

**BAP 201 : C PROGRAMMING AND DATA STRUCTURES**

**External Marks: 45**

**Maximum Time: 3 Hrs.**

**Minimum Pass Marks: 35%**

**Lectures to be delivered: 45-55 Hrs.**

**Internal Assessment: 15**

**A) Instructions for paper-setter**

The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 40% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 20% marks in all.

**B) Instructions for candidates**

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C .
2. Use of non-programmable scientific calculator is allowed.

**SECTION-A**

**Overview of C Language:** C Fundamental : Introduction to C, character set, identifiers, keywords, data types, constants, variable, user defined data types, arithmetic, unary, relational, logical, assignment and conditional operators & expression. Basic structure of a C program. Data I/O statement : single character I/O, formatted I/O, string I/O functions.

**Control Structure:** sequencing, alteration (if-else, switch, break, continue, go to, iteration while, do-while, for) and nested loops.

**Functions:** Defining and accessing a function, passing arguments to a function, specifying arguments data types, function prototypes, recursion.

Storage Classes- Automatic, External, Static, Register.

**Pointers and Structures:** Character pointers, pointer to arrays, array of pointers. Structure and Unions : Defining and processing structure, Unions Preprocessor Directives.

**SECTION-B**

**Basic Notations and Array (Data Structure):** Basic concept and notations, data structures, Types of data structure and data structure operations, mathematical notation and functions, algorithmic complexity, Big 'O' notation and time space trade off. Arrays: Linear array, Representation of Linear array in memory, Traversing Linear array, Insertion and deletion in an array, Multi-dimensional array: Row-Major, Column Major order, space array.

**Stacks:** Push and Pop in Stack. Representation of stack in memory (Using Arrays)

**Queues:** Insertion and deletion operations.

**Searching Techniques:** Linear and binary search

**Sorting Techniques:** Insertion sort, selection sort, bubble sort, merge sort, quick sort.

**Text Books:**

1. Byron Gottfried , Programming with C, Second edition, Schaum' s outline series, TMH.
2. Vishal Goyal, Lalit Goyal, Pawan Kumar, A Simplified Approach to Data Structures, Shiroff Publications.
3. Shubhnandan S. Jamwal, Programming in C, Pearson Publications.

**Reference Books:**

1. Seymour Lipschutz, Theory & Practice of Data Structures, McGraw Hill, 1988.
2. B.W. Kerrighan and D.M.Ritchie, The C programming language, PHI
3. Vikram Gupts and S. S. Bhatia, Programming Fundamentals through C Language, Kalyani Publishers.

## **BAP 202: PRACTICAL BASED ON PAPER BAP 201**

**Max. Marks : 40**

**Min. Pass Marks: 35%**

**Maximum Time: 3 hours**

**Practical units to be conducted: 45-55 Hrs**

The laboratory course will comprise of exercise to supplement what is learnt under Paper BAP 201: C Programming & Data Structures.

### **Detailed Syllabus**

1. Programs to be implemented in C language such as  
Programs to be implemented in C language such as
  - (a) to find the sum of digits of a given number.
  - (b) to find the sum of odd numbers and sum of even numbers from the numbers entered through the keyboard.
  - (c) to check whether a given number is prime or not.
  - (d) Conversion from one number system to another number system.
2. Programs related to array such as:
  - (a) to find the maximum and minimum in a given array
  - (b) for matrix multiplication, addition, subtraction, etc.
3. Programs related to function, structures, pointers
  - (a) all the programs should be written with the help of user defined functions.
  - (b) String processing with the help of pointers.
  - (c) Simple programs using structures, such as printing the merit list of the students record.
4. Programs related to searching and storing.

All the techniques to be implemented in C Language which are taught in theory paper BAP 210: C Programming and data structure.

The break up of marks for the practical will be as under :

Lab Record	:	10 Marks
Viva Voce	:	10 Marks
Program Development And Execution	:	20 Marks

**BAP 203: DATABASE MANAGEMENT SYSTEM**

**External Marks: 45**  
**Minimum Pass Marks: 35%**  
**Internal Assessment: 15**

**Maximum Time: 3 Hrs.**  
**Lectures to be delivered: 45-55 Hrs.**

**A) Instructions for paper-setter**

The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 40% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 20% marks in all.

**B) Instructions for candidates**

1. Candidates are required to attempt two question each from sections A & B of the question paper and the entire section C .
2. Use of non-programmable scientific calculator is allowed.

**SECTION-A**

**Traditional file procession system:** Characteristics, limitation. Database: Definition, composition, **Database Management System** : Definition, Characteristic advantages over traditional file processing system, Implication Database approach, Uses of database, DBA and its responsibilities Database schema, instance.

DBMS architecture, data independence, mapping between different levels.

**Database language** : DDL, DML, DCL.

Database utilities, Data Models, Keys : Super, candidate, primary, unique, foreign.

**Entity relationship model** : concepts, mapping cardinalities, entity relationship diagram, weak sets, strong entity sets, aggregation, generalization, converting ER diagram to tables.

**Relational Algebra** : Basic operations, additional operations.

**SECTION-B**

**Database design:** Functional dependency, decomposition, problem arising out of bad database design, normalization, multi-valued dependency. Database design process, database protection, database integrity, Database concurrency: Problems arising out of concurrency, methods of handling concurrency. Data recovery, database security: Authentication, authorization, methods of implementing security.

**MS-Access:** Introduction to MS-Access, working with database and tables, queries in Access, Applying integrity constraints, Introduction to forms, sorting and filtering controls, Reports and Macro: Creating reports using Macros.

**Text Book:**

1. C.J. Date, An Introduction to Database Systems, Narosa Publishers.

**Reference Books:**

1. Siberscharts, Korth and Sudarshan, "Database Concepts", Mcgraw Hill Publication.
2. Ivan Bayross, "Oracle 7 The complete reference", BPB Publications.
3. Jeffrey D. Ulliman, "Principles of Database Systems", 2nd Ed., Galgotia Publications.
4. D. Kroenke, "Database Processing", Galgotia Publications.

**BAP 204 : PRACTICAL BASED ON BAP 203**

**Max. Marks : 40**

**Min. Pass Marks: 35%**

**Maximum Time: 3 hours**

**Practical units to be conducted: 45-55Hrs**

The laboratory course will comprise of exercise to supplement what is learn under Paper BAP 203: Database Management Systems.

**MS-ACCESS:** Introduction to MS-ACCESS, working with databases and tables, queries in Access  
Applying integrity constraints.

Introduction to forms, sorting and filtering, controls.

Reports and Macro: creating reports, using Macros.

The break up of marks for the practical will be as under:

Lab Record	:	10 Marks
Viva Voce	:	10 Marks
Program Development And Execution	:	20 Marks