



Faculty of Engineering

COMPUTER SCIENCE ENGINEERING

Computer Science (50 MCQs – 01 mark each)

Data Structures

- Advanced Sorting Methods
- Algorithm Design Paradigms
- Complexity of Algorithm
- Depth-first and Breadth-first Algorithms
- Kinetic Data Structures

Algorithms

- Asymptotic analysis
- Asymptotic notation
- Basic concepts of complexity classes
- Connected components
- Dynamic programming
- Notions of space and time complexity
- Tree and graph traversals
- Worst and average case analysis
- Computational Geometry
- Growth of Functions
- Heuristic Methods

Computation Theory

- Regular Languages and Finite Automata
- Languages and Pushdown Automata
- Recursively Enumerable sets and Turing Machines

Operating Systems

- Agreement Protocols for handling Processor Failures
- Comparative Performance Analysis
- Distributed Mutual Exclusion
- Distributed Operating Systems
- Local and Global states
- Process Deadlocks
- Resource Models
- Synchronization Mechanisms
- Coordination of Processes and related Algorithms
- Failure Handling and Recovery Mechanisms
- Multiprocessor Operating Systems and related Thread Handlings
- Token and Non-token based Algorithms
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Database Systems

- Database design
- Indexing and Hashing
- Relational model
- Storage and File Structures
- Extended Relational Model
- Mobile Databases and Web-enabled Database Systems
- Transactions and Concurrency control

Computer Organization and Architecture

- Cache and main memory
- CPU control design
- Design and synthesis of combinational and sequential circuits
- Instruction pipelining
- Machine instructions and addressing modes
- Number representation and computer arithmetic
- Secondary storage
- Structured Memory Design for Parallel Systems

Software Engineering

- Team Software Process
- Systems Modeling Language
- Requirement and feasibility analysis
- Process Models- Iterative
- Planning and managing the project
- Domain specific modeling
- Software architecture and design patterns
- Software reliability and Advanced testing techniques
- Aspect oriented programming

Computer Networks

- LAN technologies
- Application layer protocols
- Flow and error control techniques
- Introduction to intelligent networking
- Performance analysis of networks

In addition to these, candidates are advised to refer topics such as Compiler Design, Computer Graphics and Web technologies.