Department of Computer Science,
University of Lucknow
Old Syllabus
B.Sc.(Computer Science)

B.Sc-II Year (CS)

S.No.	P/Code	Paper Name
1.	**Paper -I**	Operating System
2.	**Paper -II**	C++ and Object Oriented Programming
3.	**Paper -III**	Data Structure Using C
4.	**Practical Content**	C++ & Data Structure Using C

B.Sc-III Year (CS)

S.No.	P/Code	Paper Name
1.	**Paper -I**	Introduction to Web-Designing.
2.	**Paper -II**	Computer Architecture & Data Communication
3.	**Paper -III**	Introduction To DBMS—SQL & Software Engineering Concept
4.	**Practical Content**	VB, DBMS, HTML & Microprocessor

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B.Sc-II Year

Paper-I **MM-50**

Operating System

UNIT-I

Definition of operating system (OS), History of OS, Simple Batch Systems, Multi-programmed Batched Systems, Tim-Sharing Systems, Personal Computer system, Distributed Systems and Real-Time Systems, Operating System Structures-Command Interpreter System, Operating System Services, System Calls, System Programs.

Process Management:
Process Concept, Process control Block, process Scheduling, CPU scheduling-Basic Concepts.

UNIT-II

Storage Management:
Basic Concepts, Logical and Physical Address Space, Swapping, Contiguous Allocation, Paging Segmentation, Virtual Memory- Demand Paging, Paging Replacement, Thrashing and Demand Segmentation.

File System:
File Concept, Access Methods, Directory Structure, Protection, File System Structure. Allocation methods, Free Space Management.

UNIT-III

CPU scheduling, Scheduling Criteria, Round Robin Scheduling, Real Time Scheduling

UNIT-IV

Definition Deadlock, Deadlock Characterizations, method for Handling Deadlocks, Deadlock prevention, Avoidance, Detection, recovery from Deadlock.

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Paper-II **MM-50**

C++ and Object Oriented programming

UNIT-I

OOP concept, Procedural vs OOP programming, OOP terminology and features, Tokens, Character set, Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library and header files. Operator and Expressions: Arithmetic Operator, Increment/Decrement Operator, Relational Operator, Logical Operator and conditional operators, library functions, Logical Expressions, C++ shorthand,

UNIT-II

Flow of control statements: Selection statements, Iteration statement, Jump statement, Construction of loops and implementation, While, Do-while, For statements nested loops. If-else, switch, break, continue and Go to statements.
Classes and Objects: Need for Classes, Declaration of Classes, referencing class Members, Scope of class and its members Nested Classes, Functions in a class: Inline Functions, Constant Member functions, Nesting of Member Functions, friend function, Memory allocation of objects, Arrays of objects, Static Class Member

UNIT-III

Functions, function definition, Default arguments, Constant arguments, Call by value, Call by reference, returning from a function, storage class specifier and variables, storage class specifier and Functions automatic, external and static variables, Pointer: Declarations, Passing to a function, Operations on Pointers

UNIT-IV

Arrays two dimensional and multidimensional arrays, Arrays of Pointers, Pointers and functions, Constructors and Destructor: Declaration, Definition and characteristics, Function Overloading, Inheritance: Need, Different forms, Single Inheritance, Multilevel Inheritance, C++ Memory Map: Dynamic and Static Allocation of Memory, Stacks Queues and Linked Lists, Declarations, File handling: Open, Close, Create, Process, Detecting EOF.

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Paper-III **MM-50**

Data Structure Using C

UNIT-I

Structure, definition, and application, Lists, Basic Terminology, Static Implementation of Lists, Pointer Implementation of Lists, Insertion in a List, Deletion from a List, Storage of Sparse, Arrays using Linked List, Doubly Linked Lists, Circular Linked List

UNIT-II

Defining Stack and Queue, Stack Operations and Implementation, Array Implementation, Pointer Implementation, Stack Applications, Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Queues: Operations and Implementation, Queue Application, Priority Queues

UNIT-III

Defining Graph, Basic Terminology, Graph Representation, Graph Traversal, Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem, Minimal Spanning Tree, Binary Trees, In order Traversal, Post order Traversal, Preorder Traversal, Binary Search Trees, Operations on a BST, Insertion in Binary Search Tree, Deletion of a node in BST, Search for a key in BST, Height Balanced Tree.

UNIT-IV

Searching and Sorting techniques, Sequential Search, Binary Search, Internal Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort

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B.Sc. –III Year

Paper-I **MM-75**

Visual Basic and Introduction to Web-Designing.

UNIT-I

Basics of Visual Basic Language, Requirements for VB 6.0, Toolbars, Menu Bars-File, Edit, View, Project, format, Tools, Add-Ins menu, Project Explorer, properties Window, Code, form, Debug Windows, Immediate Debug Window, Local Debug Window, Watch Debug Window, Toolbox Window, Adding/Removing Custom Control to Toolbox,

Creating and saving a Project, visual Development and event Driven Programming, OOPS, Object and Classes, Properties Methods and Events.

UNIT-II

Operating, Controll Flow Statements, Decision Making Statements, Select Case Statement, Iterations For Loop Structure, Do-loop Structure, Do-Loops Do-Until Loops, Do…While, While….Wend, With…End With Statements, Array : Accessing Array elements, Double Dimensional or Multidimensional Arrays, Dynamic Arrays, Redimensioning an Array, Lbound and Ubound statements Option Base Statement, Collections, Interacting with the basic Controls, Forms, Form Collection, Controlling one form within another MDI form, command Buttons, Label Control, Text Box Control, Capturing the Key Strokes, List Box Controls, Combo Box Controls, Lab Assignments, more Controls : Radio Buttons, Scrollbars, Example program timer Control, Running Lights Application, Image Control, Drive List Box, Searching a drive the directory list box, file Box copying a file, Deleting a File, Renaming a File, Moving a File, Lab Assignments.

UNIT-III

Creating Menu Based Applications: Menus and the Menu Editor, Designing Menus, programming Menu Commands, Manipulating Menus at runtime, Creating a Menu's Control Array, Types of Dialog Boxes (Commond Custom Predefined dialog Box), Procedures and functions: Introduction to procedure types, procedures: Sub. Procedure, General procedures, Event Procedures, Function procedures, Creating new procedures, Selecting existing procedures, Calling sub procedures, Calling Function Procedures, Calling procedures in other modules, passing arguments to procedures, passing arguments by value, Passing arguments by Reference, Using Optional Arguments, Using an Indefinite number of arguments.

UNIT-IV

HTML tags and VB Script

<HTML>, <HEAD>,<BODY>, Paragraphing, line Break tag, Bullet and Numbering tag, Text formatting tags,(Bold, Italic, Underline, strike through, subscript, superscript) Marquee tag, Hyperlink tag, Inserting Back ground image, Horizontal Rule, Changing the Background and fore ground color, Creating table, merging cells, splitter cells, Inhering Colum heading table caption etc. VB script, variable and constant declaration, Output function decision making statement, **Looping control statement etc.**

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Paper-II **MM-75**

Computer Architecture & Data Communication

UNIT-I

Introduction of Microprocessor: Evolution of microprocessor, Embedded microprocessor, Bit-Slic Processors RISC and CISC Processor, Vector Processor Array processor.

Intel 8086 Microprocessor: Pin description of Intel 8085, operating model of 8085, Register organization of 8085, Bus Interface and Execution Unit (BIU and EU), Interrupts 8085 Read and write Bus Cycle.

UNIT-II

8086 Instruction Group: Data transfer Instruction , Arithmetic Instruction, Logical Instruction processor Control Instructing, string Instructions, Interrupts instructions, Addressing modes of 8086 up, Assembly Language Programming.

UNIT-III

Synchronous Data Transfer, Asynchronous Data Transfer, Interrupt Driven Data Transfer DMA Controller Address space partitioning – Memory mapped I/O scheme, I/O mapped I/O scheme.

UNIT-IV

Data Communication, Types of Transmission media.
Topology-Mesh, Star, tree, Bus, Ring, Hybrid.
Transmission mode-Simplex, Half Duplex Full Duplex
Categories of Networks-LAN,MAN,WAN the OSI model, Functions of the Layer- Physical Layer, Data Link Layer, Network Layer, Transport Layer session Layer, Presentation Layer, Application layer.

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Paper-III **MM-75**

Introduction To DBMS—SQL & Software Engineering Concept

UNIT-I

Data, Information and Knowledge, Introducing Databases and Different kinds of database users, Concept Of A Database, Interacting With A Database, Architecture Of A Database, Using Relational Databases, Basics Of Relational Databases, Using Relational Databases, Identifiers For Relations, characteristics of database, database system concepts and Data Independence, Content of Data Dictionary, Data administration function, DBMS, Concurrency control, Database security, Database recovery

UNIT-II

Traditional Data Model – ANSI/SPRC 3-level Architecture, Overview of three Traditional models—Hierarchical, Network and Relational Models, Comparison of these models

File organization technique—Random file organization technique, Multi key file organization technique, Entity relationship Model, ER Model

Structured Query Language- Introduction, Data definition, views and queries in SQL, Specifying constraints and indexes in SQL, Data Manipulation, Data maintenance, Multiple Table Operations, Transaction integrity facilities,

UNIT-III

Why Software Engineering? Software processes-Software Process model (water Fall model, iterative, spiral model) Software Requirements: Functional and non-functional requirements user requirements, system requirements Software requirement document, DFD, Pert Chart ER Diagram.

UNIT-IV

Software Testing –System testing Component testing, test case design test automation. Software Cast Estimation-Software productivity, Estimation technique, Algorithmic Cost modeling project duration and staffing.