

SRI VENKATESWARA UNIVERSITY :: TIRUPATI

**FIRST YEAR B.Sc. COMPUTER SCIENCE / INFORMATION TECHNOLOGY
FIRST SEMESTER**

Revised Syllabus Under CBCS W.E.F. 2020-21

PROBLEM SOLVING IN C

Semester	Course Code	Course Title		
I	C1	PROBLEM SOLVING IN C		

Objectives:

This course aims to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.

Course Learning Outcomes:

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

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply 'C' language constructs to the algorithms to write a 'C' language program.

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, Programming Languages – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

UNIT II

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in 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- Programming Examples.

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 – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings.

UNIT IV

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

UNIT V

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – 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 – Accepting Command Line Arguments.

BOOKS

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The ‘C’ Programming language” - Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. Yashavant Kanetkar - Let Us ‘C’ – BPB Publications.

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. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like “Creating Text Editor in C”.
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

Problem solving in C LAB

Semester	Course Code	Course Title	Hours	Credits
I	C1-P	PROBLEM SOLVING IN C LAB	30	2

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 refaction 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

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

W.E.F. 2020-21

MODEL QUESTION PAPER

Time: 3 hours

Marks: 75 marks

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.

Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any Five of the following question.

(5X5=25M)

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

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
FIRST YEAR - SECOND SEMESTER
(Under CBCS W.E.F. 2020-21)

DATA STRUCTURES USING C

Semester	Course Code	Course Title	Hours	Credits
II	C2	DATA STRUCTURES USING C	60	3

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

Course Learning Outcomes:

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

1. Understand available Data Structures for data storage and processing.
2. Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
3. Choose a suitable Data Structures for an application
4. Develop ability to implement different Sorting and Search methods
5. Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
6. Design and develop programs using various data structures
7. Implement the applications of algorithms for sorting, pattern matching etc

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

Principles of Programming and Analysis of Algorithms: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O' Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques for Writing Programs in 'C'

UNIT – II:

Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List, Linked List in Arrays, 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.

BOOKS:

1. “Data Structures using C”, ISRD group Second Edition, TMH
2. “Data Structures through C”, Yashavant Kanetkar, BPB Publications.
3. “Data Structures Using C” Balagurusamy E. TM

RECOMMENDED CO-CURRICULAR ACTIVITIES:

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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. 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 from individual and collaborative work

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
FIRST YEAR - SECOND SEMESTER
(Under CBCS W.E.F.
2020-21)

DATA STRUCTURES USING C LAB

Semester	Course Code	Course Title	Hours	Credits
II	C2-P	DATA STRUCTURES USING C LAB	30	2

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 beginning 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 Linked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Linked 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 Dijkstra'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

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE EXAMINATION IN COMPUTER SCIENCE
FIRST YEAR - SECOND SEMESTER
(Under CBCS W.E.F. 2020-21)
DATA STRUCTURES USING C
MODEL QUESTION PAPER

Time: 3 hours

Marks: 75

marks

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks

PART - A

Answer any *Five* of the following question.
(5X5=25M)

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

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A)
	OR
	(B)
10.	(A)
	OR
	(B)
11.	(A)
	OR
	(B)
12.	(A)
	OR
	(B)

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
III - SEMESTER
(Under CBCS W.E.F. 2021-22)

DATABASE MANAGEMENT SYSTEMS

Semest er	Course Code	Course Title	Hour s	Credit s
III	C3	DATABASE MANAGEMENT SYSTEMS	60	3

Course Objective:

The objective of the course is to introduce the design and development of databases with special emphasis on relational databases.

Course Learning Outcomes:

On completing the subject, students will be able to:

1. Gain knowledge of Database and DBMS.
2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
4. Model database using ER Diagrams and design database schemas based on the model.
5. Create a small database using SQL.
6. Store, Retrieve data in database.

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, costs and risks of database approach.

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, multiple inheritance, constraints on specialization and generalization, advantages of ER modeling.

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 up to 3rd normal form.

UNIT IV

Structured Query Language: Introduction, History of SQL Standard, 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.

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;

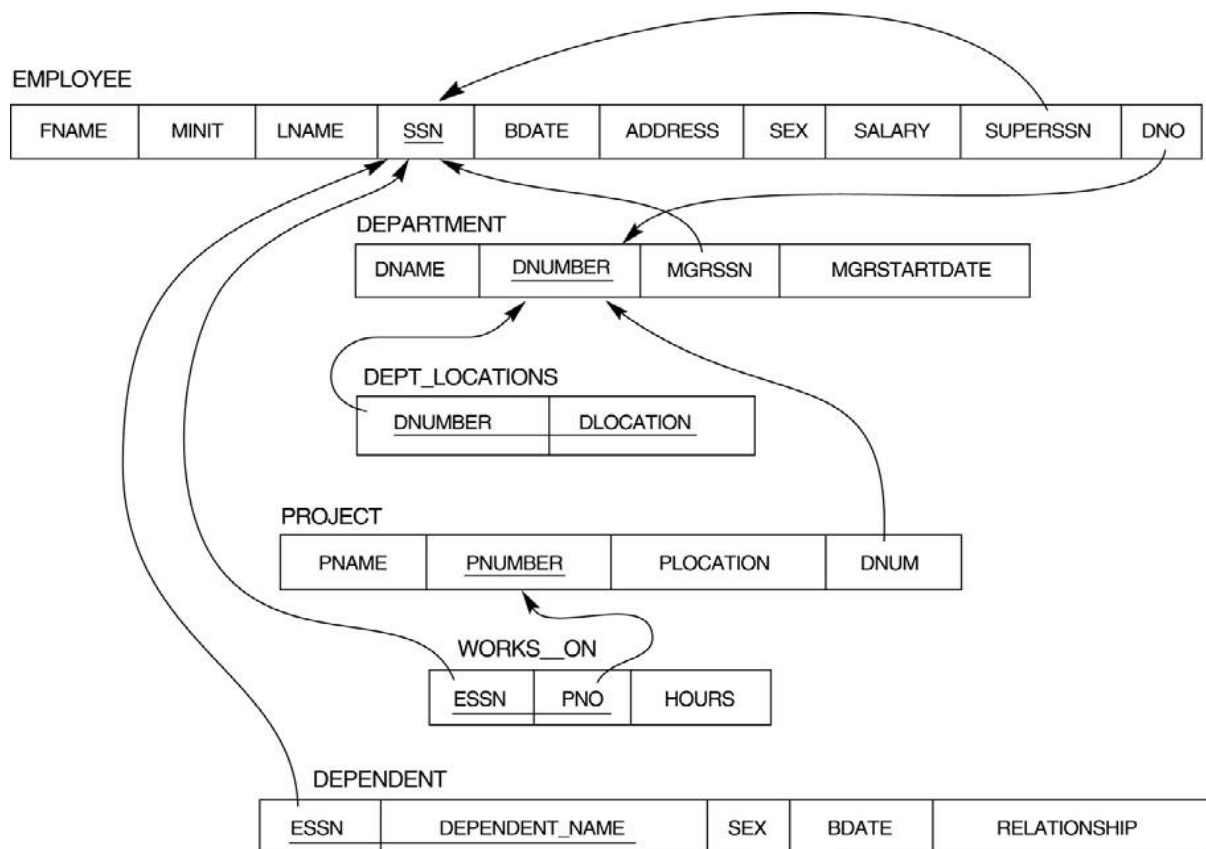
1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Practical assignments and laboratory reports,
4. Observation of practical skills,
5. Individual and group project reports like Create your college database for placement purpose.
6. Efficient delivery using seminar presentations,
7. Viva voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
III - SEMESTER
(Under CBCS W.E.F. 2021-22)

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.
5. Retrieve the **Birth date 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 'Aryan' 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.
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'**. Perform a query using alter command to drop/add field and a constraint in Employee table.

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

III – SEMESTER W.E.F. 2021-22

MODEL QUESTION PAPER

Time: 3 hours

Marks: 75 marks

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART – A

Answer any *Five* of the following question.

(5X5=25M)

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

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A)	
		OR
	(B)	
10.	(A)	
		OR
	(B)	
11.	(A)	
		OR
	(B)	
12.	(A)	
		OR
	(B)	
13.	(A)	
		OR
	(B)	

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
SEMESTER SYSTEM WITH CBCS
SEMESTER IV
W.E.F. 2021-2022

C4-OBJECT ORIENTATED PROGRAMMING THROUGH JAVA

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

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 using FileInputStream, 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 Callable Statements, Types of Result Sets

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)
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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),
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5. Observation of practical skills,
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8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

IV SEMESTER - W.E.F. 2021-22

PAPER-C4 OBJECT ORIENTATED PROGRAMMING THROUGH JAVA **MODEL QUESTION PAPER**

Time: 3 hours

Marks: 75 marks

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.

Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any Five of the following question.

(5X5=25M)

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

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

SEMESTER SYSTEM WITH CBCS
SEMESTER IV
W.E.F. 2021-2022

C4-P - OBJECT ORIENTATED PROGRAMMING THROUGH JAVA LAB

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 words 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

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

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
SEMESTER SYSTEM WITH CBCS
SEMESTER IV
W.E.F. 2021-2022
C5-OPERATING SYSTEMS

Objectives:

This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc.

Course Learning Outcomes:

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

1. Know Computer system resources and the role of operating system in resource management with algorithms
2. Understand Operating System Architectural design and its services.
3. Gain knowledge of various types of operating systems including Unix and Android.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
5. Have a basic knowledge about multithreading.
6. Comprehend different approaches for memory management.
7. Understand and identify potential threats to operating systems and the security features design to guard against them.
8. Specify objectives of modern operating systems and describe how operating systems have evolved over time.
9. Describe the functions of a contemporary operating system

UNIT- I

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.

UNIT- II

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery.

Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT IV

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

UNIT V

File and I/O Management, OS security: Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization

Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

REFERENCE BOOKS:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne (7th Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)
4. Online Resources for UNIT V

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

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

IV SEMESTER - W.E.F. 2021-22

PAPER-C5 OPERATING SYSTEMS

MODEL QUESTION PAPER

Time: 3 hours

Marks: 75 marks

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.

Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any Five of the following question.

(5X5=25M)

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

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

SEMESTER SYSTEM WITH CBCS
SEMESTER IV
W.E.F. 2021-2022
C5-P - 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

THREE YEAR B.Sc.DEGREE EXAMINATION, MARCH - 2022

CHOICE BASED CREDIT SYSTEM

FIFTH SEMESTER

Part - I: COMPUTER SCIENCE

Paper : III : Software Engineering

(W.E.F. 2017-2018)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any **Five** of the following questions. Each question carries of equal marks.

(5×5=25)

1. What is software Engineering?
2. What is requirement engineering?
3. What is function oriented design?
4. What is User interface design?
5. What is Black box testing?
6. What is integration in testing strategies?
7. Write about reverse engineering.
8. What is object-oriented design?

SECTION - B

Answer any one question from each unit. Each question carries equal marks. **(5×10=50)**

Unit - I

9. Explain about software project planning.

(OR)

10. Explain about software metrics.

Unit - II

11. Explain about requirement engineering process.

(OR)

12. Explain about Analysis model.

Unit - III

13. Explain about software architecture.

(OR)

14. Explain about strategy of design.

Unit - IV

15. Explain software quality assurance.

(OR)

16. Explain about user interface design.

Unit - V

17. Explain about control structure testing.

(OR)

18. Explain about Re-engineering.

THREE YEAR B.SC. DEGREE EXAMINATION, DECEMBER - 2017

CHOICE BASED CREDIT SYSTEM

FIFTH SEMESTER

PART - I : COMPUTER SCIENCE

PAPER -II: DATA BASE MANAGEMENT SYSTEM

(W.E.F 2017-2018)

Time : 3 Hours

Max. Marks :75

Part - A

Answer any **Five** of the following questions. All Questions carry equal marks. (5×5=25)

1. Write a note on evaluation of database systems?
2. Explain the building blocks for E-R diagrams.
3. Write a note on entity clustering.
4. What is generalization? Explain with an example.
5. Explain relational algebra operations.
6. Write a brief note on functional dependency.
7. Explain aggregate functions in SQL.
8. Write a brief note on embedded SQL.

[P.T.O

(1)

3-5-111

Part-B

II. Answer any **one** question from each unit. All questions carry equal marks. (5×10=50)

Unit-I

9. a) Explain the drawbacks of file-based system. (5)
- b) List out the advantages of DBMS. (5)

OR

10. Write a detailed note on database architecture.

Unit-II

11. Explain the process of reducing ER diagrams to tables.

OR

12. What is specialization? Explain the constraints on generalization and specialization with example.

Unit-III

13. What is relational algebra? Explain the advantages and limitations of relational algebra.

OR

14. What is normalization? Explain different forms of normalization.

Unit-IV

15. Explain DDL and DML commands with examples.

OR

16. a) Explain in detail about set operations. (5)

b) Explain Join operation with example. (5)

Unit-V

17. Explain different control structures with examples in PL/SQL.

OR

18. a) Write a brief note on packages. (5)

b) Explain about exceptional handling in PL/SQL. (5)



THREE YEAR B.Sc. DEGREE EXAMINATION — JULY 2020

CHOICE BASED CREDIT SYSTEM

SIXTH SEMESTER

Part-I :Computer Science

DSC-ELECTIVE – I (B) –COMPUTER NETWORKS

(W.E.F 2017-2018)

Time : 3 hours

Max. Marks : 75

SECTION – A

Answer any FIVE of the following. All question carry equal marks.

(Marks : $5 \times 5 = 25$)

1. Define networks, write the uses and benefits of networks.
2. Discuss about the wireless transmission.
3. Write about Ethernet.
4. Write about networks OS.
5. Why OSI is important in networks?
6. Explain about error generating code.
7. What is store forward packet switching?
8. Write about Routers and Bridges.

SECTION – B

Answer ONE questions from each unit . All question carry equal marks.

(Marks : $5 \times 10 = 50$)

UNIT - I

9. Explain about OSI reference model with an example.

Or

10. What is Topology? Explain different types of topologies in detail with diagram.

[P.T.O.]

SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN COMPUTER SCIENCE
SEMESTER SYSTEM WITH CBCS

SEMESTER V
W.E.F. 2022-2023

Skill Enhancement Courses (SECs) for Semester V,
from 2022-23 (Syllabus with Learning Outcomes, References,
Co-curricular Activities)

CourseCode:
MaxMarks: 100+50

Course7A:Web Applications Development using PHP & MYSQL
(Skill Enhancement Course(Elective),Credits:05)

I. Learning Outcomes:

Students after successful completion ofthecoursewillbeableto:

1. Writesimpleprograms inPHP.
2. Understand how to use regular expressions, handle exceptions, and validate data usingPHP.
3. ApplyIn-Builtfunctions andCreate Userdefined functionsinPHPprogramming.
4. WritePHPscriptsto handleHTMLforms.
5. Writeprogramstocreatedynamicandinteractivewebbasedapplicationsusi ngPHPandMYSQL.
6. KnowhowtousePHPwithaMySQLdatabaseandcanwritedatabasedrivenw ebpages.

II. Syllabus:(TotalHours:90 including Teaching, Lab, and Field training, Unit tests etc.)

Unit-1: (10hours)

The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants.Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.Working with Functions: What is function?, Calling functions, Defining Functions, Returningthe values from User-Defined Functions, Variable Scope, Saving state between Function callswiththestatic statement, moreabout arguments.

Unit-2: (10hours)

Working with Arrays: What are Arrays? Creating Arrays, Some Array-Related Functions.Working with Objects: Creating Objects, Object Instance Working with Strings, Dates andTime: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings withPHP, UsingDate and TimeFunctions in PHP.

Unit-3:

(10hours)

Working with Forms: Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, and Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the QueryString, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

Unit-4:

(10hours)

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipe to and from Process Using popen(), Running Commands with exec(), Running Commands with system() or passthru(). Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Unit-5:

(10hours)

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

III. References

1. Julie C. Meloni, SAMSTeachyourselfPHPMySQLandApache, Pearson Education (2007).
2. Steven Holzner, PHP: The Complete Reference, McGraw-Hill
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'Reilly, 2014
4. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).
5. Web resources:
 - e. <http://www.codecademy.com/tracks/php>
 - f. <http://www.w3schools.com/PHP>
 - g. <http://www.tutorialpoint.com>
6. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities:

a) Mandatory: (Training of students by teacher in field related skills: (lab: 10+field: 05):

1. **For Teacher:** Field related training of students by the teacher in laboratory/field for not less than 15 hours on demonstrating various **interactive and dynamic websites** available online, addressing the students on identifying the case study to build an interactive and database driven website, forms to be used in website, database to be maintained, reports to be produced, etc.

2. **For Student:** Students shall (individually) search online and visit any of the agencies like malls, hotels, super bazaars, etc. where there is a need for an interactive and database driven website and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a firm or business to develop a website, identifying forms to be placed in the websites, back end databases to be maintained and reports to be generated and placed in the websites.

3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Project work/Project work Report: 05.

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of place or websites visited, structure of the website and acknowledgements.*

5. Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Arrange expert lectures by IT experts working professionally in the area of web content development

2. Assignments (in writing or implementing contents related to syllabus or outside the syllabus. Shall be individual and challenging)

3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).

4. Preparation by students on best websites.

5. Arrange a web page development competition among small groups of students.

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

V SEMESTER - W.E.F. 2022-23

COURSE7A: WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL

MODEL QUESTION PAPER

Time: 3 hours

Marks: 75 marks

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A. Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any Five of the following question.

(5X5=25M)

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

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

SRI VENKATESWARA UNIVERSITY
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SEMESTER SYSTEM WITH CBCS
SEMESTER V
W.E.F. 2022-2023
COURSE 7A: WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL –
PRACTICAL SYLLABUS

V. Learning Outcomes:

On successful completion of this practical course, students shall be able to:

1. Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
2. Create an interactive and dynamic website.
3. Create a website with reports generated from a database.
4. Write programs to create an interactive website for e-commerce sites like online shopping, etc.

VI. Practical (Laboratory) Syllabus:

(30hrs.)

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using textbox, checkbox, radio button, select, submit button. And display user inserted value in new PHP page.
8. Create Website Registration Form using textbox, checkbox, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add new Rows in a Table.
12. Write a PHP application to modify the Rows in a Table.
13. Write a PHP application to delete the Rows from a Table.
14. Write a PHP application to fetch the Rows in a Table.
15. Develop an PHP application to implement the following Operations

- i. Registration of Users.
 - ii. Insert the details of the Users.
 - iii. Modify the Details.
 - iv. Transaction Maintenance.
 - a) No of times Logged in
 - b) Time Spent on each login.
 - c) Restrict the user for three trials only.
 - d) Delete the user if he spent more than 100 Hrs of transaction.
 - 16. Write a PHP script to connect MySQL server from your website.
 - 17. Write a program to read customer information like cust-no, cust-name, item-purchased, and mob-no, from customer table and display all these information in table format on output screen.
 - 18. Write a program to edit name of customer to "Kiran" with cust-no =1, and to delete record with cust-no=3.
 - 19. Write a program to read employee information like emp-no, emp-name, designation and salary from EMP table and display all this information using table format in your website.
 - 20. Create a dynamic web site using PHP and MySQL.
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