

Department of Computer Science & IT
University of Jammu
Syllabus for ENTRANCE TEST

Programme: M.Tech. (Computer Science)
Total Questions: 50

Session : 2022
Duration: 1 hour 30 minutes

Mathematical Logic: Propositional Logic; First Order Logic, counting techniques, recurrence relation, Mathematical Induction, Predicate calculus, Rules of Inference.

Computer Organisation: Introduction & Data Representation, Logic Gates & Boolean Algebra, Combinational and sequential circuits, Memory organization and Input/Output devices, Central Processing Unit & Microprocessor.

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

Algorithms: Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching.

Operating System: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.

Databases: ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

Statistical Methods: Probability Theory, Probability distributions, Sampling Theory, Hypothesis Testing and Decision-making.

Information Systems and Software Engineering: Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

Internet and Web Technology: Concept of Internet, Internet Domain, Internet Architecture and Protocols, Switches, Routers, Gateways, Firewalls, Proxy servers, Domain Name System, Security and Cryptography, Web Server, HTML, DHTML, XML, Server side and client side scripts.

NOTE: TEST SHALL CONTAIN 50 MULTIPLE CHOICE QUESTIONS OF ONE MARK EACH. THE CANDIDATES MUST SCORE AT LEAST 25 MARKS (50%) TO EARN THEIR ELIGIBILITY FOR ADMISSION TO THE PROGRAMME.