Structure of Computer Science /Information Technology (IT)

Programme: B.Sc. with Computer Science as one of the Core Subjects.
Discipline: Computer Science

Year	Semester	Paper Code	Subject	Hrs. per Week	Credits	IA	ES	Total
First Year	I	C1	Problem Solving in C	4	3	25	75	100
	I	C1-P	Problem Solving in C Lab	2	2		50	50
	II	C2	Data Structures using C	4	3	25	75	100
	II	C2-P	Data Structures using C Lab	2	2		50	50
Second Year	III	C3	Database Management System	4	3	25	75	100
	III	C3-P	Database Management System Lab	2	2		50	50
	IV	C4	Object Oriented Programming using Java	4	3	25	75	100
	IV	C4-P	Object Oriented Programming using Java Lab	2	2		50	50
	IV V	C5	Operating Systems	4	3	25	75	100
	IV V	C5-P	Operating Systems Lab using C/Java	2	2		50	50

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12/2/21

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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Atmakur(V),Mangalagiri(M), Guntur-522 503, Andhra Pradesh
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REVISED SYLLABUS OF B.Sc. (COMPUTER SCIENCE/ INFORMATION TECHNOLOGY) UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.Sc.

(B.Sc. Computer Science/ Information Technology (IT))

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

Annex - I

Andhra Pradesh State Council of Higher Education

B.Sc. Computer Science/ Information Technology (IT) Syllabus under CBCS

W.e.f.2021-2021 Academic Year

Structure of Computer Science/Information Technology (IT)

Syllabus I YEAR 1 SEMESTER

Problem solving in C

UNIT I

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

Introduction to Algorithms and Programming Languages: Algorithm - Key features of Algorithms, Flow Charts, and Programming Languages - Generations of Programming Languages

UNIT II

Introduction to C: Introduction - Structure of C Program - Compiling and Executing C Programs - Using Comments -Keywords - Identifiers - Basic Data Types in C - Variables - Constants - I/O Statements in C- Operators in C.

Decision Control and Looping Statements: Introduction to Decision Control Statements- Conditional Branching Statements - Iterative Statements - Nested Loops - Break and Continue Statement - Goto Statement.

UNIT III

Arrays: Introduction - Different types of arrays (1D, 2D, and 3D) - Operations on Arrays - one dimensional, two dimensional and multi dimensional arrays, character handling and

Strings: String operations, string character functions.

UNIT IV

Functions: Introduction - User defined and pre-defined functions, passing parameters, Scope of variables - Storage Classes - Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction, Nested Structures, Arrays of Structures - Structures and Functions, Structures and pointers- enumerated data types.

UNIT V

Pointers: Understanding Computer Memory - Introduction to Pointers - Pointer Expressions and Pointer Arithmetic - Null Pointers -Pointer and Arrays - Dynamic Memory Allocation - Drawbacks of Pointers

Files: Introduction to files - Using Files in C -Reading Data from files-writing Data to files- Detecting the end of file -Error handling during file operations.

REFERENCE BOOKS

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS

2. E .Balagurusamy: —COMPUTING FUNDAMENTALS & C PROGRAMMING -Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.

3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.

12/12/2021

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Problem solving in C LAB

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value & Call by Address
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two N X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using ***Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)*** structure.

a. DA is 30 %of Basic Pay

b. HRA is 15% of Basic Pay

c. Deduction is 10% of (Basic Pay + DA)

d. Gross Salary = Basic Pay + DA+ HRA

e. Net Salary = Gross Salary - Deduction

13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.
15. Write a program to create ***Book (ISBN, Title, Author, Price, Pages, Publisher)*** structure and store book details in a file and perform the following operations

a. Add book details

b. Search a book details for a given ISBN and display book details, if available

c. Update a book details using ISBN

d. Delete book details for a given ISBN and display list of remaining Books

Reference for lab activities

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.

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Ann-A

MODEL QUESTION PAPER (Sem-end. Exam)

B.Sc (CS) / ~~IT~~ End Semester Exams

Time: 3 house problem slowing in C Max.Marks: 75

SECTION-A

Answer any FIVE questions. **5X5 = 25M**

1. Explain Block diagram of Computer.
2. Define an Algorithm. What are the key features of an algorithm?
3. Write about go to statement with syntax and example.
4. Dynamic memory allocation.
5. Explain pointers in arrays.
6. Explain Nested structures
7. Drawback of pointer.
8. Briefly explain various types of recursions.
9. Write a program to check weather given number is prime or not.
10. Write a program for matrix transpose using arrays.

SECTION-B

5X10 = 50M

Answer Any FIVE question

1. Briefly explain about generations of computers.
2. What is a Flowchart? Explain significance with an example.
3. Explain basic data types in C?
4. Explain about iterative statements available in C.
5. What is an Array? Explain different types of arrays with examples.
6. What is a string? Explain various string handling functions available in C.
7. Define a function. Explain the passing parameter mechanism.
8. Explain about Structure with syntax and example in detail.
9. Define and use of a pointer and write a 'C' program on swapping of two numbers using pointers.
10. Explain dynamic memory allocation in detail.

Note: Paper Setter must select TWO short questions and TWO essay questions from each unit.

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Annex-II

I YEAR II SEMESTER

DATA STRUCTURES USING C

UNIT -I:

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages.

UNIT - II:

Linked Lists: Introduction to Lists and Linked Lists, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Linked List versus Arrays.

UNIT - III:

Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion.

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues.

UNIT - IV:

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree

UNIT - V:

Searching and sorting: Sorting - An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching - An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search.

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

Text Books:

1. "Data Structures using C", ISRD group Second Edition, TMH
2. "Data Structures through C", Yashavant Kanetkar, BPB Publications

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Details of Lab Syllabus: **Data Structures Using C Lab**

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array

a. Add an element at the begging of an array

b. Insert an element at given index of array

c. Update a element using a values and index

d. Delete an existing element

2. Write a program using stacks to convert a given

a. postfix expression to prefix

b. prefix expression to postfix

c. infix expression to postfix

3. Write Programs to implement the Stack operations using an array

4. Write Programs to implement the Stack operations using Liked List.

5. Write Programs to implement the Queue operations using an array.

6. Write Programs to implement the Queue operations using Liked List.

7. Write a program for arithmetic expression evaluation.

8. Write a program for Binary Search Tree Traversals

9. Write a program to implement dequeue using a doubly linked list.

10. Write a program to search an item in a given list using the following Searching Algorithms

a. Linear Search

b. Binary Search.

11. Write a program for implementation of the following Sorting Algorithms

a. Bubble Sort

b. Insertion Sort

c. Quick Sort

12. Write a program for polynomial addition using single linked list

13. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm.

14. Write a program to implement Depth First Search graph traversals algorithm

15. Write a program to implement Breadth First Search graph traversals algorithm

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Ann-B

MODEL QUESTION PAPER (Sem-end. Exam)

B.Sc (CS) / B.Sc (IT) End Semester Exams

Time: 3 house — Data Structures Using C — Max.Marks: 75

SECTION-A

Answer any FIVE questions. **5X5 = 25M**

1. Explain about Abstract Data Types.
2. Define linear and non-linear data structures.
3. Explain Linked List concept.
4. What are the applications of stacks?
5. What is priority queue?
6. Explain about binary search tree.
7. Define sorting. What are the advantages and disadvantages of merge sort?
8. Briefly explain various representations of Graphics.
9. How to reverse a given linked list.
10. Write different applications of Binary and Binary search trees.

SECTION-B

Answer following question **5X10 = 50M**

1. What are primitive and non-primitive data structures with an example?
2. Explain different primitive data types.
3. Explain different operations on single linked list.
4. What is linked list? Explain different types of linked lists in data structures.
5. What is stack? Write ADT. Explain various operations of stack.
6. What is a Deque? What are the different techniques used to represent Deque? Explain.
7. Write about different tree travelling techniques and write an algorithm for travelling techniques.
8. Explain different applications and properties of binary tree.
9. Write about various Graph Travelling techniques.
10. What is searching? Explain Linear Search Algorithm with example.

Note: Paper Selector must select TWO short questions and TWO essay questions from each unit.

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Computer science (B.Sc.)

DATABASE MANAGEMENT SYSTEMS

Semester - III - Syllabus

UNIT I

Overview of Database Management System: Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, three schema architecture of data base.

UNIT II

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, constraints on specialization and generalization, advantages of ER modelling.

UNIT III Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC), Functional dependencies and normal forms upto 3rd normal form.

UNIT IV Structured Query Language: Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query.

UNIT V PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers.

BOOKS:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan,

McGrawhill

2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

3. Principles of Database Systems by J. D. Ullman

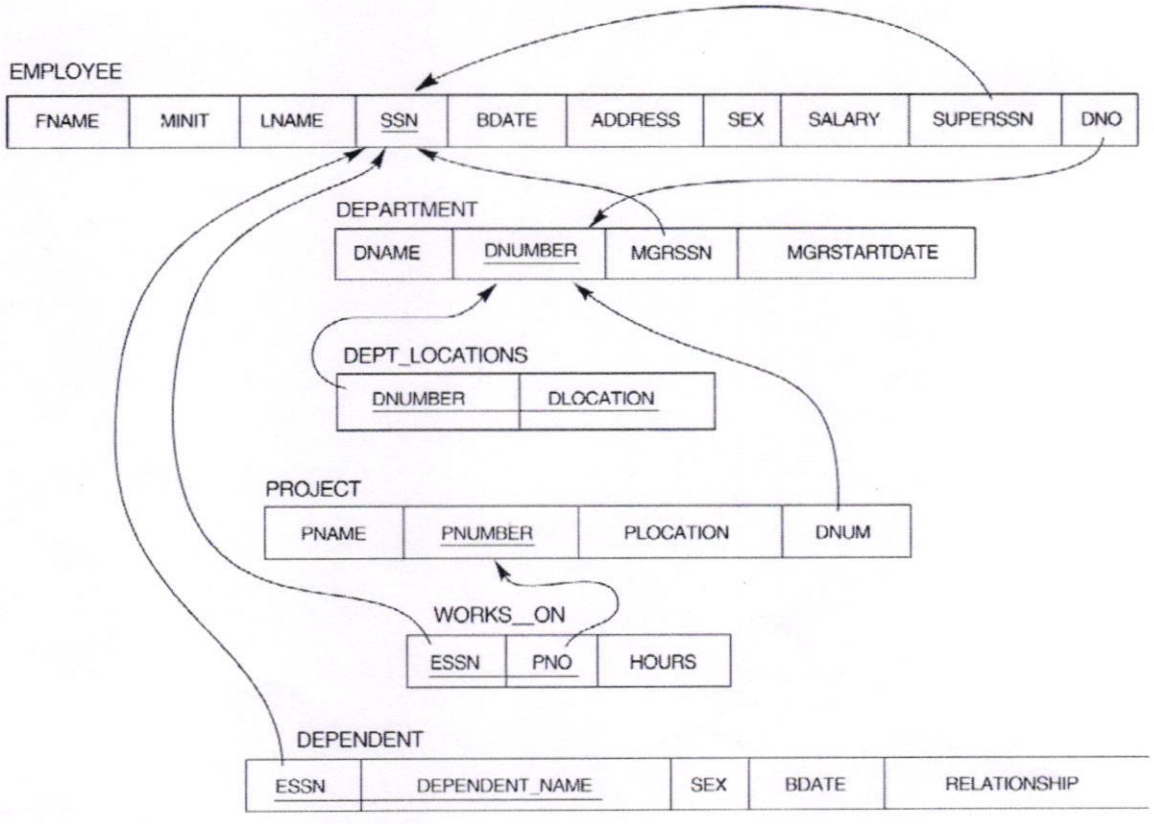
4. Fundamentals of Database Systems by R. Elmasri and S. Navathe

5. SQL: The Ultimate Beginners Guide by Steve Tale.

Semester	Course Code	Course Title	Hours	Credits
III	C3-P	DATABASE MANAGEMENT SYSTEMS LAB	30	2

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY

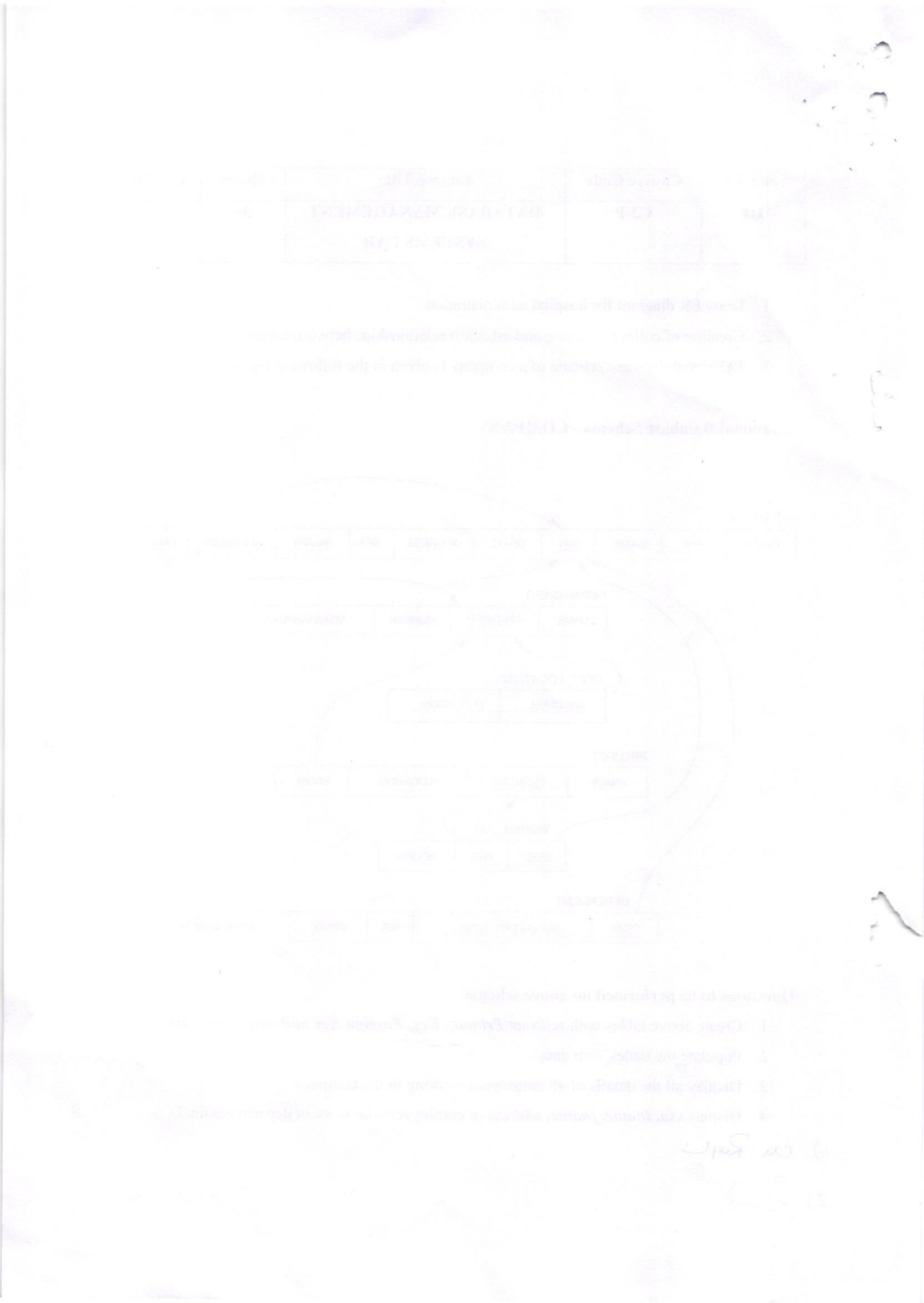


Questions to be performed on above schema

1. Create above tables with relevant ***Primary Key, Foreign Key and other constraints***
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display ***ssn, lname, fname, address*** of employees who work in department no 7.

1) Ch. Rayi

2) S.



5. Retrieve the ***Birthdate and Address*** of the employee whose name is 'Franklin T. Wong'
6. Retrieve the name and salary of every employee
7. Retrieve all distinct salary values
8. Retrieve all employee names whose address is in 'Bellaire'
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.
18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
20. Select the names of employees whose salary does not match with salary of any employee in department 10.
21. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
22. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
23. Find the sum of the salaries and number of employees of all employees of the 'Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department.

1) Mr. Ray

2)

24. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
25. Delete all dependents of employee whose ***ssn is '123456789'***.
26. Perform a query using alter command to drop/add field and a constraint in Employee table.

1) Ch. Raju

2)

Model Question Papers

Subject: DATABASE MANAGEMENT SYSTEM

Time: 3 Hours Max.Marks:75

Section-A (Answer any FIVE Questions). 5x5=25 Marks

1. Explain Drawbacks of file-Based System.
2. Explain Classification of Database Management Systems.
3. Explain relationship degree.
4. Explain generalization and specialization
5. Explain relational algebra operations
6. Explain tuple relational calculus.
7. Explain Data Manipulation Language.
8. Explain Aggregate functions.
9. Explain Structure of PL/SQL
10. Explain Types of Triggers.

SECTION-B

Answer ANY FIVE Questions. 5X10=50 MARKS

1. Drawbacks of file-Based System
2. Components of Database Management System
3. Reducing ER diagram to tables
4. Constraints on specialization and generalization.
5. Discuss about the CODD Rules.
6. Explain different normal forms.
7. Explain different SQL commands.
8. Explain different constraints in SQL.
9. Explain about cursors in detail
10. Explain iterative statements in C.

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OBJECT ORIENTATED PROGRAMMING ~~THROUGH~~ using JAVA

Semester	Course Code	Course Title	Hours	Credits
IV	C4	OBJECT ORIENTATED PROGRAMMING ~~THROUGH~~ using JAVA	60	3

Objectives:

To introduce the fundamental concepts of Object-Oriented programming and to design & implement object oriented programming concepts in Java.

Course Learning Outcomes: At the end of this course student will:

1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

UNIT – I

Introduction to Java: Features of Java, The Java virtual Machine, Parts of Java

Naming Conventions and Data Types: Naming Conventions in Java, Data Types in Java, Literals

Operators in Java: Operators, Priority of Operators

Control Statements in Java: if... else Statement, do... while Statement, while Loop, for Loop, switch Statement, break Statement, continue Statement, return Statement

Input and Output: Accepting Input from the Keyboard, Reading Input with Java.util.Scanner Class, Displaying Output with System.out.printf(), Displaying Formatted Output with String.format()

Arrays: Types of Arrays, Three Dimensional Arrays (3D array), arrayname.length, Command Line Arguments

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UNIT – II

Strings: Creating Strings, String Class Methods, String Comparison, Immutability of Strings

Introduction to OOPs: Problems in Procedure Oriented Approach, Features of Object-Oriented Programming System (OOPS)

Classes and Objects: Object Creation, Initializing the Instance Variables, Access Specifiers, Constructors

Methods in Java: Method Header or Method Prototype, Method Body, Understanding Methods, Static Methods, Static Block, The keyword 'this', Instance Methods, Passing Primitive Data Types to Methods, Passing Objects to Methods, Passing Arrays to Methods, Recursion, Factory Methods

Inheritance: Inheritance, The keyword 'super', The Protected Specifier, Types of Inheritance

UNIT – III

Polymorphism: Polymorphism with Variables, Polymorphism using Methods, Polymorphism with Static Methods, Polymorphism with Private Methods, Polymorphism with Final Methods, final Class

Type Casting: Types of Data Types, Casting Primitive Data Types, Casting Referenced Data Types, The Object Class

Abstract Classes: Abstract Method and Abstract Class

Interfaces: Interface, Multiple Inheritance using Interfaces

Packages: Package, Different Types of Packages, The JAR Files, Interfaces in a Package, Creating Sub Package in a Package, Access Specifiers in Java, Creating API Document

Exception Handling: Errors in Java Program, Exceptions, throws Clause, throw Clause, Types of Exceptions, Re – throwing an Exception

UNIT – IV

Streams: Stream, Creating a File using FileOutputStream, Reading Data from a File uingFileInputStream, Creating a File using FileWriter, Reading a File using FileReader, Zipping and Unzipping Files, Serialization of Objects, Counting Number of Characters in a File, File Copy, File Class

Threads: Single Tasking, Multi Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Single Tasking Using a Thread, Multi Tasking Using Threads, Multiple Threads Acting on Single Object, Thread Class Methods, Deadlock of Threads,

Thread Communication, Thread Priorities, thread Group, Daemon Threads, Applications of Threads, Thread Life Cycle

UNIT – V

Applets: Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, An Applet with Swing Components, Animation in Applets, A Simple Game with an Applet, Applet Parameters

Java Database Connectivity: Database Servers, Database Clients, JDBC (Java Database Connectivity), Working with Oracle Database, Working with MySQL Database, Stages in a JDBC Program, Registering the Driver, Connecting to a Database, Preparing SQL Statements, Using jdbc–odbc Bridge Driver to Connect to Oracle Database, Retrieving Data from MySQL Database, Retrieving Data from MS Access Database, Stored Procedures and CallableStatements, Types of Result Sets

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BOOKS:

1. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TMH.
4. Deitel&Deitel. Java TM: How to Program, PHI (2007)

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,

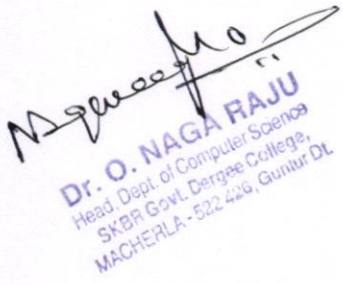
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

Semester	Course Code	Course Title	Hours	Credits
IV	C4-P	OBJECT ORIENTATED PROGRAMMING ~~THROUGH~~ USING JAVA LAB	30	2

1. Write a program to read ***Student Name, Reg.No, Marks[5]*** and calculate ***Total, Percentage, Result***. Display all the details of students
2. Write a program to perform the following String Operations
   a. Read a string
   b. Find out whether there is a given substring or not
   c. Compare existing string by another string and display status
   d. Replace existing string character with another character
   e. Count number of works in a string
3. Java program to implements Addition and Multiplication of two N X N matrices.
4. Java program to demonstrate the use of Constructor.
5. Calculate area of the following shapes using method overloading.
   a. Triangle
   b. Rectangle
   c. Circle
   d. Square
6. Implement inheritance between ***Person (Aadhar, Surname, Name, DOB, and Age)*** and ***Student (Admission Number, College, Course, Year)***classes where ReadData(), DisplayData() are overriding methods.
7. Java program for implementing Interfaces
8. Java program on Multiple Inheritance.
9. Java program for to display ***Serial Number from 1 to N*** by creating two Threads
10. Java program to demonstrate the following exception handlings
    a. Divided by Zero
    b. Array Index Out of Bound
    c. File Not Found
    d. Arithmetic Exception
    e. User Defined Exception

M. Rajl

11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle.
12. Write a program to create ***Book (ISBN,Title, Author, Price, Pages, Publisher)***structure and store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books



QUESTION PAPER PATTERN FOR END SEMESTER EXAM

UG CBCS SEMESTER PATTERN

object oriented programming ~~[illegible]~~ using JAVA

Time: 3 Hours **Max. Marks : 75**

SECTION-A

Answer any FIVE of the following Questions: (5 x 5= 25 Marks)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

SECTION - B

Answer any FIVE of the following Questions (5 × 10 =50 Marks)

11.
12.
13.
14.
15.
16.
17.
18.
19.
20.

Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit

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Sem IV Paper-5

OPERATING SYSTEMS

UNIT I

Introduction to Operating System Concept: Types of operating systems, operating systems concepts, operating systems services, Introduction to System call, System call types.

UNIT-II:

Process Management – Process concept, The process, Process State Diagram , Process control block, Process Scheduling- Scheduling Queues, Schedulers, Operations on Processes, Interprocess Communication, Threading Issues, Scheduling-Basic Concepts, Scheduling Criteria, Scheduling Algorithms

UNIT-III:

Concurrency: Process Synchronization, The Critical- Section Problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization examples.

UNIT-IV:

Memory Management: Swapping, Contiguous Memory Allocation, Paging, structure of the Page Table, Segmentation

Virtual Memory Management: Virtual Memory, Demand Paging, Page-Replacement Algorithms, Thrashing.

UNIT-V:

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, allocation methods, free-space management

Mass-storage structure overview of Mass-storage structure, Disk scheduling, Device drivers

TEXT BOOK:

1. Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin and Greg Gagne 9th Edition, John Wiley and Sons Inc., 2012.

2.Operating Systems – Internals and Design Principles, William Stallings, 7th Edition, Prentice Hall, 2011.

3. Operating Systems-S Halder, Alex A Aravind Pearson Education Second Edition 2016 .

REFERENCES:

1. Modern Operating Systems, Andrew S. Tanenbaum, Second Edition, Addison Wesley, 2001.

2. Operating Systems: A Design-Oriented Approach, Charles Crowley, Tata Mc Graw Hill Education", 1996.

3. Operating Systems: A Concept-Based Approach, D M Dhamdhere, Second Edition, Tata Mc Graw-Hill Education, 2007.

VU BOS chairman

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OPERATING SYSTEMS LAB USING C/Java

1. Write a program to implement Round Robin CPU Scheduling algorithm
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm
4. Write a program to Priority CPU Scheduling algorithm
5. Simulate Sequential file allocation strategies
6. Simulate Indexed file allocation strategies
7. Simulate Linked file allocation strategies
8. Simulate MVT and MFT memory management techniques
9. Simulate Single level directory File organization techniques
10. Simulate Two level File organization techniques
11. Simulate Hierarchical File organization techniques
12. Write a program for Bankers Algorithm for Dead Lock Avoidance
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.

a) FIFO

b) LRU

c) LFU

15. Simulate Paging Techniques of memory management

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Model Question Papers

Subject: OPERATIN SYSTEM

Time: 3 Hours Max.Marks:75

Section-A (Answer any FIVE Questions). 5x5=25 Marks

1. Explain the importance of Real-Time Embedded systems.
2. Define Cooperating process? What is the environment need in Cooperating processes?
3. What is Critical Section Problem?
4. Write the difference between internal and external fragmentation.
5. Define the Safe, unsafe, and deadlock state spaces
6. What are Operating-System Services?
7. Identify the situations for Preemption of a process.
8. Define Busy Waiting? How to overcome busy waiting using Semaphore operations.
9. What is Deadlock?
10. Write short note on demand paging.

SECTION-B

Answer ANY FIVE Questions. 5X10=50 MARKS

1. What is meant by interleaving and overlapping with respect to multi programming and multi processing? Explain. (Assume system have two user processes).
2. Explain the Time-shared operating system.
3. For given process how to evaluate Average Waiting Time and Average Turnaround Time for: i) FCFS ii) SJF iii) SRT iv) Non-Preemptive Priority v) Preemptive Priority vi) RR(Q=2).
4. What is paging? Explain its structure for 32 -byte memory with 4-byte pages.
5. What is effective access time? Compute it for 70% hit ratio, 20 ns to search TLB and 100 ns to access memory. Observe the difference when it is changed to 90% hit ratio.
6. Explain the usage and structure of monitors with an example.
7. Explain Banker's deadlock-avoidance algorithm with an illustration.
8. List out the various methods for free-space management and explain them.
9. Give a brief note on Disk scheduling algorithms
10. Differentiate SCAN, C-SCAN and LOOK, C-LOOK disk scheduling algorithms with an example

Note:- At least 2 question must be given from each unit in both section-A and Section-B

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REVISED SYLLABUS UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021:		
	LIFE SKILL COURSES:	
Sl.No.	Programme	Syllabus
1	ANALYTICAL SKILLS	
2	BASIC COMPUTER APPLICATIONS	
3	ELEMENTARY STATISTICS	
4	ENTREPRENEURSHIP DEVELOPMENT	
5	ENVIRONMENTAL EDUCATION	
6	HEALTH AND HYGIENE	
7	HUMAN VALUES PROFESSIONAL ETHICS AS PART OF LIFE SKILLS COURSES	
8	INDIAN CULTURE AND SCIENCE	
9	INFORMATION AND COMMUNICATION TECHNOLOGY	
10	PERSONALITY ENHANCEMENT AND LEADERSHIP	
	SKILL DEVELOPMENT COURSES:	
Sl.No.	Programme	Syllabus
1	TOURISM GUIDANCE	
2	JOURNALISTIC REPORTING	
3	PUBLIC RELATIONS	
4	SURVEY AND REPORTING	
5	FINANCIAL MARKETS	
6	DISASTER MANAGEMENT	
7	SOCIAL WORK METHODS	
8	PERFORMING ARTS	
9	ADVERTISING	
10	AGRICULTURE MARKETING	
11	BUSINESS COMMUNICATION	
12	INSURANCE PROMOTION	
13	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	
14	ONLINE BUSINESS	
15	OFFICE SECRETARYSHIP	
16	RETAILING	
17	ELECTRICAL APPLIANCES	
18	SOLAR ENERGY	
19	FOOD ADULTERATION	
20	ENVIRONMENTAL AUDIT	
21	PLANT NURSERY	
22	FRUITS AND VEGETABLE PRESERVATION	
23	DAIRY TECHNOLOGY	
24	POULTRY FARMING	
	Core Subjects	Syllabus
Sl.No.	Programme	
1	THREE-YEAR B.A. - ECONOMICS	
2	THREE-YEAR B.A. - HISTORY	
3	THREE-YEAR B.A. - POLITICAL SCIENCE	
4	THREE-YEAR B.Com - (GENERAL AND COMPUTER APPLICATIONS)	
5	THREE-YEAR BOTANY	
6	THREE-YEAR B.Sc. (CHEMISTRY)	
7	THREE-YEAR B.Sc. (COMPUTER SCIENCE/ INFORMATION TECHNOLOGY)	
8	THREE-YEAR B.A. /B.Sc. MATHEMATICS	
9	THREE-YEAR B.Sc. PHYSICS (FOR MATHEMATICS COMBINATIONS)	
10	THREE-YEAR B.Sc. PHYSICS (FOR NON-MATHEMATICS COMBINATIONS)	
11	THREE-YEAR B.Sc. ZOOLOGY	
12	THREE-YEAR B.A. /B.Sc./B.Com/BCA/BBM/BHM & CT ENGLISH under (Part - I)	
13	THREE-YEAR B.A. /B.Sc./B.Com/BCA/BBM/BHM & CT GENERAL TELUGU	
14	CBCS CURRICULAR FRAMEWORK	
15	GUIDELINES	

16. B.Sc (Data Science) — Three-years
17. B.Sc (Aquaculture Technology)
18. ~~B.Sc~~

~~Maths — Statistics~~ (1) Statistics – Computer Science – Data Science.
(2) Maths – Electronics – IOT
(3) B.A – History – Economics – Functional Telugu.

Market oriented Courses.

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

B.Sc. / B.Com / B.A

Revised Syllabus under CBCS w.e.f. 2020-2021

LIFE SKILL COURSE

BASIC COMPUTER APPLICATIONS

Semester	Course Code	Course Title	Hours	Credits
I	Life skill course	BASIC COMPUTER APPLICATIONS	30	2

Objectives:

This course aims at providing exposure to students in skill development towards basic office applications.

Course Learning Outcomes:

After successful completion of the course, student will be able to:

1. Demonstrate basic understanding of computer hardware and software.
2. Apply skills and concepts for basic use of a computer.
3. Identify appropriate tool of MS office to prepare basic documents, charts, spreadsheets and presentations.
4. Create personal, academic and business documents using MS office.
5. Create spreadsheets, charts and presentations.
6. Analyze data using charts and spread sheets.

Unit-I: (08 hrs)

Basics of Computers: Definition of a Computer - Characteristics of computers, Applications of Computers – Block Diagram of a Digital Computer – I/O Devices, hardware, software human ware, application software, system software, Memories - Primary, Auxiliary and Cache Memory.

MS Windows – Desktop, Recycle bin, My Computer, Documents, Pictures, Music, Videos,

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Task Bar, Control Panel.

Unit-II: (08 hrs)

MS-Word : Features of MS-Word - MS-Word Window Components - Creating, Editing, Formatting and Printing of Documents – Headers and Footers – Insert/Draw Tables, Table Auto format – Page Borders and Shading – Inserting Symbols, Shapes, Word Art, Page Numbers, Mail Merge.

Unit-III: (10 hrs)

MS-Excel : Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Inserting Rows/Columns –Changing column widths and row heights, Formulae, Referencing cells , Changing font sizes and colors, Insertion of Charts, Auto fill, Sort.

MS-PowerPoint: Features of PowerPoint – Creating a Presentation - Inserting and Deleting Slides in a Presentation – Adding Clip Art/Pictures -Inserting Other Objects, Audio, Video - Resizing and scaling of an Object – Slide Transition – Custom Animation.

RECOMMENDED CO-CURRICULAR ACTIVITIES: (04 hrs)

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside
   a. the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz, Group Discussion
4. Solving MCQ's available online.
5. Suggested student hands on activities:
   - Create two folders, Rename the folder, create two files each using notepad and paint, move the files from one folder to another folder, delete a file you have created, copy and paste text within notepad.
   - Create a letter head for your college with watermark, your resume, visiting card, brochure for your college activity, organization chart for your college, any advertisement, Prepare your Class time table.
   - Prepare your mark sheet, Prepare your class time table, Prepare a salary bill for an organization, Sort the bill as per the alphabetical order of the names, Get online weather data and analyze it with various charts.
   - Create a PowerPoint presentation for a student seminar.

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BSC/BCOM/BA
REVISED SYLLABUS UNDER CBCS W.E.F 2020-2021
LIFE SKILL COURSE
BASIC COMPUTER APPLICATIONS

ANSWER THE FOLLOWING QUESTIONS: **20x1=20**

1) "Transistors" are used in which generation?
   a) 1G b) 2G c) 3G d) 4G

2) This type of memory is commonly called temporary or volatile storage

   A. ROM B. RAM C. Flash Memory D. Virtual Memory

3) —— is the heart of the computer and this is where all the computing is done.

   A. Printer B. Central Processing Unit C. Mouse D. Keyboard

4) Select the smallest memory size

   A. kilobyte B. megabyte C. gigabyte D. terabyte

5) The set of instructions that tells the computer what to do is

   A. Softcopy B. Hardware C. Software D. Hardcopy

6) The main workspace of a Windows computer is called the _____.

   A. Folder B. taskbar C. desktop D. shortcut

7) A Microsoft Windows is .....a(n)
   a. Operating system b. Graphic program c. Word Processing d. Database program
8) Which is not application software?
   a. Windows b. Page Maker c. ms word 2007 d. Photosho
9). Taskbar is used for
   a. Navigation program b. Switching between program c. Start a program d. All of above
10) The operating system is the most common type of .... Software
   a. Communication b. Application c. System d. Word processing software

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14) The center the selected text, the shortcut key is
(A) Ctrl + C (B) Ctrl + E(C) Ctrl + U(D) Ctrl + O

15) A memory bus is mainly used for communication between

(A) Processor and I/O devices (B) Processor and memory
(C) Input devices and output devices(D) I/O devices and SMPS

16) To maximize the currently selected window, press

(A) Ctrl+ F9 (B) Ctrl+ F10 (C) Ctrl+ F11 (D) Ctrl+ F12

17) How many columns are there in old version of MS Excel?

(A) 250(B) 256(C) 265(D) 269

18) Typed text showed in active cell and also in ___

(A) Formula bar (B) Ribbon(C) Title bar(D) Scroll bar

19) Workbook is a collection of

(A) Worksheets(B) Page set-up(C) Buttons(D) Diagrams
20) ____ is the intersection of a row with a column.

(A) Cell(B) Row(C) Column(D) All of these

Match the following 1X5=5

1.Short cut for Copy command ☐ a) Ctrl +A
2.Short cut for Replace command ☐ b) Ctrl+R
3.Short cut for Undo command ☐ c) Ctrl+Z
4.Short cut for Goto command ☐ d) Ctrl+G
5.Short cut for select all command ☐ e) Ctrl +C

Answer any five of the following 5X5=25

1) Define computer? Explain the characteristics of computer?
2) Explain any four input statements?
3) Explain the features of MS- Word?
4) Write about mail merge?
5) Define chart? Explain different types of charts?
6) Explain the procedure to create a presentation
7) How can you customize a presentation?
8) Explain about functions in MS-Excel?

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