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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.

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- (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.

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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.

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- (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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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.

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- (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

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- (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.

WT

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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.

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