

Syllabus for Electrical Engineering Master's

Section 1: Subject Knowledge

Please Note: A Total of 40 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Master's Candidate.

Unit I: Engineering Mathematics

Linear Algebra, Calculus, Differential equations, Complex variables, Probability and Statistics.

Unit II: Electric circuits

Network elements, Network solution methods, Network Theorems, Transient response of dc and ac networks, sinusoidal steady-state analysis, resonance, two-port networks, balanced three-phase circuits, star-delta transformation, complex power and power factor in AC circuits.

Unit III: Electromagnetic Fields

Electrostats, Magnetostats, Self and Mutual inductance of simple configurations.

Unit IV: Signals and Systems

Continuous and discrete-time signals, shifting and scaling properties, linear time-invariant and causal systems, Fourier series representation of signals, sampling theorem, Fourier Transform for signals, Laplace Transform, Z transform, R.M.S value, average value calculation for periodic waveform.

Unit V: Electrical Machines

Single-phase transformers, DC machines, Three-phase induction machines, Synchronous machines.

Unit VI: Power Systems

power generation, transmission, distribution, control, fault analysis, protection, and stability.

Unit VII: Control Systems

Modeling, feedback, transfer functions, analysis, stability, compensators, controllers, and state-space representation.

Unit VIII: Electrical and Electronic Measurements

Bridges and Potentiometers, Measurement of voltage, current, power, energy and power factor, Instrument transformers, Digital voltmeters and multi-meters, Phase, Time and Frequency measurement, Oscilloscopes, Error analysis.

Unit IX: Analog and Digital Electronics

Simple diode circuits, operational amplifiers, characteristics and applications, Active Filters.

Unit X: Power Electronics

Static V-I characteristics and firing/gating circuits for Thyristor, MOSFET, IGBT, AC to DC conversion.

Section 2: Fundamental Skills

Please Note: A Total of 24 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Masters Candidate.

Unit I: Data Analysis

Unit II: Math and Statistics

Unit III: Critical Reasoning and Aptitude

Unit IV: Reading and Writing

Section 3: Specific Skill Proficiency

This section has multiple skills. You can select the ones you are proficient in from the enrollment form. You can select a maximum of 4 skills.