

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS

Syllabus

Vikrama Simhapuri University, Nellore with effect from 2021-2022



VIKRAMA SIMHAPURI UNIVERSITY::NELLORE

Common Framework of CBCS for Colleges in Andhra Pradesh

(A.P. State of Council of Higher Education)

SYLLABUS OF

BCA WITH CLOUD COMPUTING AND DEVOPS

(UNDER CBCS FRAMEWORK WITH EFFECT FROM 2021-22)

PROGRAMME: FOUR-YEAR UG PROGRAMME

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities &

Model Q.P.)

For Twenty-one Courses of 1, 2, 3, 4 & 5 Semesters)

(To be Implemented from 2021-22 Academic Year)

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I Semester

S.No	Paper Code	Subject	Hours/Week	No of Credits	Max. Marks Internal assessment	Max. Marks University Exam	Total Marks
1		English – I	4	3	25	75	100
2		Language(H/T/S) – I	4	3	25	75	100
3		Life Skill Course – I	2	2	-0-	50	50
4		Skill Development Course - I	2	2	-0-	50	50
5	C1	Programming in 'C'	4	4	25	75	100
6	C1-P	Programming in 'C' Lab	2	1	-0-	50	50
7	C2	Mathematical Techniques for Computing	4	4	25	75	100
8	C2-P	Mathematical Techniques for Computing Lab	2	1	-0-	50	50
9	C3	Data Analysis using Excel ↔	4	4	25	75	100
10	C3-P	Data Analysis using Excel Lab	2	1	-0-	50	50
11		Communication Skills & Technical Report Writing Lab	2	2	25	75	100
Total			32	27	150	700	850

1418P

1415MTC22

1418DAE22

Note: Paper C2 to be taught by Mathematics teachers

II Semester

S.No	Paper Code	Subject	Hours/Week	No of Credits	Max. Marks Internal assessment	Max. Marks University Exam	Total Marks
1		English – II	4	3	25	75	100
2		Language(H/T/S) – II	4	3	25	75	100
3		Life Skill Course – II	2	2	-0-	50	50
4		Skill Development Course - II	2	2	-0-	50	50
5		Skill Development Course - III	2	2	-0-	50	50
6	C4	DBMS using SQL	4	4	25	75	100
7	C4-P	DBMS using SQL Lab	2	1	-0-	50	50
8	C5	Programming in Java	4	4	25	75	100
9	C5-P	Programming in Java Lab	2	1	-0-	50	50
10	C6	Statistical Techniques for Computing	4	4	25	75	100
11	C6-P	Statistical Techniques for Computing Lab	2	1	-0-	50	50
12		Comprehensive Viva Voce	2	2	25	75	100
Total			34	29	150	750	900

Note:

Paper C6 to be taught by Mathematics teachers

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07/03/2022
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SEMESTER-I
PROGRAMMING IN 'C'

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C1	Programming in 'C'	4	60	4

Course 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 programming languages and flow charts.
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

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

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – Files used in C Program – Compiling and Executing C Programs - Programming Examples

UNIT II

C Fundamentals : Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Operators in C – I/O Statements (scanf, printf)

Decision Control Statements: Introduction to Decision Control Statements – Conditional Branching Statements : simple if, if..else, nested if, switch statements – Programming Examples

UNIT III

Iterative Control Statements: Iterative Statements – Nested Loops – Break and Continue Statement - Goto Statement

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – one dimensional array for inter-function communication – Two dimensional Arrays – two dimensional arrays for inter-function communication

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Strings: Introduction – String operations – String functions

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 and Unions: Introduction – Nested Structures – Arrays of Structures – Structures and Functions – Unions – Arrays of Unions Variables

UNIT V

Pointers: Introduction to Pointers – declaring Pointer Variables – Passing Arguments to Functions using Pointer – Pointer and Arrays – Dynamic Memory Allocation

File Handling: Introduction to Files, File modes, File operations, Using Files in C, Reading Data from Files, Writing Data from Files, Detecting the End-of-file

TEXT BOOKS:

1. Computer Fundamentals and Programming in C by Reema Thareja from Oxford University Press

REFERENCE BOOKS

1. E Balagurusamy: Computing Fundamentals & C Programming – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
2. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
3. Yashavant Kanetkar - Let Us 'C' – BPB Publications.
4. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language - Pearson publications.

PROGRAMMING IN 'C' LAB

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C1-P	Programming in 'C' Lab	2	30	1

1. Write a program to find
 - a. Area of Circle
 - b. Area of triangle
2. Write a Program to find
 - a. simple interest
 - b. Compound Interest
3. Write a program to convert temperature from Celsius to Fahrenheit
4. Write a program to find whether a number is even or odd
5. Write a program to find sum and average of 5 numbers
6. Write a program to check whether the given number is Armstrong or not.
7. Write a program to find the sum of individual digits of a positive integer.
8. Write a program to generate the first n terms of the Fibonacci sequence.
9. Write a program to find both the largest and smallest number in a list of integer values
10. Write a program to calculate factorial of given integer value using recursive functions
11. Write a program for addition of two matrices.
12. Write a program for multiplication of two matrices.
13. Write a program to perform various string operations.
14. Write a program to search an element in a given list of values.
15. Write a C program to
 - a. Write data into a File.
 - b. Read data from a File

B.C.A (Cloud Computing and DevOps)

SEMESTER-I CBCS

PROGRAMMING IN 'C'

MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks : 75

SECTION-A

Answer any FIVE of the following Questions:

(5 x 5= 25 Marks)

1. Define flowchart. Write symbols used in flow charts.
2. Write about compiling and executing programs in C.
3. Explain briefly constants used in C language.
4. Write about switch statement with an example
5. Illustrate break and continue statements.
6. Write about accessing elements of an array with an example
7. What is recursive function? Explain with an example program
8. Explain how to define a function in C program
9. Briefly explain passing arguments to functions using pointers with an example
10. Write various file modes used in C language

SECTION - B

Answer any FIVE of the following Questions

(5 × 10 =50 Marks)

11. Explain the key features of an algorithm
12. Write in detail the structure of C program with an example
13. Define data type. Explain various data types used in C language
14. Illustrate the use of decision control statements with an example
15. Define array. Explain how will you declare and access arrays in C program
16. Explain various string functions with an example
17. Write about storage classes used in C language
18. Define Structure. Illustrate the use of structures in C program
19. What is dynamic memory allocation? Explain with examples
20. Explain different file operations in C language

Instruction to Paper Setter:

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

MATHEMATICAL TECHNIQUES FOR COMPUTING

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C2	Mathematical Techniques for Computing	4	60	4

Course Objectives

In order to be able to formulate what a computer system is supposed to do, or to prove that it does meet its specification, or to reason about its efficiency, one needs the precision of mathematical notation and techniques. For instance, to specify computational problems precisely one needs to abstract the detail and then use mathematical objects such as matrices, differentiation and integration. To prove that a proposed solution does work as specified, one needs to apply the principles of mathematical logic, and to use proof techniques such as induction. And to reason about the efficiency of an algorithm, one often needs to count the size of complex mathematical objects. The Mathematics foundation aims to provide this mathematical background.

Course Outcomes

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

1. Have an idea about basic mathematical techniques which are necessary to analyze the statically technique.
2. Able to know the concept of matrices and its operations.
3. Able to complete the adjoint and determinate of a square matrix, hence it's inverse.
4. Capable of solving the simultaneous equations using matrix method.
5. Understands the technique differentiation, integration and its applications.

UNIT-I

Matrix Algebra I: Introduction-Definition of Matrix-Various types of Matrices –Row Matrix-Column Matrix-Square Matrix-Rectangular Matrix-Scalar Matrix-Unit Matrix-Null Matrix-orthogonal Matrix-Addition of Matrices-Subtraction of Matrices-Multiplication of Matrices and their applications.

UNIT-II

Matrix Algebra II: Transpose of a Matrix-Symmetric Matrix-Skew Symmetric Matrix - Orthogonal Matrix - Singular Matrix - Non Singular Matrix - Determinant of a Matrix -Adjoint of a Square Matrix - Inverse of a Matrix up to 3 order only.

UNIT-III

Matrix Algebra III: Rank of a Matrix - Definition - To find Rank of a Matrix for a given Matrix.

Solutions of Linear equations: 1.Matrix inversion method2.Cramer's Rule up to 3 order only

UNIT-IV : Finite Difference and Interpolation

Finite Difference and Interpolation:

Finite Differences - Forward Differences - Backward differences.

Newton's forward interpolation formula - Newton's backward interpolation formula.

UNIT-V

Set Theory : Definition of Set- Types of Sets-Union of Sets-Intersection of Sets-Venn diagrams- Operations on Sets-Complement of Set-Distributive Laws-De'Morgan's Laws

Note:

1. Concentration on numerical problems only.
2. Proofs of theorems and Derivations of expressions are omitted.

Text BookS:

1. Mathematical Methods by Dr.T.K.V. Ivengar, Dr.B.Krishna Gandhi, Dr. S.Ranganatham, and Dr.M.V.S.S.N. Prasad by S.Chand publications 6th revised edition 2011.
2. Quantitative Techniques by C.Satyadevi by S.chand Company

Reference Book:

1. Higher Engineering Mathematics by Dr.B.S.Grewal by Karna publisher"s 34th edition.

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS**Syllabus****Vikrama Simhapuri University, Nellore with effect from 2021-2022****Mathematical Techniques for Computing Lab**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C2-P	Mathematical Techniques for Computing Lab	2	30	1

1. Addition, Subtraction of Matrices.
2. Multiplication of Matrices.
3. Determinant of a Matrix and Inverse of a Matrix.
4. Singular and Non-Singular Matrices.
5. Cramer's Rule and Matrix Inversion Method.
6. Rank of a Matrix.
7. Forward Difference, Backward Difference table.
8. Newton's forward and backward difference formulas
9. Problem on Union.
10. Problem on Intersection.

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS**Syllabus****Vikrama Simhapuri University, Nellore with effect from 2021-2022****BLUE PRINT OF QUESTION PAPER****(INSTRUCTIONS TO PAPER SETTER)****SEMESTER - I CBCS: B.C.A (Cloud Computing and DevOps)****PAPER-I: MATHEMATICAL TECHNIQUES FOR COMPUTING**

NOTE: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit as follows

UNIT	TOPICS	5 MARKS	10 MARKS
UNIT-I	Addition of Matrices Subtraction of Matrices Multiplication of Matrices	2 (PROBLEMS)	2 (PROBLEMS)
UNIT-II	Transpose of a Matrix, Singular and Non-Singular Matrices, Orthogonal Matrix, Symmetric and Skew Symmetric Matrices	1 (PROBLEM)	1 (PROBLEM)
	Adjoint of a Matrix Inverse of a Matrix	1 (PROBLEM)	1 (PROBLEM)
UNIT-III	Rank of a Matrix	1 (PROBLEM)	1 (PROBLEM)
	Linear Equations	1 (PROBLEM)	1 (PROBLEM)
UNIT-IV	Forward difference	1 (PROBLEM)	1 (PROBLEM)
	Backward difference	1 (PROBLEM)	1 (PROBLEM)
UNIT-V	Sets	2 (PROBLEMS)	2 (PROBLEMS)

B.C.A (Cloud Computing and DevOps)
SEMESTER - I CBCS
MATHEMATICAL TECHNIQUES FOR COMPUTING
(Statistical tables and Electronic Calculators are allowed)

MODEL QUESTION PAPER

TIME: 3 HOURS

MAX.MARKS:75

SECTION-A

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 5 MARKS. 5x5 = 25M

1. If $A = \begin{bmatrix} 8 & 9 \\ 5 & -1 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 3 \\ 4 & 0 \end{bmatrix}$ then find $A+B$ and $A-B$

2. If $A = \begin{bmatrix} 1 & 2 \\ 1 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then find AB

3. Examine the following Matrix is Singular or Non-Singular $A = \begin{bmatrix} 3 & 8 & 1 \\ -4 & 1 & 1 \\ -4 & 1 & 1 \end{bmatrix}$.

4. Find the inverse matrix of $A = \begin{pmatrix} 2 & -3 \\ 4 & 6 \end{pmatrix}$

5. Find the rank of $A = \begin{bmatrix} 2 & 4 \\ 1 & 2 \end{bmatrix}$.

6. Explain Matrix Inversion method for solving linear equations.

7. Construct backward difference table to the following data and find $\nabla^2 y$, $\nabla^4 y$

x	0	1	2	3	4	5	6
y	0	1	16	81	256	625	1296

8. Find forward difference table to the following data :

x	:	35	45	55	65	75
y	:	200	220	243	270	289

9. $A = \{1, 2, 3, 4\}$, $B = \{2, 3, 5, 6\}$ find $A-B$ and $B-A$.

10. $A = \{2, 6, 8, 10\}$, $B = \{6, 8, 10, 11, 12\}$ find $A \cup B$ and $A \cap B$.

SECTION-B

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS

5x10=50

11. $A = \begin{bmatrix} 1 & 2 \\ 0 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 5 \\ 1 & 0 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 1 \\ 3 & -1 \end{bmatrix}$ then prove that $A(BC) = (AB)C$

12. Evaluate $A^2 - 3A + 9I$ where $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{bmatrix}$ and I is the unit Matrix.

13. Examine the following matrix is orthogonal or not

$$A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 5 & 7 \\ 2 & 1 & -1 \end{bmatrix}$$

14. If $A = \begin{bmatrix} 2 & 0 & 1 \\ 4 & -2 & 3 \\ 0 & 4 & -1 \end{bmatrix}$ then find A^{-1}

15. Find the rank of $A = \begin{bmatrix} 3 & -1 & 2 \\ -3 & 1 & 2 \\ -6 & 2 & 4 \end{bmatrix}$.

16. Solve the equations by using Matrix Inversion method $2x - y + 3z = 9$, $x + y + z = 6$, $x - y + z = 2$

17. Find $f(1.6)$ using Newton's forward Interpolation formula from the following table

x	1	1.4	1.8	2.2
y	3.49	4.82	5.96	6.5

18. Below are the given values of x and y respectively. Estimate by a suitable formula of interpolation the value of y , when $x = 7$.

$x:$	2	4	6	8
$y:$	7	21	43	73

19. If $A = \{8, 3, 2, 6, 5\}$, $B = \{1, 2, 7, 9\}$, $C = \{4, 5, 9\}$ prove that $A \cup (B \cap C) = (A \cup B) \cap C$.

20. $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{2, 4, 6, 8, 10\}$, $B = \{1, 3, 5, 7, 9\}$

prove that 1. $(A \cup B)^c = A^c \cap B^c$ 2. $(A \cap B)^c = A^c \cup B^c$

Instruction to Paper Setter:

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

DATA ANALYSIS USING EXCEL

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C3	Data Analysis using Excel	4	60	4

Course Objectives:

The objective of the course is to introduce the concepts of computer fundamental & their applications for the efficient use of Excel software in data analysis.

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. Understand hardware and software components
3. Have exposure to Excel software package
4. Understand various functions & formulae used in data analysis, preparing charts etc.
5. Apply data analysis tools like pivot table, goal seek, scenarios etc.

UNIT I

Introduction to Computers: Characteristics and limitations of computer, Block diagram of computer, types of computers, uses of computers, computer generations, **Types of Hardware:** Input devices and output devices, **Memories:** Primary memory, Secondary Memory, and cache memory,

UNIT II

Types of Software: System software, Application software, commercial, open source, domain and free ware software

Microsoft Excel:

Fundamentals of Excel : Features of MS-Excel, Excel Program Screen, the Ribbon, Office button and Quick Access tool bar, Worksheets, rows, columns, cells.

UNIT III

Worksheet basics: Creating a new workbook, Opening a Workbook, Saving a Workbook, Workbooks, Entering labels, values, and formulas in worksheet

Editing a worksheet: Editing cell contents - cutting, copying and pasting cells – Find and Replace - Undo, Inserting rows and columns, Deleting rows and columns

Formatting Options: Adjusting row height and column width - Formatting cell values, conditional formatting

UNIT IV

Formulas and Functions: Formulas: Enter and edit formula in Excel, operators used in formula, cell references in formula

Functions: Definition, Inserting a function in Excel, Types of functions in Excel: Mathematical, Statistical, Logical, Text, Date & Time functions

Working with Data ranges: Sorting: Sorting on single column, sorting on multiple columns, Filtering: Filtering data using AutoFilter

UNIT V

Working with Charts: Different types of charts, Creating a chart, Parts of chart, Changing chart type, changing chart options

Analyzing and Organizing Data: Data Validation, Scenarios, SubTotals

Working with PivotTables: Creating a PivotTable, Specifying PivotTable data, Working with PivotTable Layout

TEXT BOOKS:

1. Fundamentals Of Computers by Reema Thareja from Oxford University Press
2. Microsoft Excel 2007, Custom Guide Inc, 2007

REFERNCE BOOKS

1. Rajaraman, Introduction to Information Technology, PHI
2. Peter Norton, Introduction to Computers, Sixth edition, Tata McGraw Hill (2007).
3. Microsoft Office 2007 Fundamentals, 1st Edition By Laura Story, Dawna Walls
4. Working in Microsoft Office – Ron Mansfield - TMH.
5. MS Office 2007 in a Nutshell –Sanjay Saxena – Vikas Publishing House.

DATA ANALYSIS USING EXCEL LAB

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
I	C3-P	Data Analysis Using Excel Lab	2	30	1

1. Prepare your class time table using different Text formatting
2. Create a payslip with details of employee salary
3. Prepare an Excel sheet to calculate students result and grades based on their marks
4. Prepare an excel sheet to enter some strings and perform the following text functions
 - a. Find length of strings
 - b. Convert strings into uppercase and lowercase
 - c. Remove extra spaces in the strings
 - d. Extract substrings from the strings
5. Prepare an excel sheet to perform the following statistical analysis
 - a. Find mean of the values
 - b. Find mode of the values
 - c. Calculate standard deviation
 - d. Find largest and smallest values
6. Draw different types of charts for weather analysis of 5 successive years
7. Prepare an excel sheet for creating a pie chart for budget analysis
8. Prepare an excel sheet to illustrate the sorting
9. Prepare an excel sheet to illustrate the filtering
10. Prepare an excel sheet to illustrate the concept of sub totals
11. Prepare an excel sheet for restricting data entry using data validation feature
12. Create and demonstrate to analyze the data using a pivot table

B.C.A (Cloud Computing and DevOps)

SEMESTER - I CBCS

DATA ANALYSIS USING EXCEL

MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks : 75

SECTION-A

*Answer any **FIVE** of the following Questions:*

(5 x 5= 25 Marks)

1. What are various characteristics of computers
2. What is Cache memory? Explain
3. Briefly write about open source software
4. Define MS-Excel. Write about rows in Excel sheet
5. Briefly explain creating a new workbook in MS-Excel
6. Explain how to enter different data into a worksheet
7. Write about cell references used in Excel
8. Explain mathematical functions used in Excel with an example
9. Write about parts of chart in Excel
10. Briefly write about the use of SubTotals in Excel

SECTION - B

*Answer any **FIVE** of the following Questions*

(5 × 10 =50 Marks)

11. Explain in detail about parts of a computer system with a neat sketch.
12. Write about input devices in detail.
13. What is software? Explain different types of software
14. Write about features of MS-Excel
15. Explain various editing options of MS-Excel.
16. Write about formatting options in Excel
17. Define Sorting. Explain how to sort data in MS-Excel
18. Explain operators with examples used in Excel software.
19. Explain in detail how to create a PivotTable in Excel
20. Write in detail how Scenarios help in what-if-analysis.

Instruction to Paper Setter:

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

SEMESTER II

DBMS using SQL

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C4	DBMS using SQL	4	60	4

Course Objectives:

The objective of the course is to introduce the design and development of databases for data science with analytical features in relational databases.

Course Learning Outcomes:

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

1. Gain knowledge of Database, DBMS and SQL.
2. Learn SQL as best analysis tool for extract data in different ways
3. Create a small database using SQL.
4. Able to construct SQL queries to Store, Retrieve data in database
5. Model database using ER Diagrams and design database schemas based on the model.

UNIT I

Introduction to Database Management System: Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, Classification of Database Management Systems, advantages and disadvantages of database approach, services of database systems, Components of Database Management System

UNIT II

The Relational Database Model: Various Data Models, Relational Database model, Keys used in Relational model, Relational Data Integrity, Relationships within the Relational Database, Codd's relational database rules.

Entity–Relationship Model: Introduction, The components of an Entity–Relationship model, entities, attributes, relationships, Classification of Entity Sets, Attribute Classification, Relationship Degree, Relationship Classification

UNIT III

Structured Query Language: Introduction, SQL literals, Data types in SQL, SQL operators, Commands in SQL, Data Definition Language (DDL) commands, Creating tables, Table Modification, Table Truncation, Creating Tables with constraints, Dropping tables, Data Manipulation Language (DML) commands: Inserting data into tables, updating data in tables and deleting data in tables. Transaction Control commands in SQL

UNIT IV

Queries, Aggregate Functions, Subqueries and correlated queries, Relational Set Operators, Joining Database Tables, SQL Functions: Numeric functions, Date & Time functions, Text functions and Conversion functions, Views, Types of views, creating views, dropping views, Data Control Language (DCL) commands

UNIT V

PL/SQL: Introduction, Structure of PL/SQL program, PL/SQL Data Types, operators used in PL/SQL, variables, declaring variables in PL/SQL, Creating and running a PL/SQL Program, Control Structures, Conditional control statements, Iterative Control statements, Cursors, types of cursors, Steps to create a Cursor, using cursors in PL/SQL program

TEXT BOOKS:

1. Peter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, Seventh Edition, Thomson (2007)
2. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB publications

REFERNCE BOOKS

1. Elimasri / Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison Wesley (2007).
2. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
3. Database Management Systems by Raghu Ramakrishnan, McGrawhill
4. SQL: The Ultimate Beginners Guide by Steve Tale.
5. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education (2006).
6. Atul Kahate, Introduction to Database Management Systems, Pearson Education (2006).

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS

Syllabus

Vikrama Simhapuri University, Nellore with effect from 2021-2022

DBMS using SQL LAB

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C4-P	DBMS using SQL Lab	2	30	1

1. Draw ER diagram for inventory control system
2. Draw ER diagram for hospital administration
3. Illustrate the creation of a table with constraints
4. Creation of college database and establish relationships between tables
5. Employee database

An enterprise wishes to maintain a database to automate its operations. Enterprise divided into certain departments and each department consists of employees. The following two tables describes the automation schemas

Dept (deptno, dname, loc)

Emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

Generate the following queries using data of above tables.

- i. List out all employees details
 - ii. Display empno, ename, job and sal columns of all employees
 - iii. Display employee details who are working as 'CLERK'
 - iv. Find out number of employees working in each department
 - v. Find out job wise total salaries and number of employees.
 - vi. Calculate HRA as 30% and DA as 65% of salary
6. Create a view to get details of a table
 7. Demonstrate the use of GRANT and REVOKE commands to provide authorization
 8. Write a PL/SQL program to find factorial of a number
 9. Write a PL/SQL program to find sum of digits of an integer
 10. Write a PL/SQL program to demonstrate a for loop
 11. Write a PL/SQL program to demonstrate cursors
 12. Write a PL/SQL program to demonstrate Aggregate functions

B.C.A (Cloud Computing and DevOps)

SEMESTER-II CBCS

DBMS using SQL

MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks : 75

SECTION-A

*Answer any **FIVE** of the following Questions:*

(5 x 5= 25 Marks)

1. Describe the following
a) Data b) information c) database
2. Explain the Services of database management system
3. Briefly write about keys used in DBMS
4. Explain the relationship degree with an example
5. Define literal. Write about various literals used in SQL
6. Explain how do you insert data into tables
7. Explain aggregate functions with an example
8. Write about the use of COMMIT and ROLLBACK commands
9. Briefly explain the block structure of PL/SQL suitable example
10. Write about declaring variables in PL/SQL program

SECTION - B

*Answer any **FIVE** of the following Questions*

(5 × 10 =50 Marks)

11. Explain advantages of database management system
12. Write about various components of database management system
13. Define data model. Elaborate various data models
14. Write a short note on ER model
15. Explain about data definition commands
16. Write about data types used in Structured Query Language
17. Explain about relational set operators with examples
18. Illustrate the use of views in the database
19. Write about iterative control structures in PL/SQL
20. Explain how cursors are managed and their types

Instruction to Paper Setter:

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

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS

Syllabus

Vikrama Simhapuri University, Nellore with effect from 2021-2022

PROGRAMMING IN JAVA

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C5	Programming in Java	4	60	4

Course Objectives:

As the business environment becomes more sophisticated, the software development is becoming increasingly complex. Object Oriented Programming (OOP) has become the predominant technique for writing software in the past decade. Many other important software development techniques are based upon the fundamental ideas captured by object-oriented programming.

Course Learning Outcomes:

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

1. Understand the concept and underlying principles of Object-Oriented Programming
2. Understand how object-oriented concepts are incorporated into the Java programming language
3. Develop problem-solving and programming skills using OOP concept
4. Understand the benefits of a well structured program
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java
6. Develop efficient Java applets and applications using OOP concept

UNIT - I

FUNDAMENTALS OF OOP : Introduction, Object Oriented paradigm, Basic Concepts of OOP

OVERVIEW OF JAVA LANGUAGE: Introduction, Java features, Java program structure, Java tokens, Implementing a Java Program, Java Virtual Machine (JVM), Command line arguments.

CONSTANTS, VARIABLES & DATA TYPES: Introduction, Constants, Data Types, Variables, Declaration of Variables, Giving Value to Variables, Scope of variables, Type casting, operators

UNIT - II

INPUT AND OUTPUT IN JAVA: Reading Input with Java.util.Scanner Class, Displaying Output with System.out.println()

CONTROL STATEMENTS IN JAVA: Conditional control statements (simple if, if..else, switch), Iterative control statements (while, do..while, for), break Statement, continue Statement, return Statement

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members

UNIT - III

ARRAYS, STRINGS AND VECTORS: Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings, Vectors, Wrapper classes

INHERITANCE: Introduction, Types of inheritance, Overriding methods, Final variables and methods, Final classes, Abstract methods and classes

UNIT - IV

INTERFACES: Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface variables, Multiple Inheritance using interfaces

EXCEPTIONS: Types of errors: Compile-time errors, Run-time errors, Exceptions, Exception handling, Multiple Catch Statements

UNIT - V

MULTITHREADED PROGRAMMING: Introduction, Lifecycle of a Thread, Creating Threads, Extending the Threads, Stopping and Blocking a Thread

APPLET PROGRAMMING: Definition, Local and remote applets, Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state, Building Applet code

PACKAGES: Introduction, Java API Packages, Creating Packages, Accessing a Package

TEXT BOOKS:

1. E.Balaguruswamy, Programming with JAVA, A primer 3e, TATA McGraw-Hill Company

REFERENCE BOOKS:

1. Programming in Java by Sachin Malhotra, OXFORD University Press
2. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao & Kogent Learning Solutions Inc.
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TATA McGraw-Hill Company.
4. Deitel & Deitel. Java TM: How to Program, PHI (2007)
5. Java Programming: From Problem Analysis to Program Design- D.S Mallik
6. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press (2008)

PROGRAMMING IN JAVA LAB

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C5-P	Programming in Java Lab	2	30	1

1. Program to demonstrate the use of Harmonic Series.
2. Program to display a number is even or odd
3. Program to find whether a number is prime or not
4. Program to find a sub string in the given string.
5. Program to arrange the given strings in Alphabetic Order.
6. Program to search an element using arrays
7. Program to implement Addition and multiplication of two Matrices.
8. Program to demonstrate the use of Constructor.
9. Program to demonstrate the use of overriding Method.
10. Program for single Inheritance.
11. Program for implementing Interface.
12. Program on Multiple Inheritance.
13. Program for to implement Thread
14. Program to demonstrate Exception handling.
15. Program to demonstrate Applet program.

B.C.A (Cloud Computing and DevOps)

SEMESTER-II CBCS

PROGRAMMING IN JAVA

MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks : 75

SECTION-A

Answer any FIVE of the following Questions:

(5 x 5= 25 Marks)

1. Explain about command line arguments.
2. Discuss about JVM.
3. Explain break and continue statements
4. Define a class. How to define a class in Java.
5. What is an array? Discuss creating a one dimensional array in Java.
6. Briefly explain wrapper class
7. Discuss how to implement the Runnable Interface.
8. Write short notes on compile time errors
9. Write short notes on Thread life cycle
10. Differentiate local and remote applets.

SECTION – B

Answer any FIVE of the following Questions

(5 × 10 =50 Marks)

11. Explain basic concepts of OOP.
12. Write about the structure of Java Program with an example.
13. Write in detail about looping structures in Java
14. Explain about constructors in Java.
15. Explain about Inheritance with an example.
16. Write about how vectors used in Java program
17. Write about Interfaces used in Java
18. How to handle exceptions in Java with an example.
19. Explain how to create user defined package.
20. Explain Applet life cycle in detail.

Instruction to Paper Setter:

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

STATISTICAL TECHNIQUES FOR COMPUTING

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C6	Statistical Techniques for Computing	4	60	4

Course Objectives

Statisticians help to design data collection plans, analyze data appropriately and interpret and draw conclusions from those analyses. The central objective of the undergraduate major in Statistics is to equip students with consequently requisite quantitative skills that they can employ and build on in flexible ways.

Majors are expected to learn concepts and tools for working with data and have experience in analyzing real data that goes beyond the content of a service course in statistical methods for non-majors. Majors should understand [1] the fundamentals of probability theory, [2] statistical reasoning and inferential methods, [3] statistical computing, [4] statistical modeling and its limitations, and have skill in [5] description, interpretation and exploratory analysis of data by graphical and other means; [6] graduates are also expected to learn to communicate effectively.

Course Outcomes

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

1. Knowledge of Statistics and its scope and importance in various areas such as Medical, Engineering, Agricultural and Social Sciences etc.
2. Knowledge of various types of data in diagrammatic representation.
3. Brief analyzing in different types of data and tabulated.
4. Knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion etc.
5. Insights into preliminary exploration of different types of data.

COURSE SYLLABUS**UNIT-I:**

Introduction measures of central tendency, computation of Arithmetic mean, Median and Mode only for ungrouped data and grouped data. (Numerical Applications Only)

UNIT-II:

Measures of Dispersion, Computation of Range – Coefficient of Range – Quartile Deviation – Coefficient of Quartile Deviation – Mean Deviation – Coefficient of Mean Deviation. (Numerical Applications Only)

UNIT-III:

Measures of Dispersion, Variance standard Deviation – Coefficient of Variation for grouped and ungrouped data. (Numerical Applications Only)

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS

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UNIT-IV :

Concept of Skewness, Karl-Pearson's coefficient of skewness, Bowley's coefficient of skewness.
(Numerical Applications Only)

UNIT-V :

Meaning of Correlation, Types of correlation Karl-Pearson's coefficient of correlation (for individual series only) Spearman's Rank correlation.

NOTE : 1. Concentration on numerical problems Only.
2. Proofs of theorems and Derivations of expressions are omitted.

Text Books :

1. Statistical Methods – Dr. S.P. Gupta – Chand & Sons.
2. Quantitative Techniques by C. Sathyadevi – S. Chand.

Reference Books :

1. Statistical Methods – Snedecor G.W. & Cochran W.G. Oxford & + DII.
2. Elements of Statistics – Mode. E.B. - Prentice Hall.

STATISTICAL TECHNIQUES FOR COMPUTING LAB

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C6-P	Statistical Techniques for Computing Lab	2	30	1

1. Arithmetic Mean, Median.
2. Mode.
3. Quartile Deviation
4. Mean Deviation
5. Standard Deviation.
6. Variance
7. Karl Pearson's Coefficient of Skewness.
8. Bowley's Coefficient of Skewness.
9. Correlation
10. Rank Correlation

B.C.A (Cloud Computing and DevOps)

SEMESTER - II CBCS

STATISTICAL TECHNIQUES FOR COMPUTING

(Statistical tables and Electronic Calculators are allowed)

MODEL QUESTION PAPER

TIME: 3 HOURS

MAX.MARKS:75

SECTION-A

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 5 MARKS 5X5=25

1. From the following data the monthly income of ten employees in an office. Calculate the Arithmetic mean

Income (Rs) : 4780, 5760, 6690, 7750, 4840, 4920, 6100, 7210, 7050, 6950.

2. In Asymmetrical Distribution, mode=32.1, Mean=35.4, find out the value of Median.

3. Find Median, and Mode to the following data :4, 5, 6, 4, 5, 4, 10

4. Find the range to the following data 200, 210, 208, 160, 220, 250.

5. Compute Quartile Deviation From the following data

Marks	10	20	30	40	50	60
No. of Students	4	7	15	8	7	2

6. If mean of a distribution is 160, Mode 157 Standard deviation is 50. Find coefficient of Variation.

7. Find Karl-Pearsons Coefficient of Skewness to the following data mean=150, mode=185, standard deviation(σ) = 55

8. Find Bowleys Coefficient of Skewness for $Q_1 = 16.4$, $Q_2 = 24.2$, $Q_3 = 26.4$.

9. Find Correlation Coefficient to the Following data $\Sigma x^2 = 222$, $\Sigma y^2 = 362$, $\Sigma xy = 261$

10. Find rank Correlation when ranks are given :

Stat : 9, 6, 1, 5, 4, 2, 3, 8, 7, 10.

Maths : 8, 5, 1, 4, 10, 7, 6, 9, 3, 2.

BACHELOR OF COMPUTER APPLICATIONS WITH CLOUD COMPUTING AND DEVOPS

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SECTION-B

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS 5X10=50

11. Calculate Arithmetic Mean for the following data

X	1	2	3	4	5	6	7
F	5	9	12	17	14	10	6

12. Find Mode to the following data :

Marks	0-10	10-20	20-30	30-40	40-50
No of students	3	15	7	10	12

13. Calculate Mean Deviation for the following data :

X	5	10	15	20	25	30
F	3	4	8	12	7	2

14. Compute Coefficient of Quartile Deviation to the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No of students	10	15	28	32	40	35	26

15. The following are the runs scored by two batsmen A and B in 10 Innings. Find out who is better run getter and who is more consistent player

A runs	90	110	5	10	125	15	35	16	134	10
B runs	65	68	52	47	63	25	25	60	55	60

16. Compute Variance and Standard Deviation for the following data :

X: 4, 14, 22, 30, 20, 8, 2

17. Compute Karl-Pear sons Coefficient of Skewness to the following data :

Distance (km)	10	20	30	40	50
No.of Buses	16	20	29	49	61

18. Compute Bowley's coefficient of skewness to the following data :

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	5	10	22	28	16	9

19. Calculate coefficient of correlation of the following data :

X	10	12	13	16	17	20	25	30	34
Y	20	22	26	27	29	33	37	40	42

20. Calculate Rank Correlation for the data given below :

X	72	70	46	69	56	65	65	45	35	75
Y	111	110	105	112	115	115	101	118	107	120

Instruction to Paper Setter:

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

K. Keetha
07/03/2022

M.D. Ramana
07/03/2022

A. S.
07/03/2022

R.V. S.
07/03/2022
Ajaydatta

B.
07/03/2022

V. S. S.
7/3/2022