Syllabus for M. Tech Entrance Test for Sponsored Candidates.

Engineering Mathematics

Linear Algebra: Matrix Algebra, Determinants, Systems of linear equations, Eigen values and Eigen vectors.


Differential equations: First order equation (linear and nonlinear), Higher order linear differential equations with constant coefficients,

Probability and Statistics: Sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Discrete and continuous distributions, Poisson, Normal and Binomial distribution.

General Aptitude

Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.

Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation

Core and related Engineering streams


Electronic Devices and Circuits: Energy bands in silicon, intrinsic and extrinsic silicon. Carrier transport in silicon: diffusion current, drift current, mobility, and resistivity. Generation and recombination of carriers, p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOSFET, LED, p-i-n and avalanche photo diode, Small Signal Equivalent circuits of diodes, BJTs, and MOSFETs. Simple diode circuits,

**Digital circuits:** Boolean algebra, minimization of Boolean functions; logic gates. Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs and PLAs. Sequential circuits: latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Microprocessor(8085): architecture, programming, memory and I/O interfacing.

**Communications:** Random signals and noise; probability, random variables, probability density function, autocorrelation, power spectral density. Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis of these operations, super-heterodyne receivers; elements of hardware, realizations of analog communication systems; signal-to-noise ratio (SNR) calculations for amplitude modulation (AM) and frequency modulation (FM) for low noise conditions. Fundamentals of information theory and channel capacity theorem, Digital communication systems: pulse code modulation (PCM), differential pulse code modulation (DPCM), digital modulation schemes: amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK). Plane Wave propagation through various media. Data Communication Fundamentals: OSI model, switching, routing, MAC protocols

**Computer Organization and Architecture:**
Computer cycle control, CPU organization, Memory Organization, I/O organization.

**Programming and Data Structures:** Programming in C; Functions, Recursion, Parameter passing; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.