**CSE1903 Comprehensive Examination L T P J C 0 0 0 0 1**

**Digital Logic and Microprocessor**

Simplification of Boolean functions using K-Map – Combinational logic: Adder, subtractor,

encoder, decoder, multiplexer, de-multiplexer – Sequential Logic: Flip flops- 8086

Microprocessor: instructions – peripherals: 8255, 8254, 8257.

**Computer Architecture and Organization**

Instructions - Instruction types- Instruction Formats - Addressing Modes- Pipelining- Data

Representation - Memory Hierarchy- Cache memory-Virtual Memory- I/O Fundamentals- I/O

Techniques - Direct Memory Access - Interrupts-RAID architecture

**Programming, Data Structures and Algorithms**

Programming in C; Algorithm Analysis – Iterative and Recursive Algorithms; ADT - Stack and its Applications - Queue and its Applications; Data Structures – Arrays and Linked Lists; Algorithms - Sorting – Searching; Trees – BST, AVL; Graphs – BFS , DFS , Dijkstra‟s Shortest Path Algorithm.

**Theory of Computation**

Deterministic Finite Automata, Non deterministic Finite Automata, Regular Expressions, Context Free Grammar, Push down Automata and Context Free Languages, Turing Machines.

**Web Technologies**

Web Architecture- JavaScript – objects String, date, Array, Regular Expressions, DHTMLHTML DOM Events; Web Server – HTTP- Request/Response model-RESTful methods- State Management – Cookies , Sessions – AJAX.

**Operating Systems**

Processes, Threads, Inter‐process communication, CPU scheduling, Concurrency and

synchronization, Deadlocks, Memory management and Virtual memory & File systems.

**Database Management System**

DBMS, Schema, catalog, metadata, data independence, pre-compiler; Users-naïve, sophisticated,

casual ;ER Model- Entity, attributes, structural constraints; Relational Model-Constraints,

Relational Algebra operations; SQL- DDL, DML, TCL, DCL commands, basic queries and Top

N queries; Normalization-properties, 1NF, 2NF, 3NF, BCNF; Indexing-different types, Hash Vs

B-tree Index; Transaction-problems, Concurrency Control-techniques, Recovery-methods.

**Data Communication and Computer Networks**

Circuit Switching, Packet Switching, Frame Relay, Cell Switching, ATM , OSI Reference model, TCP\IP, Network topologies, LAN Technologies, Error detection and correction techniques, Internet protocols , IPv4/IPv6, Routing algorithms, TCP and UDP, Sockets, Congestion control, Application Layer Protocols, Network Security: Basics of public and private key cryptosystems- Digital Signatures and Hash codes, Transport layer security, VPN, Firewalls.