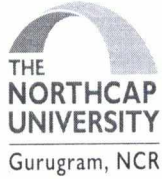


- 7 MAR 2025 (M)

NCU/FRM/2.6/ACAD/027



Question paper for Minor Test

School of Engineering & Technology

Programme Name: BCA

Course Name: Programming Fundamentals - II

Course Code: BCL 104

Semester: Even, 2nd Sem

Review Date:

Session: Jan-June 2025

Maximum Marks: 50
Duration: 1.5hrs

Sheet 1 of 2

Note:

1. All the questions are compulsory.
2. Marks and COs are indicated against the questions.

CO1: Decomposing and solving a complex problem by identifying participating objects and their communication framework.

CO2: Applying the concepts of object-oriented paradigm (Classes, Objects, inheritance, polymorphism etc.) for designing solution of a given programming problem.

CO3: Writing clean well commented code with proper indentation by applying Single responsibility principle.

SECTION A (12 marks)

Q. No.	Question	Marks	CO's
Q1.	Explain important features of object-oriented programming.	3	CO1
Q2.	Create a Java class named "Circle" with data members "radius" and a method to calculate and display the area of the circle.	3	CO2
Q3.	Develop a Java program that takes a string input from the user and calculates the number of vowels present in it.	3	CO1
Q4.	Explain method overloading with the help of an example?	3	CO3

SECTION B (30 marks)

Q5.	a) Write a Java program that reads an integer from the user, calculates its factorial using a recursive function, and displays the result. b) Write a Java program that prompts the user to enter their name and age, then displays a "WELCOME" message along with "keyword" based on their age category (i.e., child (1-12), teenager (13-17), adult (18 above)).	5*2 = 10	CO2
Q6.	a) Implement a Java program that takes user input for an array of integers (size = 10), displays the largest and smallest element in the array. b) Explain and contrast selection, iterative and jump control statements in JAVA.	5*2 = 10	CO1

Issued by:

Approved by:

Date:

Date:

Q7.	You are tasked with developing an Employee Management System using Java classes and constructors. The system should be able to: I. Create Employee class with the following attributes: a. Employee ID (Integer) b. Name (String) c. Department (String) d. Salary (Double) II. Implement two constructors: a. Default Constructor: Initializes the employee with default values (e.g., Employee ID = 0, Name = "Unknown", Department = "Not Assigned", and Salary = ₹30,000). b. Parameterized Constructor: Allows setting values for all attributes during object creation. III. Implement a method to calculate a performance bonus, where: a. If the salary is greater than ₹50,000, the bonus is 10% of salary. b. Otherwise, the bonus is 15% of salary. IV. Implement a method to display employee details, including their ID, Name, Department, Salary, and Calculated Bonus. V. In the main method, create: a. An employee using the default constructor and display its details. b. Two employees using the parameterized constructor with different attributes and display their details.	5*2 = 10	CO3
SECTION C (8 marks)			
Q8.	You are tasked with developing a Student Performance Tracker for a university. Each student has a name, age, and score, which determines their academic standing. The system should allow the creation of student records, validation of input data, and comparison between students based on their scores. a) When a student object is created, the system should ensure that the provided age is at least 15, and the score is within the range of 0 to 100. If invalid values are entered, the student should be assigned default values: "Default Student", 18 years old, and a score of 50.0. b) Students should be able to compare their performance with another student. If two students have the same score, the system should indicate that they have performed equally well. Write a Java program that creates multiple students, displays their details, and compares their academic performance. Ensure that the program correctly utilizes the "this" keyword to handle instance variables and method calls.	4*4=8	CO3

Issued by:	Approved by:
Date:	Date: