Electrical and Electronics Engineering

II B.Tech I Semester

(13A54302) MATHEMATICS – III

1. Determine analytic functions and non-analytic functions.
2. Evaluate real definite integrals by complex integration.
3. Understand the nature of solutions of system With Complex integrals.
4. Define Residue and apply them to evaluate real definite integrals.

(13A01403) ENVIRONMENTAL SCIENCE

1. Awareness of the various natural resources, analyze their degradation and available management.
2. Understanding the Classification and functioning of Ecosystems.
3. Remembering the Importance of Biodiversity and its Conservation.
4. Understanding the Problems related to Environmental Pollution and management.

(13A01307) FLUID MECHANICS AND HYDRAULIC MACHINERY

1. Determine the concept of power stations for good efficiencies.
2. Evaluates the Problems associated with friction forces.
3. Evaluate the performance of Hydraulic Turbines and Centrifugal pumps.

(13A04301) ELECTRONIC DEVICES AND CIRCUITS

1. Describe the basic principles and operation of various electronic devices such as semiconductor diodes, bipolar junction transistors, field effect transistors and power devices.
2. Explain the methods of biasing of BJTs & FETs.
3. Design and analyze the electronic circuits.
4. Solve the problems related to basic electronic circuits.

(13A03304) ENGINEERING GRAPHICS

1. Representing various conics and curves.
2. Perform dimensioning to a given drawing.
3. Construction of Isometric Scale, Isometric Projections and Views.
4. Sectioning of various Solids and their representation.
5. Understand Development of surfaces and their representation and Pictorial views to Orthographic Projections.

(13A02301) ELECTRICAL MACHINES –I

1. Explain the construction of DC Generator & DC Motor.
2. Elucidate the working and characteristics of DC Motors and DC Generators.
3. Control the speed of DC Motors and test DC machines.
4. Design of DC Motor Starters , Design of Armature Windings.

II B.Tech II Semester

(13A02401) ELECTROMAGNETIC FIELDS

1. Determine the electric and magnetic fields and energy stored due to specified charge and current distributions.
2. Apply the appropriate electric and magnetic field boundary conditions for a given problem involving their usage.
3. Solve problems involving one dimensional Poisson's and Laplace's equations.

4. Work with Maxwell's equation in differential and integral forms for the solution of appropriate problems involving static as well as time varying fields.

(13A02402) CONTROL SYSTEMS ENGINEERING

1. Describe basic components of feedback control systems; formulate mathematical models of physical systems and represent them in block diagrams and signal flow graphs.
2. Explain the time- domain specifications; Analyze first and second order control systems in time domain.
3. Explain the concepts of stability; Analyze stability of the system from transfer functions approach and graphical methods.
4. Design controllers, compensators and control system.

(13A04407) ANALOG ELECTRONIC CIRCUITS

1. Explain the concepts of feedback amplifiers and oscillator
2. Analyse and design power and tuned amplifiers
3. Apply knowledge of various types of multi vibrator circuits & design multi vibrator circuits.
4. Analyse and design Clipping and Clamping Circuits.

(13A04303) SWITCHING THEORY AND LOGIC DESIGN

1. Expound number systems and their algebra used in logic circuit design.
2. Explain Boolean algebra, Boolean functions representation with logic circuits and simplify logic circuits.
3. Design and implement combinational and sequential logic circuits.
4. Explain various logic families and their importance in digital IC characteristics.

(13A02403) ELECTRICAL POWER GENERATING SYSTEMS

1. Categorize different electrical energy sources.
2. Explain the different components, block diagrams and functioning of steam, nuclear, gas and hydro power plants.
3. Explain combined operation of different power plants.
4. State different tariffs in distribution; apply power factor improvements methods

(13A02404)ELECTRICAL MACHINES –II

1. Expound the principle of operation and construction of single phase and three phase Transformers and Induction Motors.
2. Test the transformers and induction motors.
3. Elucidate different winding connections of three phase transformers.
4. Perform parallel operation of transformers.
5. Control the speed of induction motor.

III B.Tech I Semester

(13A52501) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

1. Explain Principles of management.
2. Apply the principles of managerial economics to forecast demand in the market.
3. Maximize profit of an organization under competition.
4. Apply various work study techniques to reduce work content and ineffective time.
5. Explain various functions of marketing and market research.

(13A02501) ELECTRICAL & ELECTRONIC MEASURING INSTRUMENTS

1. Explain the basic laws governing the operation of electrical measuring instruments, relevant circuits and their working. Measure electrical quantities like Voltage, Current, Power, Energy.
2. Determine Resistance, Inductance and Capacitance using different bridges.
3. Expound the measurement of non-electrical quantities like heat, flux, displacement and strain using transducers. Analyse waveforms using Cathode Ray Oscilloscope.
4. Design the shunts and series impedances for extension of range of the instruments.

(13A04508) LINEAR & DIGITAL IC APPLICATIONS

1. Explain the concepts of linear integrated circuits and special IC's (IC 565, IC 566) and their applications. Design oscillators, waveform generators and filter circuits using IC741.
2. Elucidate the concepts of A/D , D/A converters.
3. Design stable voltage regulators. Design the circuits using 555 timers for particular application.

(13A02502) ELECTRICAL POWER TRANSMISSION SYSTEMS

1. Compute the transmission line parameters.
2. Determine regulation and efficiency of transmission lines; explain Ferranti and corona effects.
3. Perform mechanical design of transmission lines.
4. Classify insulators; explain voltage distribution in a string of suspension insulators; test the insulators; Expound underground cables.

(13A02503) POWER ELECTRONICS

1. Explain the theory of various power electronic devices
2. Elucidate the operation of controlled rectifiers and evaluate their performance.
3. Explain the operation of various DC and AC choppers with different loads.
4. Elucidate the frequency changing operation using cyclo converter **.**

(13A02504) ELECTRICAL MACHINES – III

1. Identify the different features of synchronous & special machines.
2. Carry out steady state and dynamic analysis of Synchronous machines.
3. Perform and analyse different methods to find regulation of alternators.
4. Plot and interpret the V and inverted V curves and power circles of Synchronous motor.

III B.Tech II Semester
(13A02601) POWER SEMICONDUCTOR DRIVES

1. Apply power semiconductors for electrical drives.
2. Design rectifier and chopper circuits for speed control of DC machines. Apply AC controllers for soft-starting of Induction Motors.
3. Analyze DC-AC inverter circuits for variable speed control of Induction Motors.
4. Analyze circuits for variable speed control of Synchronous Motors.

(13A02602) POWER SYSTEM PROTECTION

1. Explain the concepts and working of different types of switchgear like circuit breakers, relays Design the ratings for fuses according to the requirement.
2. Elucidate various protection schemes of power system components like alternators, transformers and bus-bars.
3. Expound the concepts of over voltage protection.

(13A04601) MICROPROCESSORS AND MICROCONTROLLERS

1. Describe the history and structure of Microprocessors (MP) and Microcontrollers (MC).
2. Describe basic microprocessor architecture, physical and logical configuration of memory ; perform number system conversions and binary math computations .
3. Explain different instruction sets and operation related to each of the instructions ; write assembly language programs.
4. Describe the circuitry of the 8086 and demonstrate the ability to enter a program into the 8086 MP; Interface keyboard, A/D and D/A converters with MP.
5. Explain 8051 architecture, hardware, input/ output pins, ports and circuits and applications.

(13A02603) POWER SYSTEM OPERATION AND CONTROL

1. Distribute load economically between the thermal plants.
2. Explain power quality.
3. Model LFC, AGC and AVR for an isolated thermal system.
4. Explain different methods of voltage control in transmission and distribution systems.
5. Explain the functions of power system control centres.

(13A02604) POWER SYSTEM ANALYSIS

1. Formulate the incidence and network matrices using singular, nonsingular transformation and building algorithm methods.
2. Analyze short circuit faults using building algorithm method.
3. Perform steady state load flow analysis using Gauss, Gauss–Seidel, Newton-Raphson and Fast Decoupled methods. Determine transient stability using numerical methods

(13A02605) NEURAL NETWORK &FUZZY LOGIC

1. Explain about Neuron and it's characteristics.
2. Give details of Artificial Neural Networks.
3. Explain about supervised Learning networks.
4. Classify about Fuzzy Sets and it's components.

IV B. Tech – I Sem Course Outcomes

(13A52702) MANAGEMENT SCIENCE

1. Explain Principles of management.
2. Apply the principles of managerial economics to forecast demand in the market.
3. Maximize profit of an organization under competition.
4. Apply various work study techniques to reduce work content and ineffective time ¾ Explain various functions of marketing and market research.
5. Select the best alternative from various investment options and calculate depreciation using different methods.

(13A02702) UTILIZATION OF ELECTRICAL ENERGY

1. Demonstrate the concepts of electric heating & welding.
2. Demonstrate the different types of lights and design lighting schemes according to the given specification.
3. Demonstrate the concepts of electric traction & braking methods.
4. Select motor ratings for various applications.

(13A04602) DIGITAL SIGNAL PROCESSING

1. Determine whether a discrete time system is linear, time-invariant, causal, and stable.
2. Analyse discrete systems using Z transforms.
3. Apply DFT to discrete systems; evaluate DFT using fast Fourier transforms (FFT)

(13A02705) ENERGY AUDITING & DEMAND SIDE MANAGEMENT

1. Explain about Energy Auditing.
2. Explain about Energy efficient Motors.
3. Explain about Lighting and Energy Instruments

(13A02701) ELECTRICAL DISTRIBUTION SYSTEMS

1. Explain the operation of the different distribution schemes .
2. Explain the distribution system planning and automation.
3. Describe design considerations on primary systems and secondary systems..
4. Determine capacitor rating for power factor correction

(13A02707) FLEXIBLE AC TRANSMISSION SYSTEMS

1. Understand various types of FACTS controllers.
2. Apply suitable converter for better power transmission.
3. Apply different static shunt compensators.
4. Achieve The Qualitative Power Using Compensators.
5. Determine The Location and to apply FACTS Controllers.

IV B. Tech R13 – II Sem Course Outcomes

(13A02801) INSTRUMENTATION

1. Identify and explain the types of errors occuring in measurement systems.
2. Differentiate among the types of data transmission and modulation techniques.
3. Apply digital techniques to measure voltage, frequency and speed.
4. Choose suitable transducers for the measurement of non-electrical quantities.

(13A02803) HVDC TRANSMISSION

1. Compare HVDC and HVAC transmission systems.
2. Understand the operation of various converters used in HVDC transmission systems.
3. Devise means to suppress / eliminate harmonics.
4. Design HVDC and AC Filters.

(13A04703) EMBEDDED SYSTEMS

1. Able to understand the fundamental concepts of embedded systems.
2. Able to learn the architecture of Advanced ARM microcontrollers.
3. Able to learn the architecture of Advanced MSP430 microcontrollers.
4. Able to learn various programming techniques and interfacing using ARM and MSP430