Department of Electrical & Electronics Engineering

Subject: Power System Analysis

Class : T.E.

Subject Code: EEP-301

Course Outcome of CO's

- Students understood the basic concept of Modeling of power system.
- Students understood the basic concept of concept of load flow.
- Students understood the basic concept of fault in power system and analysis.
- Students understood the basic concept of fault and calculations.
- Students understood the basic concept of unsymmetrical Fault analysis.
- Students understood the knowledge of security of power system.

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Department of Electrical & Electronics Engineering

Subject: Power System Analysis

Class : T.E.

Subject Code: EEP-301

Program Specific Outcome (PSO's)

- Students got the Knowledge of the Excitation system modeling
- Students understood different examples of complex power flow.
- Students understood the per unit system
- Students got the idea of single line diagram.
- Students understood the idea of formation of Y bus matrix
- Students got the knowledge of formation of z bus matrix.
- Students understood the concept of newton's raphsan mthod
- Students understood the concept of go-seidal method.
- Students got knowledge of transient in power system.
- Students understood how to calculation short circuit current.
- Students got knowledge of symmetrical fault.
- Students understood the knowledge of unsymmetrical fault.
- Students got knowledge of symmetrical components to calculate unsymmetrical fault.
- Students understood the knowledge of different types of unsymmetrical fault.
- Students understood the different types of symmetrical fault.
- Students understood the knowledge bus impedance matrix.
- Students got knowledge of open circuit fault.
- Students got knowledge security.
- Students understood the knowledge of static security analysis
- Students understood the knowledge of bus voltage and line current.

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Department of Electrical and Electronics Engineering

Program Outcomes (P.O.s)

At the end of the program, the graduates of B.E EEE engineering department will be able to :

PO 1 – Application of Engineering Knowledge: Apply knowledge of Engineering, mathematics and science for solving engineering problems. Analyze, plan and apply the acquired knowledge in basic sciences and mathematics in solving problems with technical, economic, environmental and social contexts.

PO 2 – Analysis of Problem: Ability to Design and conduct experiments as well as to analyze and interpret experimental or collected data, simulate and fabricate circuits and systems and make own projects utilizing latest software tools and techniques. Design, build and test analog & digital electronic systems for given specifications.

PO 3 - Design/development of solutions: Design a system, component or process to meet the desired specifications, performance and capabilities; compatible with health, safety, legal, societal and environmental considerations.

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PO 5 - Modern tool us age: 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.

PO 6 - The engineer and society: Apply reasoning in formed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7 - Environment and sustainability: Understand and correctly interpret the impact of engineering solutions in global, societal and environmental contexts and demonstrate the knowledge of a need for sustainable development.

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Department of Electrical & Electronics Engineering

Subject: Microprocessor and Interfacing

Class: TE EEE

Subject code: EEP302

Course Outcome of CO's

- Students understood general idea of microprocessor with architecture , memory and input/output devices
- Students got knowledge of 8085 microprocessor with architecture and memory Interfacing.
- Students understood basic types of instructions and assembly language programming
- Students got knowledge of interfacing of different I/O devices with 8085.
- Students understood different applications of microprocessor

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Department of Electrical & Electronics Engineering

Subject: Microprocessor and Interfacing

Class: TE EEE

Subject code: EEP302

Program Specific Outcome(PSO's)

- Students understood basic organization of microprocessor
- Students understood basic architecture and operation of microprocessor.
- Students got knowledge of memory and input/ output devices
- Students understood 8085 architecture in detail .
- Students got knowledge of different control signals.
- Students understood memory interfacing with 8085 in detail.
- Students understood different types of instructions
- Students got knowledge of addressing modes of 8085.
- Students understood assembly language programming of simple arithmetic operations
- Students got knowledge of stack and subroutine.
- Students understood decision making loop structure
- Students understood concept of counters and delay subroutine.
- Students got knowledge of basic interfacing techniques.
- Students understood how to interface LED, LCD, 7 segment display with 8085.
- Students understood how to interface keyboard, stepper motor relay with 8085.
- Students understood how to interface ADC and DAC with 8085.
- Students got knowledge of 8279 IC and its interfacing
- Students understood the concept of 8255 PPI I and its interfacing.
- Students understood 8253 Timer IC and its interfacing.
- Students understood 8257 DMA controller and its interfacing.
- Students got knowledge of 8251 USART and its interfacing.
- Students understood how to measure voltage, frequency and power by microprocessor.
- Students understood how to control protective relays using 8085.

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Department of Electrical &Electronics Engineering

Subject : Electromagnetic Fields

Class: TE EEE

Subject Code: EEP/303

Course Outcome (CO's)

- Students understood the vector analysis system along with Coulomb's law.
- Students got knowledge of Electric Flux density, Gauss's Law and
- Students learned in detail about types of conductors, dielectric and about capacitance.
- Students understood about steady magnetic field along with magnetic flux and magnetic flux density.
- Students learned magnetic materials, magnetic circuits and forces.
- Students understood about Maxwell's equation in point form and in Integral form.

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Department of Electrical &Electronics Engineering

Subject : Electromagnetic Fields
Class : TE EEE
Subject Code: EEP/303

Program Specific Outcomes (PSO's)

- Students got the concept of vector algebra, vector components and unit vectors.
- Students understood cartesian coordinate system with dot and cross products.
- Students learned Coulomb's law and electric field intensity.
- Students understood electric field due to volume charge distribution.
- Students understood Gauss's law & its application.
- Students got knowledge of Maxwell's First equation and Divergence law.
- Students understood potential gradient and potential difference.
- Students got knowledge of potential of point charge and system of charge.
- Students understood dipole and energy density in electric field.
- Students got the idea of current density and continuity of current.
- Students understood conductor properties and boundary conditions.
- Students understood nature of dielectric and boundary conditions for perfect dielectric.
- Students learned Poisson's and Laplace's equations.
- Students understood product solution of Laplace equation.
- Students understood solution of Poisson's equation.
- Students learned Biot-savart's law, Ampere circuital law.
- Students understood magnetic flux and magnetic flux density.
- Students got knowledge of scalar and vector magnetic potential.
- Students understood force on moving charge and differential current element.
- Student learned magnetic material, magnetization and magnetic boundary conditions.
- Students got knowledge of forces on magnetic material and self and mutual inductances.
- Students understood Faraday's law and Maxwell's equation in point form.
- Students learned Maxwell's equation in integral form and retarded potential.

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Department of Electrical and Electronics Engineering

Subject: Control System Engineering
Class T.E.
Subject Code EEP/304

Course Outcome of CO's

- Students learned to representation of control system using block diagrams, gain calculation of the system
- Students got the insights of time response of first order, second order system, steady state errors in these systems and definition of error constants
- Students learned about stability analysis of systems using various criterias
- Students learned about root locus and inverse root locus and its use for stability analysis
- Students learned to analyze system in frequency domain using bode plot

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Department of Electrical and Electronics Engineering

Subject: Control System Engineering
Class T.E.
Subject Code EEP/304

Course Outcome of PSO's

- Students learned fundamentals of control systems, open and close loop system and representation of system
- Students learned gain calculations techniques
- Students learned calculate transfer function and its application
- Students learned type and order of system
- Students learned to find time response of first and second order system for unit step input
- Students got insights of specification of second order system
- Students learned about steady state error, error constants
- Students understood sensitivity of system
- Students got the concept of stability
- Students understood stability analysis using Hurwitz's criteria, Routh stability criteria, Nyquist stability criteria
- Students understood applications of stability analysis
- Students understood the concept of root locus, construction of root locus
- Students learned concept of inverse locus
- Students learned stability analysis of using root locus
- Students understood concept of PID controller, functions of PID controller
- Students learned correlation between time and frequency domain response
- Students learned to plot bode plot, calculation of gain and phase margin
- Students learned to get state equation for LIT and continuous data system

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Department of Electrical & Electronics Engineering

Subject: Electrical Machine Design

Class : T.E.

Subject Code: EEP-351

Course Outcome of CO's

- Students understood the basic concept of Different types of Principle of machine design.
- Students understood the basic concept of Specifications in machine design.
- Students understood the basic concept of transformer design outer part.
- Students understood the basic concept of Internal design of transformer.
- Students understood the basic concept of three phase induction motor design.
- Students understood the basic concept of three phase induction motor design with air gap.
- Students understood the knowledge of basic electrical design.

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Department of Electrical & Electronics Engineering

Subject: Electrical Machine Design

Class : T.E.

Subject Code: EEP-351

Program Specific Outcome(PSO's)

- Students got the Knowledge of Different types of machine.
- Students understood concept of machine design.
- Students understood the specification of machine design.
- Students got the idea of standard of machine design.
- Students understood the idea of number of ampere turn required for machine.
- Students got the knowledge of temperature rise.
- Students understood the concept of air gap flux distribution in machine.
- Students understood the different method of heat generation in machine
- Students got knowledge of Types of insulation.
- Students understood how to leakage reactance of winding.
- Students got knowledge of mechanical force.
- Students understood the knowledge of types of ac windings.
- Students got knowledge of inductance of number of turn per phase required
- Students understood the knowledge of stator slots per phase.
- Students understood the idea insulation and laminations.
- Students understood the knowledge dimensions.
- Students got knowledge of cable faults and location of faults
- Students got knowledge laminations design and material.
- Students understood the knowledge of heating coil.
- Students understood the knowledge of electromagnet design

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Department of Electrical &Electronics Engineering

Subject : Microcontroller and Applications

Class T.E. EEE

Subject Code: EEP/354

Course Outcome

- **Students understood 8086 microprocessor along with its architecture, instructions and ALP**
- **Students got knowledge of 8051 Microcontroller which include its architecture, memory organization, special function registers etc.**
- **Students understood all types of instruction sets and basic ALP.**
- **Students understood Timers and counters along with its different mode.**
- **Students got knowledge of serial communication and interrupt.**
- **Students learned how to interface 8051 with I/O devices like keyboard, seven segment LED, stepper motor and DC motor**

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Department of Electrical &Electronics Engineering

Subject : Microcontroller and Applications

Class T.E. EEE

Subject Code: EEP/354

Program Specific Outcome(PSO)

- Students understood concept of 16 bit 8086 microprocessor.
- Students got knowledge of 8086 architecture with addressing modes.
- Students understood memory organization and instruction set of 8086.
- Students understood ALP of 8086.
- Students understood comparison between microprocessor and microcontroller.
- Students got knowledge of features and block diagram of 8051.
- Students understood pin diagram and memory organization of 8051.
- Students understood different special function register of 8051.
- Students got knowledge of Timer and interrupt serial port of 8051.
- Students understood different types of instructions.
- Students understood assembly language programming in 8051 .
- Students understood Different modes of Timer 0.
- Students understood different modes of Timer1.
- Students got concept of RS 232 standards.
- Students understood interfacing of RS 232 with 8051.
- Students got idea of 8051 interrupts.
- Students understood how to program Timer interrupts.
- Students understood how to program external hardware interrupts.
- Students understood how to program serial communication interrupts.
- Students got knowledge of interfacing external memory with 8051.
- Students understood how to interface 8051 with 8255,
- Students understood how to interface, DAC, keyboard, .
- Students understood how to interface seven segment LED, Display, stepper motor and DC motor.

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Department of Electrical and Electronics Engineering

Subject: Testing and Maintenance of Electrical Equipments
Class T.E.
Subject Code EEP/352

Course Outcome of CO's

- Students learned objective of testing and maintenance
- Students learned different types of faults, testing and rectification methods occurring in Power Transformer
- Students learned different types of faults, testing and rectification methods occurring in Induction Motor
- Students learned about sophisticated fault finding and testing equipments
- Students got conceptual understanding different testing methods for fault detection

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Department of Electrical and Electronics Engineering

Subject: Testing and Maintenance of Electrical Equipments
Class T.E.
Subject Code EEP/352

Program Specific Outcome (PSO's)

- Students learned about different methods of testing
- Students learned about significance of ISS
- Students understood different methods of testing
- Students got insights about different types of maintenance and its advantages
- Students learned about faults occurring during manufacturing of Power transformers
- Students got insights of probable effects of these faults on transformer
- Students learned different testing methods for identification of these faults
- Students learned about kind of faults occurring during operation of Power transformer
- Students got insights of reasons behind these faults
- Students learned different testing methods as per ISS for identification of these faults
- Students learned about faults occurring during manufacturing of Induction Motors
- Students got insights of probable effects of these faults on Induction Motors
- Students learned different testing methods for identification of these faults
- Students learned about kind of faults occurring during operation of Induction Motors
- Students got insights of reasons behind these faults
- Students learned different testing methods as per ISS for identification of these faults
- Students understood functioning of different industrial test equipments like sono-graphy, X ray, EM swinging, etc
- Students learned about different testing methods to detect faults, their use and when to use them

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Subject: Power Electronics-I (PE-I)

Class: TE (EEE)

Subject code: EEP/353

Course Outcomes (COs)

- Students got the idea of basics of power devices.
- Students understood the working of AC to DC Converters with circuit diagram and waveforms.
- Students understood the working of DC to DC Converters with circuit diagram and waveforms.
- Students got the idea of the working of DC to AC Converters with circuit diagram and waveforms.
- Students got the idea of PWM Converters, power conditioners and UPS.
- Students understood the working of AC to AC Converters with circuit diagram and waveforms.

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Subject: Power Electronics-I (PE-I)

Class: TE (EEE)

Subject code: EED/353

Program Specific Outcomes (PSOs)

- Students understood the power devices basics.
- Students got the idea of basic structure, characteristics, switching actions, trigger requirements of power devices.
- Students understood the ratings, protections and applications of power devices such as SCR, TRIAC, GTOs, IGBT, Power MOSFET and MCTs.
- Students got the idea of the operating principle, working and performance parameters of single phase semi and full converters (AC to DC).
- Students got the idea of the operating principle, working and performance parameters of three phase semi and full converters (AC to DC).
- Students understood the dual converter in circulating and non-circulating mode.
- Students understood the different configurations of DC-DC Converters, CLC and TRC, PWM and FM Techniques.
- Students got the idea of modes of operation, control and output waveforms of practical transistorized chopper circuits.
- Students understood the basics of DC to AC Converters.
- Students understood the single phase thyristorised bridge circuits along with its output waveforms.
- Students got the idea of different PWM Techniques, PWM Inverters and CSI.
- Students understood the three phase thyristorised bridge circuits along with its output waveforms.
- Students understood the operating principle, waveforms and applications of PWM Converters.
- Students got the idea of power conditioners and UPS.
- Students got the idea of AC to AC Converters- working and output waveforms of their different configurations.

Department of Electrical and Electronics Engineering

Program Outcomes (P.O.s)

At the end of the program, the graduates of B.E EEE engineering department will be able to :

PO 1 – Application of Engineering Knowledge: Apply knowledge of Engineering, mathematics and science for solving engineering problems. Analyze, plan and apply the acquired knowledge in basic sciences and mathematics in solving problems with technical, economic, environmental and social contexts.

PO 2 – Analysis of Problem: Ability to Design and conduct experiments as well as to analyze and interpret experimental or collected data, simulate and fabricate circuits and systems and make own projects utilizing latest software tools and techniques. Design, build and test analog & digital electronic systems for given specifications.

PO 3 - Design/development of solutions: Design a system, component or process to meet the desired specifications, performance and capabilities; compatible with health, safety, legal, societal and environmental considerations.

PO 4 - Conduct investigations of complex problems: Use research -based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5 - Modern tool us age: 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.

PO 6 - The engineer and society: Apply reasoning in formed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7 - Environment and sustainability: Understand and correctly interpret the impact of engineering solutions in global, societal and environmental contexts and demonstrate the knowledge of a need for sustainable development.

PO 8 - Ethics: Understand ethics of life and professions and abide by them.

PO 9 - Individual and Team-work: Communicate effectively, demonstrate leadership qualities and exhibit professional conduct in their career. Work with a multi-disciplinary team, and appreciate the role of a leader, leadership principles, and attitudes conducive to effective professional practice of Engineering.

PO 10 - Communication: Communicate and present effectively both orally and in writing, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO 11 - Project management and finance: Demonstrate knowledge and understanding of the engineering finance and management principles as a member and leader in a team to manage projects in multi-disciplinary environments. Apply relevant shop practices in compliance with safety policies and current regulations for engineering workplaces.

PO 12 - Life-long learning: Engage in life-long learning, demonstrate knowledge and understanding of contemporary and emerging issues relevant to their domain - demonstrate knowledge and understanding of business practices and principles of management and understand their limitations, develop awareness of legal consequences of engineering solution.

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