

ELECTRICAL ENGINEERING (EEE) – SYLLABUS

- i. **Electric Circuits:**
Three phase circuits, Power and power factor in AC circuit.
- ii. **Electromagnetic Fields:**
Inductance Magneto motive force, Reluctance, Magnetic circuits, Effect of dielectric medium. Self and mutual inductance of simple configurations.
- iii. **Signals and Systems & Control Systems:**
Bode Plots, Root Loci, Stability Analysis, Lag, Lead and Lead-Lag Compensators: P, PI and PID Controllers.
- iv. **Electrical Machines:**
Single phase transformer: equivalent circuit, pharos diagram, open circuit and short circuit tests, regulation and efficiency-Three phase transformers: parallel operation-Auto Transformer, DC machines- Series and shunt, motoring and generating mode of operation and their characteristics, starting and speed control of dc motors; Three phase induction motors: principle of operation, types, performance, torque-speed characteristics, no-load and blocked rotor tests, equivalent circuit, starting and speed control- Operating principle of single phase induction motors-Synchronous machines: cylindrical and salient pole machines, performance, regulation and parallel operation of generators, Electromechanical energy conversion principles, Types of losses and efficiency calculations of electric machines.
- v. **Power Systems:**
Power generation concepts, cables. Distribution systems, Voltage and Frequency control, Power factor correction, Symmetrical components, Symmetrical and unsymmetrical fault analysis, Circuit Breakers, Principles of over current, differential and distance protection; Circuit breakers, System stability concepts.
- vi. **Control Systems:**
Bode plots, Root loci, Stability analysis, P, PI and PID Controllers-State space model, State transition matrix.
- vii. **Electrical and Electronic Measurements:**
Bridges and Potentiometers, Measurement of voltage, current, power, energy and power factor-Instrument transformers, Digital voltmeters and millimeters', Phase, Time and Frequency measurement-Oscilloscopes, Error analysis.
- viii. **Analog and Digital Electronics:**
Operational amplifiers, Single active filters, 8085 Microprocessor: Architecture, Programming and Interfacing, A/D and D/A converters.
- ix. **Power Electronics:**
Thyristor, IGBT-Line commutated thyristor based converters, Bidirectional ac to dc voltage source converters, Issues of line current harmonics, Power factor, Distortion factor of ac to dc converters, Single phase and three phase inverters, Sinusoidal pulse width modulation.
- x. **Soft Computing Techniques:**
Fuzzy Systems, Artificial Neural Networks, Micro Computing Systems.