

COMPUTER APPLICATIONS

(PG DEGREE STANDARD)

SUBJECT CODE: 289

UNIT - I: MATHEMATICAL FOUNDATIONS

Set Theory, Principles of mathematical Induction, Relations, Functions, Algebraic structure - Semigroup, monoid, group, propositional calculus generating functions and graph theory.

UNIT - II: COMPUTER ARCHITECTURE

Review of elements of Computer organisation - Machine instructions, addressing modes, instruction pipelining, memory organization. CPU and system buses, bus standards, Von Neumann Vs Non Von Neumann architectures, language directed architectures, RISC architectures, object oriented architectures, memory and I/O subsystems - Hierachial memory, virtual memory system memory allocation and management, cache memories, I/O subsystems, architectural classification, pipelined processors, vector processing. Array processors, multiprocessor architectures.

UNIT - III: PROGRAMMING AND DATA STRUCTURES [C AND C++]

Arrays, Stacks, Strings, Queues, Lists, Graphs, Trees and Sets, Graph and Tree Traversals, Recursion, Tree balancing, Hashing, File structures, Sorting and Searching, Algorithm design and Analysis techniques.

UNIT - IV: SYSTEMS ANALYSIS AND DESIGN

Introduction – Definition of a System – Characteristics of a system – Elements of Systems Analysis – System development life cycle – Software crisis – Role of Systems Analyst – **Project Selection** : Project request – Managing Project selection – Preliminary investigation – Problem classification and definition – **Feasibility study** : Types of feasibility – Investigative study – Cost Benefit Analysis –

Fact finding techniques – DFD – Data Dictionaries – HIPO – Decision tables and Decision Trees – Warnier Orr Diagrams.

UNIT - V: COMPILER DESIGN

Assemblers, loaders, linkers, macroprocessor, text editors, programming languages, lexical analysis, parsing techniques, precedence grammars, symbol tables, scope rules and parameter passing mechanisms, syntax directed translation, run time environment, machine code generation, interpreters.

UNIT - VI: ADVANCED DATABASES

Elements of data base systems, file organization, relational and network data models, normal forms, query languages. Design and implementation of typical database systems, Internal and external consistency, concurrency control techniques, object oriented data bases.

UNIT - VII: SOFTWARE ENGINEERING

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.

UNIT- VIII: COMPUTER GRAPHICS

Introduction – Point plotting techniques – Line drawing displays – Two dimensional displays – Clipping and Windowing. Graphics package – Segmented display files – Display file compilation – Geometric models – Picture structure. Graphical input units – graphical input techniques – Event handling – Input functions. Raster graphics fundamentals – Solid area scan conversion – Interactive raster graphics – Raster

graphics systems – Raster display hardware. Two dimensional and three dimensional transformations.

UNIT - IX: MULTIMEDIA AND WEB TECHNOLOGIES

Uses of Multimedia – Introduction to making multimedia – Multimedia skills. Multimedia hardware and software – Connections – Memory and storage devices – Input devices – Output devices – Communication devices. Basic software tools – Text editing and word processing tools – Painting and drawing tools – 3-D modelling and animation tools – Image editing tools – Animation, video and digital movie tools. Making instant multimedia – Multimedia authoring tools. Multimedia Building Blocks – Text – Sound – Multimedia System Sounds – MIDI versus Digital Audio – Digital Audio – Making MIDI Audio – Audio File Formats – Production tips - Images – Animation - Video.

The world wide web: Browsing the Web - Web address - Web browser basics - Strong and managing(book marks) - Surfing the web with web browser - Searching the web directory - Search engines - Navigation tools.

Email: Sending - Reading - Replying - Deleting - Exiting - Sending Mail to more than one person sending folder - Forwarding a mail - Checking the spelling - Attachments.

HTML: Overview of HTML - Adding structure to a page formatting text and pages - Linking page to the world - Including picture - Clearing lists - Arranging items within tables - Getting feedback from form - Splitting a page into frames

UNIT - X: MANAGEMENT OF SOFTWARE PROJECTS

Software Project Planning: Size Estimation - Cost Estimation Models - The Constructive Cost Model (COCOMO)-COCOMO II - The Putnam Resource Allocation Models -Software Risk Managements