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NI—19—2023

FACULTY OF SCIENCE AND TECHNOLOGY

BCA (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(CBCS/Revised Pattern)

COMPUTER APPLICATION

Paper BCA-402

(Data Structure and Algorithm)

(Tuesday, 5-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Assume suitable data, if required.

(*iv*) Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1. Attempt any *five* of the following (**3** marks each) : 15

(*a*) Discuss basic terminology of Data Structure.

(*b*) Explain memory allocation in linked list.

(*c*) Describe in brief space complexity.

P.T.O.

(*d*) Write an algorithm for traversing of linear array.

(*e*) Explain in short In-order traversal.

(*f*) Describe PUSH operation in stack.

(*g*) Explain detail selection sort.

2. Attempt any *three* of the following (**5** marks each) : 15

(*a*) Explain bubble sort in detail.

(*b*) What is Linear and Binary search in an array ?

(*c*) Explain elementary data organization in data structure.

(*d*) Discuss different types of Data Structure operations.

(*e*) Write an algorithm for traversing a linked list.

3. Attempt any *three* of the following (**5** marks each) : 15

(*a*) Explain notation and concept of algorithm.

(*b*) Write an algorithm for Insertion sort in linked list.

(*c*) Write an algorithm to delete an element from an array.

(*d*) What is linked list ? Explain its representation in memory.

(*e*) Write an algorithm for searching an element from given sorted list.

4. Attempt any *three* of the following (**5** marks each) : 15

(*a*) Define Queue. Explain array representation of queue in memory.

(*b*) Write an algorithm for deletion in queue.

(*c*) Explain terminology of binary tree.

(*d*) Describe traversing of binary tree.

(*e*) Explain types of Binary tree.

5. Write short notes on any *three* of the following (**5** marks each) : 15

(*a*) Explain STACK in detail.

(*b*) Explain Arithmetic expression in detail.

(*c*) Explain calculating factorial of a number using recursion.

(*d*) Explain Header Nodes in detail.

(*e*) Explain Threads in detail.

This question paper contains **3** printed pages]

NI—12—2023

FACULTY OF SCIENCE AND TECHNOLOGY

BCA (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(CBCS/Revised Pattern)

COMPUTER APPLICATION

Paper BCA-401

(Programming in Java)

(Saturday, 2-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Assume suitable data, if required.

(*iv*) Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1. Attempt any *five* of the following (**3** marks each) : 15

(*a*) Discuss final variable and final method in Java.

(*b*) Explain the concept of local applet in short.

P.T.O.

(*c*) Explain use of 'this' keyword.

(*d*) Explain various data types in Java.

(*e*) What is Array ? How do you define and access array elements in Java ?

(*f*) Explain character stream classes in Java.

2. Attempt any *three* of the following (**5** marks each) : 15

(*a*) What is Constructor ? Explain constructor overloading.

(*b*) Discuss the structure of Java Program with suitable example.

(*c*) What is exception ? Discuss exception handling mechanism.

(*d*) Write the difference between applet and applications.

(*e*) Write a java program to generate multiplication table of 14.

3. Attempt any *three* of the following (**5** marks each) : 15

(*a*) What is Inheritance ? Explain its types.

(*b*) Explain any *two* conditional statements in Java with programming example.

(*c*) Write an applet to draw different graphical shapes.

(*d*) Explain method overloading with suitable example.

(*e*) Write a Java program to reverse a string.

4. Attempt any *three* of the following (**5** marks each) : 15

(*a*) How do you define Class, Method and Objects in Java ?

(*b*) What is interface ? How do you define and implement interface ?

(*c*) Explain Java Features.

(*d*) Explain Applet Life Cycle.

(*e*) Write a java program to generate Fibonacci series up to 13.

5. Write short notes on any *three* of the following (**5** marks each) : 15

(*a*) Jumping statements in Java

(*b*) Method overriding

(*c*) Types of Constructor

(*d*) Java History

(*e*) Types of errors.

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NI—29—2023

FACULTY OF SCIENCE AND TECHNOLOGY

BCA (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(CBCS/Revised Pattern)

COMPUTER APPLICATION

Paper-AK-39

(Relational Database Management System)

(Thursday, 7-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Assume suitable data, if required.

(*iv*) Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1. Attempt any *five* of the following (**3** marks each) : 15

(*a*) Explain characteristics of RDBMS.

(*b*) Describe Entity Relationship (ER) Data model.

(*c*) Explain DCL commands in SQL.

(*d*) What is Foreign Key ? Explain with example.

P.T.O.

(*e*) Explain string function.

(*f*) What is Equi Join ? Explain with example.

(*g*) Explain with example the concept of Sorting.

2. Attempt any *three* of the following (**5** marks each) : 15

(*a*) Describe in detail the advantages of RDBMS.

(*b*) Explain Network Model in detail.

(*c*) Explain Relational Data Models.

(*d*) Explain the applications and advantages of RDBMS.

(*e*) What is Data Constraints ? Explain Unique and Not Null constraint.

3. Attempt any *three* of the following (**5** marks each) : 15

(*a*) Explain with example DDL commands in SQL.

(*b*) Explain the different data types in SQL.

(*c*) What is DISTINCT Clause ? Explain with example.

(*d*) Explain the concept of primary key with example.

(*e*) Based on the given table and data, write SQL statements to perform the following :

Weather-Report

City	Max-Temp.	Min-Temp.
Aurangabad	39	29
Pune	35	27
Nanded	40	29
Mumbai	35	25

(1) Insert the given records in Weather-Report table.

(2) Display name of city whose maximum temperature is between 38 to 45 degree centigrade.

(3) Display the name of that city who has highest Min-temp.

4. Attempt any *three* of the following (**5** marks each) : 15

(*a*) What is View ? Explain in detail.

(*b*) Explain with example number functions.

(*c*) Explain with example Multiple Row Functions.

(*d*) Explain Comparison Operators BETWEEN and LIKE.

(*e*) Write SQL statements to :

(*i*) Create the following table :

Product_Details

Product_Id	Prod_Name	Rate	Qty	Amount
P101	HDD	2500	5	
P102	FD	18	10	
P103	Pen Drive	350	15	

(*ii*) Insert the given records.

(*iii*) Update discount field by 9.5 on rate and update Amt. field for each record.

P.T.O.

5. Write short notes on any *three* of the following (**5** marks each) : 15

(*a*) Group by Clause

(*b*) Subqueries and its types

(*c*) Outer Join

(*d*) PL/SQL Block

(*e*) Cross Join.