

# **Computer Science**

## **DEGREE STANDARD**

### **UNIT I**

#### **Basic Mathematics**

Element of probability, matrix, algebra, integration, differentiation.

### **UNIT II**

#### **Basic Concepts**

Analog Vs digital, accuracy, reliability, fastness, character and number representations, decimal, binary, octal, hexadecimal numbers, floating point representation, batch processing, time sharing, multiprogramming, programming language, machine language and high level language, compiler and interpreter, study of commonly used peripherals.

### **UNIT III**

#### **Mathematical Foundation of Computer Science**

Prepositional logic sets, relations, functions, partial orders and lattices, regular and context free languages, finite state machines and pushdown automata.

### **UNIT IV**

#### **Numerical Computing**

Number representation, errors in computation, analysis procedures and error estimation, interpolation, root finding, linear systems of equations, differentiation and integration.

### **UNIT V**

#### **Switching Theory and Digital Design**

Logic functions, Boolean algebra, simplifications, Gates, implementation of logical functions, design of combinational and sequential circuits, flip-flops, registers, encoder, decoder, code converters, counters, design with integrated circuits including ROM, PLA and multiplexers, microprocessor architecture, programming study of 8085/8086.

### **UNIT VI**

#### **Programming and Data structures**

PASCAL - data types, control statements, procedures, Scope rules, arrays and records, enumerated data types, sets, pointers, recursion.

COBAL - sequential, indexed files, sorting and merging report generations.

Arrays, queues, linked lists, stacks, tree traversal, evaluation of expressions using postfix notation, sorting algorithms, bubble sort, quick sort, heap sort, complexity of algorithms.

## **PAPER -II**

### **UNIT I**

#### **Computer Organization**

Function organization, machine instructions, addressing modes, introduction to microprocessors, study of 8085/8086 communication between processor and I/O via DMA and interrupt priority, I/O processors, problems associated with bus scheduling. Micro computer memory, virtual memory, basic concepts, problems of virtual memory, page replacements algorithms, cache memory, associative memory.

Fundamentals of parallel processing and its necessity pipelined processors and multiprocessors.

### **UNIT II**

#### **Systems Programming**

Editors, loaders, linkers, assemblers, phases of a compiler and their function, lexical analysers and parsers, parsing techniques, symbol table, code generation.

### **UNIT III**

#### **Operating Systems**

## **Computer Science**

Batch, Multi-programming and time sharing systems, processor memory, device and file management, virtual memory, process scheduling, inter process communication, I/O redirection, process synchronization and concurrency, deadlocks, prevention, avoidance, detection and recovery, auxiliary storage management, file system functions and its hierarchy.

### **UNIT IV**

#### **Data Processing Concepts**

File organisation techniques: indexing, relational and network data models, study of dBase III + as a relational DBMS. Data dictionary, normal forms and query languages.

### **UNIT V**

#### **Computer Networks**

Data communication concepts, concepts, concepts of LAN, evolution of LAN, OSI - 7 layer reference model and design issues. Physical layer-transmission media, packet and circuit switching, topologies, Data link layer, token passing, sliding window protocols, protocols specification and verification, network layer, routing, congestion control, transport layer, session and presentation layers, design issues, application layer, file transfer, electronic mail.

### **UNIT VI**

#### **Software Engineering and Applications**

Systems analysis, detailed analysis, feasibility study, tools for system designer, input and output design, program definition, module design and design review, structured programming and conversion, testing, training and documentation, systems life cycle, role of System Analyst. Tools for office Automation, word processing Spreadsheets, Financial and Statistical packages, payroll, inventory, picture generation and display in computers, Multimedia systems, Application of computers in Government, Defence, Agriculture, Medicine and Education.