



Koneru Lakshmaiah Education Foundation

(Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' Grade University ❖ Approved by AICTE ❖ ISO 9001-2015 Certified

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SYLLABUS FOR M.TECH (CSE) ENTRANCE EXAMINATION

I. ENGINEERING MATHEMATICS

Discrete Mathematics: Propositional and first-order logic. Sets, relations, functions, partial orders and lattices. Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.

Linear Algebra: Matrices, determinants, the system of linear equations, eigenvalues and eigenvectors, LU decomposition.

Calculus: Limits, continuity and differentiability. Maxima and minima. Mean value theorem. Integration.

Probability: Random variables. Uniform, normal, exponential, poisson and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

II. DIGITAL LOGIC

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

III. COMPUTER ORGANIZATION AND ARCHITECTURE

Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode).

IV. PROGRAMMING AND DATA STRUCTURES

Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

V. ALGORITHMS

Searching, sorting, hashing. Asymptotic worst-case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide and conquer. Graph search, minimum spanning trees, and shortest paths.

VI. THEORY OF COMPUTATION

Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.

VII. COMPILER DESIGN

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation.

VIII. OPERATING SYSTEM

Processes, threads, inter process communication, concurrency and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

IX. DATABASES

ER model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

X. COMPUTER NETWORKS

Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

Exam Pattern – Multiple Choice Questions

Sl. No.	Subjects	No. of Questions	Marks
1	Engineering Mathematics	12	12
2	Digital Logic	10	10
3	Computer Organization and Architecture	11	11
4	Programming in Data Structures	11	11
5	Algorithms	11	11
6	Theory of Computation	10	10
7	Compiler Design	11	11
8	Operating System	11	11
9	Databases	10	10
10	Computer Networks	11	11
Total		108	108

Duration: 180 Minutes