Syllabus for Electronics and Communications 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, Differential Equations, Vector Analysis, Probability and Statistics.

Unit II: Networks, Signals and Systems
Circuit analysis, Continuous-time signals, Discrete-time signals.

Unit III: Electronic Devices
Energy bands in intrinsic and extrinsic semiconductors, equilibrium carrier concentration, direct and indirect band-gap semiconductors. Carrier transport: diffusion current, drift current, mobility and resistivity, generation and recombination of carriers, Poisson and continuity equations, diodes.

Unit IV: Analog Circuits
Diode circuits, BJT and MOSFET amplifiers,Op-amp circuits.

Unit V: Digital Circuits
Number representations, Sequential circuits, Data converters, Semiconductor memories, and Computer organization.

Unit VI: Control Systems
Basic control system components, Feedback principle, Transfer function, Block diagram representation, Signal flow graph, Transient and steady-state analysis of LTI systems, Frequency response, Routh-Hurwitz and Nyquist stability criteria, Bode and root-locus plots, Lag, lead and lag-lead compensation, State variable model and solution of state equation of LTI systems.

Unit VII: Communications
Random processes, Analog communications, Information theory, Digital communications.

Unit VIII: Electromagnetics
Maxwell's equations. Plane waves and properties. Transmission lines, Rectangular and circular waveguides, light propagation in optical fibres, dipole and monopole antennas, and linear antenna arrays.

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 Master's Candidate.

Unit I: Data Analysis

Unit II: Math and Statistics

Unit III: 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.