

**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY,
DESIGN AND MANUFACTURING, KANCHEEPURAM,
CHENNAI – 600 127**

FACULTY RECRUITMENT

(Ref.: Advt. No. IIITDMK/R/2/2024 dated 15.07.2024)

SYLLABUS FOR WRITTEN TEST

Post: Assistant Professor Grade-II (Level 10 and Level 11)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Vertical 1 - Mathematics for CS –

Propositional and first order logic. Sets, relations, functions, partial orders, Graphs, Counting, recurrence relations, generating functions.

Vertical 2 – Hardware – Digital Logic Design, Computer Organization

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point). Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining, pipeline hazards. Memory hierarchy: cache, main memory and secondary storage;

Vertical 3 – Programming (C), Data Structures & Algorithms

Control Structures – Selection, Repetition, Arrays, Structures, Functions, Pointers, Recursion, Linear ADT – Linked Lists, Stack, Queue, Tree ADT – Binary Trees, Binary Search Trees, Binary Heaps , Searching & Sorting Algorithms, Asymptotic Worst case time / space complexity - Tree and Graph Traversal algorithms.

Vertical 4 – Systems – Database Systems, Operating Systems, Computer Networks

Entity Relationship modelling – Relational model & Relational Algebra, Structured Query Language (SQL), Integrity Constraints, DB Normalization (Normal forms – 1NF till BCNF), Transaction Processing & Concurrency control

Process Management – Threads, Inter Process Communication, Concurrency control and Synchronization - Deadlock techniques – Preemptive & Non preemptive scheduling algorithms

Networks – OSI & TCP/IP - Basics of packet, Data Link Layer- Framing, Error Detection – Routing Algorithms – shortest path, distance vector and link state routing.
