B.A. /B.Sc.

EVEN - SEMESTER

B.A. /B.Sc. (Semester System) (12+3 System of Education)

SEMESTER–II

PROGRAMMING USING C
(Theory)

Time: 3 Hours

4Hours/week

Total Marks: 100
Theory Marks: 60
Theory Internal Assessment M: 15
Practical Marks: 20
Practical Internal Assessment M: 05

Instructions for the Paper Setters:
(i) Eight questions are required to be set giving the equal weightage to all the units. The Candidates will be required to attempt any five questions. All questions will carry equal Marks.
(ii) Practical marks will include the appropriate weightage for proper maintenance of Lab Record.
(iii) The students can use only Non Programmable & Non Storage Type Calculator.

UNIT–I

Data Representation, Introduction to Number Systems and Character Codes, Flow Charts, Problem Analysis, decision tables, pseudo codes and, algorithms.

UNIT–II

Programming Languages C:

Basics of C: Introduction to C, Applications and Advantages of C, Tokens, Types of Errors
Data Types: Basic & Derived Data Types, User Defined Data Types, Declaring and initializing variables.
Operators and Expressions: Types of operators (Unary, Binary, Ternary), Precedence and Associativity
Data I/O Functions: Types of I/O function, Formatted & Unformatted console I/O Functions
Control Statements: Jumping, Branching and Looping–Entry controlled and exit controlled, Advantages/Disadvantages of loops, difference between for, while and do–while.

UNIT–III

Arrays: Types of Arrays, One Dimensional and Two Dimensional Arrays.
Strings: Introduction to Strings and String functions, array of strings.
Functions: User Defined & Library Function, Function (Prototype, Declaration, Definition), Methods of passing arguments, local and global functions, Recursion.
Storage Classes: Introduction to various storage classes, scope and lifetime of a variable, Storage class specifiers (auto, register, static, extern), advantages and disadvantages.
Structure and Union: Introduction to structure and union, pointers with structure

B.A. /B.Sc. (Semester System) (12+3 System of Education)

(PRACTICAL)

Time: 3 Hours

2Hours/week

Practical based on Programming in C

Books Suggested:

(i) Programming with C Languages C. Schaum Series.

(ii) Yashwant Kanitkar – Let Us C

(iii) C Programming by Stephen G Kochan

B.A. /B.Sc. (Semester System) (12+3 System of Education)

SEMESTER–IV
COMPUTER SCIENCE
Data Structures & Programming Language Using C++
(Theory)

Time: 3 Hours   **Total Marks: 100**
4 Hours/week   **Theory Marks: 60**
Theory Internal Assessment Marks: 15
Practical Marks: 20
Practical Internal Assessment Marks: 05

Instructions for the Paper Setters:
(i) Eight questions are required to be set giving the equal weightage to all the units. The candidates will be required to attempt any five questions. All questions will carry equal marks.
(ii) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
(iii) The students can use only Non Programmable & Non Storage Type Calculator.

UNIT I
Data Structure: Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time-Space Trade-off between Algorithm.
Arrays: Array Defined, Representing Arrays in memory, Various operations on Linear arrays,Multi Dimensional arrays.
Linked Lists: Types of Linked Lists, representing linked list in memory, advantages of using linked lists over arrays, Various operations of linked lists.
UNIT II
Stacks: Description of STACK structure, Implementation of stack, using arrays and linked lists, application of stack-converting Arithmetic expression from infix notational to polish and their subsequent evaluation, quicksort technique to sort an array.
Queues: Description of queue structure, Implementation of queue using arrays and linked lists, description or priorities of queues, deques.
Sorting and Searching : Sorting Algorithms, bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, searching Algorithms, linear search and binary search.
UNIT III
Object Oriented Programming: Objects & Classes, Constructor & Destructor, Operator Overloading, Overloading unary operators, Overloading binary operators, Data conversion, Pitfalls of operator overloading and conversion, Inheritance, Derived class and base, Derived class constructor. Overloading member functions, Inheritance in the English distance class, class hierarchies, Public & Private inheritance, Level of inheritance, Polymorphism, problems with single inheritance, multiple inheritance.

References:
1. Seymour Lischutz, *Theory and Problems of Data Structures.*
2. *Schaum's Outline Serie*s, McGraw Hill Company.
3. Tanenbaum, *Data Structure*

B.A./B.Sc.(Semester System) (12+3 System of Education)

SEMESTER–IV
COMPUTER SCIENCE
Data Structures & Programming Language Using C++ Lab

2 Hours/week

Practical based on Data Structures & Programming Language Using C++

B.A./B.Sc.(Annual System) (12+3 System of Education)

B.A./B.Sc. Semester VI
Computer Science
Information Technology

Total Marks: 100

Time: 3 Hours
Theory Marks: 75
Practical Marks: 25

4 Hours per week

Note (i) In theory eight questions are to be set giving the weightage to all the portions. The candidates are required to attempt any five. All questions are to be of equal marks.
(ii) The maximum marks for the paper will be 75.
(iii) As for as possible except in the Computer language papers no programme may be asked in theory papers. Emphasis should be on algorithm development.
(iv) The students can use only Non Programmable and Non storage type calculator in the subjects/papers pertaining to computer.
Practical marks will include the appropriate weightage for proper maintenance of Lab record.

UNIT-I

Data & Network Communication
Communication media: Twisted pair, Coaxial, Fibre optics, Wireless(Line of Sight & Satellite), Network Advantages, Types & Topologies, Communication using Network protocol/Network Interface card(NP/NIC), Transmission & Communication protocol/protocol(TCP/IP), Modems, Types of Operating systems: Multiuser, Multitasking & Multiprogramming and their examples.

UNIT-II

Information Systems
Introduction to IT & its components, What is Information systems, Computer based information systems, Management Information System, Decision Support System, Expert System, Functional Information System, Open Information System, Transaction Processing System, System Development Process & System development Tools. Internet basics, Its uses and Applications.
Fundamentals of Networking Operating System.
Introduction to components of various Networking Operating System, Case Study of Network Operating System Windows NT.

UNIT-III

Fundamental of Client Server
Basics of Client Server model and its applications. Designing a Client Server model by Creating Database Server and networking O.S. Server.
Careers in Computers
Role of Programmers, Program analysis, System Analyst, System Administrators, System Managers, System Integrators, DTP Manager & Administrators, MIS Director.

References:
1 Peter Norton, Introduction to Computers, Glencoe, Macmillan/McGraw Hill. Kroenke, Business Computer System, McGraw Hill.
2 Patric, G.Mckeown, Living with the Computers, 2nd edition, HBT Publishers, USA.
3 Hussain & Hussain, Computer Technology, Applications & Social Implications, PHI.

B.A. /B.Sc. (Semester System) (12+3 System of Education)

SEMESTER–VI
COMPUTER SCIENCE
Information Technology (Practical)

2 Hours/week

Practical based on Information Technology