63. COMPUTER SCIENCE

Computer Fundamentals: (15 Marks)

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences, Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements—while, for, do-while; Special Control Statement—goto, break, continue, return, exit. Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.


User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types. Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Text: 1. Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

Programming in C++: (18 Marks)

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception, Handling the bad_alloc Exception. Templates: Function Templates—Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates—Introduction, Defining Objects of the Class Template, Class Templates and Inheritance, Introduction to the STL.

Text : 2. Tony Gaddis, Starting out with C++: from control structures through objects (7e)

Data Structures: (17 Marks)


Searching and Sorting: Sequential (Linear) Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, and Comparison of Sorting Techniques. Heaps: Concept, Implementation, Abstract Data Type, Heap Sort.

Text : 3. Varsha H. Patil, Data Structures Using C++

Database Management Systems: (20 Marks)

SQL: Introduction, Data Manipulation—Simple Queries, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Multi-table Queries, EXISTS and NOT EXIST, Combining Result Tables, Database Updates. SQL: The ISO SQL Data Types, Integrity Enhancement Feature—Domain Constraints, Entity Integrity, Referential Integrity, General Constraints, Data Definition—Creating a Database, Creating a Table,
Changing a Table Definition, Removing a Table, Creating an Index, Removing an Index, Views—Creating a View, Removing a View, View Resolution, Restrictions on Views, View Updatability, WITH CHECK OPTION, Advantages and Disadvantages of Views, View Materialization, Transactions, Discretionary Access Control—Granting Privileges to Other Users, Revoking Privileges from Users. Advanced SQL: The SQL Programming Language—Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.


Programming in Java: (15 Marks)


Text : 5. Sachin Malhotra, Saurabh Choudhary, Programming in Java (2e)
Computer Networks (15 Marks)

