will be able to state various parameters of different classes of insulating materials
C203.4		Students will get latest knowledge about the nanotechnology and its applications
C203.5		Student will be able to list conducting materials & solve simple problems.

C203.6		Students will understand and will be able to create learning resources material ethically to demonstrate self-lifelong learning skills, usages of ICT/online technology through collaborative, active learning activities
C205.1	**ELECTRICAL MEASUREMENTS AND INSTRUMENTATION**	Student will be able to understand and analyse electrical measuring instrument and range extension technique.
C205.2		Student will be able to classify resistance, apply measurement techniques for measurement of resistance, inductance
C205.3		Student will be able to explain construction, working principle and make use of dynamometer type wattmeter for measurement of power
C205.4		Students will be able to explain Construction, working of energy meter and calibration procedures.
C205.5		Students will be able to explain different methods for measurement of nonelectrical quantity
C205.6		Students will be able to identify and select transducers for particular application
C208.1	**Power System I**	Students will be able to interpret and calculate inductance and capacitance for different configurations of transmission lines in power systems.
C208.2		Students will be able to relate the theoretical knowledge of power system with the real time power networks.
C208.3		Student will be able to distinguish consumers, Apply different tariff structures and compute the electricity bills.
C208.4		Students will be able to define different factors associated with generating station and can demonstrate its application in problem solving.
C208.5		Students will be able to design mechanical structure of overhead transmission lines and evaluate the efficiency of different components.
C208.6		Students will be able to analyse the performance of transmission lines & can estimate the performance parameters.
C204.1	**ANALOG AND DIGITAL ELECTRONICS**	Students will be able to Understand conversion of numbering system , perform binary arithmetic and reduce Boolean expression by K-map
C204.2		Students will be able to Demonstrate basic of various types of Flip flops, design registers and counters.
C204.3		Students will be able to Analyse parameters of Op-amp and its applications.
C204.4		Students will be able to Apply the knowledge of opamp as waveform generators and filters

C204.5		Students will be able to Make use of BJT as amplifier with various configurations
C204.6		Students will be able to Analyse uncontrolled rectifier.
C210.1	**Network Analysis**	Students will be able to characterize types of networks and formulate network equations for loop and nodal analysis.
C210.2		Students will be able to define and implement network theorems to solve various circuits.
C210.3		Students will be able to analyze transient response of basic circuits using classical method.
C210.4		Students will be able to analyze transient response of basic circuits using Laplace transform.
C210.5		Students will be able to describe and synthesize two-port network, network functions and identify stability of networks.
C210.6		Students will be able to define, recognize and design passive filters.
C212.1	**Fundamentals of Microcontroller and its Applications**	Students will be able to describe architecture, Memory organization & Internal structure of I/O port of 8051.
C212.2		Student will be able to understand 8051 addressing modes and instruction set (arithmetic & logic operations, data & control transfer operations, input & output operations)
C212.3		Students will be able to develop assembly language programs by applying knowledge of instruction set ,counter & timer
C212.4		Student can implement serial communication and interrupt programming and understand the microcontroller development systems.
C212.5		Student will be able to interface microcontroller with PPI 8255, A/D and D/A converters.
C212.6		Students will be able to interface and programming of 8051 for various applications (LED, Relay, voltage, current, speed control of dc motors, Stepper motor control)
C211.1	**Numerical Methods and Computer Programming**	Develop algorithms and implement programs using C language for various numerical methods.
C211.2		Demonstrate types of errors in computation and their causes of occurrence.
C211.3		Identify various types of equations and apply appropriate numerical method to solve different equations.
C211.4		Apply different numerical methods for interpolation, differentiation and numerical integration.
C211.5		Apply and compare various numerical methods to solve first and second order ODE.
C211.6		Apply and compare various numerical methods to solve linear simultaneous equations.
C209.1	**Electrical Machines I**	Describe construction and working of single phase transformers
C209.2		Analyse working,controlling and applications of single and three phase transformers under different operating conditions.

C209.3		Analyse construction, performance parameters,and working of d c machines.
C209.4		Evaluate different techniques of speed control and applications of d.c. machines under different operating conditions
C209.5		Describe construction, working and operation three phase Induction motor.
C209.6		Examine working, operation and applications of three phase Induction motor with its performance parameters
C206.1	Soft Skills	Students will be able to analyze SWOT analysis.
C206.2		Students will be able to develop their communication skills.
C206.3		Students will be able to apply and implement etiquettes in workplace and society.
C206.4		Students will be able to develop their interpersonal relationships.
C206.5		Students will be able to define leadership qualities and develop skills required for it.
C206.6		Students will be able to make use of skillsets like stress management, time management
C207.1	Audit Course I: German Language	Students will be able to understand and use familiar and everyday expressions and very simple sentences
C207.2		Students will be able to introduce him/herself and others as well as ask others about themselves
C207.3		Students will be able to get basic idea of reading, writing and listening skills in German Language
C207.4		Students will be able to develop interest to pursue professional German language course conducted by Goethe Institute (Max Mueller Bhavan)
C213.1	Audit Course II : Installation & Maintenance of Electrical appliances	Students will be able to understand and use familiar and everyday expressions and very simple sentences
C213.2		Students will be able to introduce him/herself and others as well as ask others about themselves
C213.3		Students will be able to get basic idea of reading, writing and listening skills in German Language
C213.4		Students will be able to develop interest to pursue professional German language course conducted by Goethe Institute (Max Mueller Bhavan)
T.E. (AY:2019-20)		
Course Outcome No.	Course Name	Course Outcomes
C305.1	Electrical Installation, Maintenance and	Student will be able to classify distribution systems & design of A.C Distribution system and Feeder.
C305.2		Students will be able to classify substation and understand types of earthing system for industrial

	Testing	and residential premises and design substation earthing grid .
C305.3		Students will be able to understand condition monitoring, maintenance & advance tools and techniques of various electrical equipment's used in substation.
C305.4		Students will be able to distinguish failure modes and condition monitoring methods for various electrical equipment's and can apply testing methods of various electrical equipments
C305.5		Student will be able to design and Estimate residential and commercial buildings lighting and estimate underground L.T Service line
C305.6		Students will be able to recognize the basic aspects of Electrical Safety.
C308.1	**Power System II**	Students will be able to analyze power flow and performance of transmission line, line efficiency and compensation techniques.
C308.2		Students will be able to solve problems involving power handling capacity, design and performance of EHVAC power transmission lines
C308.3		Students will be able to apply load flow solutions to various power system networks using per unit system by computational technique & software tools.
C308.4		Students will be able to examine power system network under symmetrical fault and provide solutions considering protection of the transmission lines.
C308.5		Student will be able to examine power system network under unsymmetrical fault and provide solutions considering protection of the transmission lines.
C308.6		Students will be able to apply knowledge of HVDC transmission systems and its control.
C310.1	**Utilization of Electrical Energy**	Students will be able to interpret different types of electric heating and welding methods and design heating element
C310.2		Students will be able to explain refrigeration and air conditioning and interpret electrochemical processes in practical world
C310.3		Students will be able to understand different terms in illumination and design illumination schemes
C310.4		Students will be able to categarize types of rail-track electrification and traction systems
C310.5		Students will be able to analyze the mechanics of train movement
C310.6		Students will be able to apply knowledge for selecting motors for traction purpose & understand process of electrical braking & railway signaling
C312.1	**Energy Audit and Management**	Students will be able to understand and get the knowledge of BEE Energy policies and Electricity Acts.
C312.2		Students will be able to demonstrate the use of various energy measurement and audit instruments

C312.3		Stuedents will be able to Carry out preliminary energy audit of various sectors
C312.4		Students will be able to enlist energy conservation and demand side measures for electrical, thermal and utility Systems.
C312.5		Students will be able to evaluate and analyze simple problems on cost benefit analysis
C312.6		Students will be able to analyze economic feasibility of energy conservation projects.
C313.1	**Electrical Workshop**	Students will be able to develop small residential wiring circuits with different lamps and MCB/ELCB (Group A)
C313.2		Students will be able to read datasheets/manuals and Integrate electrical/electronic circuits for useful applications (Group B)
C313.3		Students will be able to Acquire hardware skills to fabricate designed circuits . (Group B and c)
C313.4		Students will be able to assemble and test the circuits. (Group A,B,C)
C313.5		Students will be able to debug and produce the results of the testing in the form of report. (Group B and c)
C302.1	**Advance Microcontroller and its Applications**	Students will be able to explain the architecture of PIC microcontroller.
C302.2		Students will be able to develop assembly and embedded C language programming for ports and timers PIC 18F458.
C302.3		Students will be able to define timers/counters, interrupts, SPI protocol for PIC18F458.
C302.4		Students will be able to explain CCP module of PIC18F458 and its hardware implementation with DC motor and stepper motor control
C302.5		Students will be able to develop programming for serial communication and interrupts using PIC18F458.
C302.6		Students will be able to explain interfacing of PIC microcontroller with various peripheral devices
C309.1	**Control System-I**	Students will be able to demonstrate and determine control system parameters and model the physical system
C309.2		Students will be able to analyse and evaluate the behaviour of control system by time domain specifications and validate it by modern tool.
C309.3		Student will be able to analyse stability of system in time domain.
C309.4		Student will be able to analyse stability of system using Polar and Nyquist Plot in frequency domain.
C309.5		Student will be able to analyse stability of system using Bode Plot in frequency domain.
C309.6		Student will be able to construct, design and validate PID controller to achieve desired performance

		specification.
C303.1		Students will be able to recognize and describe construction and working of alternators.
C303.2		Students will be able to demonstrate and control three phase alternator under different operating conditions.
C303.3		Students will be able to evaluate performance parameters and explain working and applications of synchronous motor.
C303.4	**Electrical Machines II**	Students will be able to illustrate construction, working and applications of Induction generators, Induction motors and special purpose machines.
C303.5		Students will able to analyse construction, working and applications of a.c. series motor and evaluate its performance parameters
C303.6		Students will be able to analyse construction, working and applications under different operating conditions of single phase Induction motor and evaluate its performance parameters.
C304.1		Explain the working principle and characteristics of SCR with different switching circuits & describe the working of GTO
C304.2		Describe the characteristics of MOSFET, IGBT and classify Operating quadrants of chopper with its contol techniques.
C304.3	**Power Electronics**	Analyze the types of AC-DC power converters according to R, RL Load & describe the working of Single phase dual converter
C304.4		Analyze the three phase AC-DC and DC-AC power converters and AC Voltage Regulator with respect to R, RL Load.
C304.5		Analyze single phase DC-AC power Converter by using PWM techniques.
C304.6		Analyze three phase DC-AC power Converter by using computer-aided techniques & classify Multilevel Converter concept.
C311.1		Students will be able to explain constructional features of Transformer, modes of heat dissipations and IS 2026(Part I).
C311.2	**Design of Electrical Machines**	Students will be able to evaluate main dimensions of transformer for minimum cost and minimum loss design, temperature rise and cooling scheme and resistance & leakage reactance
C311.3		Students will be able to determine the performance parameters, Calculate of mechanical force of transformer and describe Computer aided design of transformer
C311.4		Students will be able to develop AC winding using modern tools and determine main dimensions of three phase induction motor.

C311.5		Students will be able to design stator, rotor & air gap and calculate unbalanced magnetic pull.of three phase induction motor.
C311.6		Students will be able to determine various performance parameters of three phase induction motor and Calculate of short time and continuous rating of electrical machine.
C301.1	**Industrial and Technology Management**	Students will be able to illustrate the fundamentals of mangerial economics and management and differentiate various types of business organization.
C301.2		Students will be able to Summarize the concept of technology management and Industrial management
C301.3		Students will be able to explain quality management, quality assitance tools and quality management standards.
C301.4		Students will be able to Identify marketing management and financial management.
C301.5		Students will be able Apply to the concepts of Motivation, group dynamics leadership and Human resource management.
C301.6		Students will be able to outline various aspects of Entrepreneurship , intellectual propety rights(IPR) and Patents
C306.1	**Seminar and Technical Communication**	Students will be able to recognize current trends in electrical engineering.
C306.2		Students will be able to extend presentation and documentation skills.
C306.3		Students will be able to relate theoretical knowledge to actual industrial applications and research activity.
C306.4		Students will be able to explain analysis, planning, management and operations in electrical engineering field.
C306.5		Students will be able to communicate effectively.
C306.6		Students will be able to relate the facts with current technology and innovations in electrical engineering.
C307.1	**AUDIT COURSE III: Microcontroller MSP 430 and Applications**	Student will be able to explain basics of MSP 430 Microcontroller
C307.2		Students will be able to compare PIC and MSP 430 Microcontroller
C307.3		Students will be able to explain Timers MSP 430 Microcontroller
C307.4		Student will be able to execute embedded C Programming for Timers, ADC and PWM
C314.1	**Audit Course I: German**	Students will be able to understand and use familiar and everyday expressions and very simple sentences

Course Code	Course Name	Course Outcomes
C314.2	**Language**	Students will be able to introduce him/herself and others as well as ask others about themselves
C314.3		Students will be able to get basic idea of reading, writing and listening skills in German Language
C314.4		Students will be able to develop interest to pursue professional German language course conducted by Goethe Institut (Max Mueller Bhavan)
B.E. (AY:2019-20)		
Course Code	**Course Name**	**Course Outcomes**
C401.1	**Power System Operation and Control**	Students will be able to identify and analyse the dynamics of power system stability.
C401.2		Students will be able to categorize the reactive power control methods under various criterions.
C401.3		Students will be able to classify and explain various FACTS devices depending upon type of compensation for power flow control.
C401.4		Students will be able to demonstrate the necessity of generator load balance in real time operation and its effect on frequency to formulate auto-control strategies with mathematical modeling
C401.5		Students will be able to Formulate Objective function for optimization such as unit commitment and economic load dispatch and can implement it for power system network to obtain its solution.
C401.6		Students will be able to describe Real time Energy control strategies and concept of Reliability
C402.1	**PLC and SCADA Applications**	Students will be able to define, describe and explain the architecture of PLC and evolution of PLC
C402.2		Students will be able to Identify and find suitable analog and digital input and output devices which can be interfaced with PLC
C402.3		Students will be able to demonstrate various ladder programs for industrial applications.
C402.4		Students will be able to implement various controllers for industrial processes.
C402.5		Students will be able to define, describe SCADA architecture,Generation of SCADA and implementing PLC and SCADA in critical infrastucture.
C402.6		Students will be able to Understand OSI and TCP/IP model and various SCADA Protocols
C403.E1B.1	**Power Quality**	Students will be able to Identify importance of Power Quality and Demonstrate various Power Quality problems.
C403.E1B.2		Students will be able to aquire the knowledge of Power Quality monitoring methods, equipments and analyze the measured data.
C403.E1B.3		Students will be able to analyse Power Quality Events and organise Power Quality Audit
C403.E1B		Students will be able to Classify and analyse mitigation Techniques and Estimate different

.4		mitigation methods for PQ problems
C403.E1B.5		Students will be able to compare different Power Quality standards and Evaluate Power Quality standards for harmonics Compliance using IEEE 519-2014
C403.E1C.1	**Renewable Energy Systems**	Student will be able to explain various concepts of Solar related terminologies, summarize various devices & Instruments for thermal collection and represent plants using CSP technologies (BTX-L2)
C403.E1C.2		Student will be able to abstract solar film technology, interpret the factors influencing the electrical design, plan and execute designing of PV system. (BTX-L2,4,6)
C403.E1C.3		Student will be able to represent various concepts of Wind Energy System, summarize various characteristics and explain Control Systems for Wind Turbine (BTX-L2)
C403.E1C.4		Student will be able to Identify Biomass Classification, Biomass Resources, can map the biomass Conversion Technologies and differentiate various Biomass plants (BTX-L2,3,4)
C403.E1C.5		Student will be able to classify Fuel Cells, retrieve Storage systems and Introduce other storage technologies (BTX 1)
C403.E1C.6		Student will be able to Integrate various sources of RES and can evaluate economics of RES (BTX 4,5)
C416.1	**Project**	Students will be able to acqire knowledge and analyse the selected problem statement
C416.2		Students will be able to investigate and design solution for the selected problem statement
C416.3		Students will be able to apply modern tools to solve societal problems and or sustainable solution in the selected domain.
C416.4		Students will be able to apply ethics while developing the sustainable solution through their project work
C416.5		Students will be able to apply individual skill and co-ordinate project as their group activity
C416.6		Students will be able to develop management of project and finance related to selected project work.
C405.1	**Control System-II**	Students will be able to understand digital control system
C405.2		Students will be able to categorize, define and evaluate basics of digital control system and Z-trans-form
C405.3		Students will be able to analyze the stability of Digital Control System
C405.4		Students will be able to understand state space technique
C405.5		Students will be able to evaluate solution of state equation by various methods

C405.6		Students will be able to analyze, design and implement control system using state space technique
C410.E4 A.1	**Smart Grid**	Students will be able to explain and compare Conventional and Smart Grid.
C410.E4 A.2		Students will be able to identify the need of Smart Grid, Micro Grid, smart metering and storage.
C410.E4 A.3		Students will be able to outline new technologies of Automation and communication in smart grid.
C410.E4 A.4		Students will be able to choose the recent trends for various electric grids
C410.E4 A.5		Students will be able to assess current professional issues in electric Grid and evaluate the emerging technologies
C410.E4 A.6		Students will be able to define and formulate the necessity of global smart communication system.
C404.E2 D.1	**Electric and Hybrid Vehicles**	Students will be able to Explain Conventional Vehicle and Summarize history, Social and environmental importance of Electric and Hybrid vehicles.
C404.E2 D.2		Students will be able analyze Energy Storage Systems & Explain Hybridization of Energy storage, Drive train & Selection of energy storage technology in Electric and Hybrid Vehicles.
C404.E2 D.3		Students will be able to choose charging algorithm & Battery balancing methods & Illustrate Battery Management System.
C404.E2 D.4		Students will be able to Explain architecture and performance of Electric and Hybrid Vehicles
C404.E2 D.5		Students will be able to select BLDC and Switched Reluctance Motor Drives for EVs & HEVs & illustrate Instrumentation and Control used for Electric & Hybrid Vehicles.
C404.E2 D.6		Students will be able to classify Vehicle to Home, Vehicle to Vehicle and Vehicle to Grid energy systems concepts.
C407.1	**Switchgear and Protection**	Students will be able to Demonstrate the need of protective Relaying and Explain operating principles of different types of relays.
C407.2		Students will be able to Classify and analyze arc interruption Methods .
C407.3		Students will be able to Explain construction ,working principle and Classify different types of High Voltage Circuit Breakers.
C407.4		Students are able to explain implementation of static and digital relaying and causes of failure of

		induction motor with the protection
C407.5		Students are able to categorize different types of faults in transformer, alternator, 3phase induction motor and various protective schemes related to them.
C407.6		Students are able to illustrate various protection schemes for bus bars, overhead transmission lines and itroduce wide area management
C409.E3B.1	HVDC & FACTS	Students will be able to extend the general back ground of HVDC System.
C409.E3B.2		Students will be able to develop the layout of HVDC system with various components including protective devices.
C409.E3B.3		Students will be able to distinguish VSC-HVDC and conventional HVDC system.
C409.E3B.4		Students will be able to extend various types of Power Electronic Controllers.
C409.E3B.5		Students will be able to analyze Series and Shunt Compensation used in FACTS devices.
C409.E3B.6		Students will be able to explain in-depth understanding of Unified Power Flow Controller.
C408.1	Power Electronics Controlled Drives	Students will be able to understand electric drives, evaluate motor load dynamics and steady state stability
C408.2		Students will be able to describe braking methods of DC drives and analysis of fully controlled converter and chopper fed DC drives
C408.3		Students will be able to describe Braking & Speed Control methods of three phase induction motor drives and analyze inverter fed induction motor drive.
C408.4		Students will be able to explain vector control of induction motor drives, Servo mechanism in drives and select classes and duty cycle of motors.
C408.5		Students will be able to evaluate synchronous motor drives and describe Brushless DC motor drives.
C408.6		Students will be able to Select Electric drive for Industrial applications.
C410.E4C.1	Illumination Engineering	Students will be able to describe relation between human optical system and illumination fundamental concepts.
C410.E4		students will be able to identify different light sources & understand control of light sources

C.2		
C410.E4 C.3		Students will be able to define & reproduce various parameters for illumination system.
C410.E4 C.4		Students will be able to implement design techniques in indoor lighting systems.
C410.E4 C.5		Students will be able to implement design techniques in outdoor lighting systems.
C410.E4 C.6		Students will be able to enlist state of the art illumination systems.
C404.E2 A.1	**Restructuring & Deregulation**	Students will be able to enlist the functions of various key entities in India and explain the implications of various policies and acts on restructuring and deregulation
C404.E2 A.2		Students will be able to describe the regulatory process in India along with various methods of regulations for socio economic aspects
C404.E2 A.3		Students will be able to enumerate the components involved in tariff determination with considerations of key indices for assessment of utilities
C404.E2 A.4		Students will be able to Explain different power sector restructuring models
C404.E2 A.5		Students will be able to differentiate various types of electricity markets
C404.E2 A.6		Students will be able to summarize different transmission pricing methods and discuss congestion management
C409.E3 A.1	**High Voltage Engineering**	Students will be able to explain breakdown theories of gaseous dielectric materials
C409.E3 A.2		Student will be able to memorize various concepts of breakdown phenomenon in liquid, solid & composite dielectrics
C409.E3 A.3		Students will be able to recall concepts of various causes of overvoltages & select protective device.
C409.E3 A.4		Students will be able to listout and categorize various methods of generation of High AC , DC and Impulse voltage
C409.E3 A.5		Students will be able to classify various methods of measurement of High AC , DC and Impulse voltage

C409.E3 A.6		Student will be able to undersatnd High Voltage Laboratory layout and demonstrate various test on High Voltage equipments
C404.E2E .1	**Special Purpose Machines**	Students will be able to describe generalized machine theory
C404.E2E .2		Students will be able to reproduce principle of operation of PMSM & brushless DC motor drives
C404.E2E .3		Students will be able to demonstrate control of PMSM drive
C404.E2E .4		Students will be able to understand operation and performance of Switched reluctance motor
C404.E2E .5		Students will be able to reproduce operation and applications of stepper motor drives.
C404.E2E .6		Students will be able to explain performance specifications and characteristic applications of linear induction motor
C409.E3 C.1	**Digital Control System**	Students will be able to analyse digital control system and its stability
C409.E3 C.2		Students will be able to differentiate between various control systems
C409.E3 C.3		Students will be able to design control system using state space
C409.E3 C.4		Students will be able to design observer for system
C409.E3 C.5		Students will be able to understand digital controllers
C409.E3 C.6		Students will be able to elaborate applications such as digital temperature control and position control