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**BRAINWARE UNIVERSITY**

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Term End Examination 2025-2026**Programme – MCA-2025****Course Name – Object Oriented Design Using Java****Course Code - MCA27501 (T)****(Semester II)****Full Marks : 40****Time : 2:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 10=10

1. *Choose the correct alternative from the following :*

- (i) Which statement best represents the core idea of Object-Oriented Programming?
 - a) Programs are executed line by line
 - b) Programs are organized around objects and their interactions
 - c) Programs focus only on functions
 - d) Programs avoid data abstraction
- (ii) Which OOP concept binds data and methods into a single unit?
 - a) Inheritance
 - b) Abstraction
 - c) Encapsulation
 - d) Polymorphism
- (iii) Which feature of OOP allows hiding internal implementation details?
 - a) Encapsulation
 - b) Inheritance
 - c) Abstraction
 - d) Polymorphism
- (iv) Which keyword is used to create an object in Java?
 - a) new
 - b) static
 - c) class
 - d) void
- (v) Which I/O class is commonly used for runtime input in Java?
 - a) BufferedReader
 - b) Scanner
 - c) InputStream
 - d) FileReader
- (vi) Which output statement prints text and moves the cursor to a new line?
 - a) System.out.print()
 - b) System.out.println()
 - c) System.out.write()
 - d) System.out.output()
- (vii) If two methods have the same name and parameters but belong to different classes in inheritance, which concept applies?
 - a) Method overloading
 - b) Method overriding
 - c) Method hiding
 - d) Encapsulation
- (viii) Why does Java disallow multiple inheritance using classes but allow it through interfaces?

- a) To reduce memory usage
- b) To avoid ambiguity in method implementation
- c) To improve runtime performance
- d) To simplify garbage collection
- (ix) Which scenario best justifies declaring a class as 'final' from a design-analysis perspective?
 - a) To improve execution speed
 - b) To enable method overriding
 - c) To enforce abstraction
 - d) To prevent misuse of critical logic through inheritance
- (x) When evaluating thread design, why is implementing 'Runnable' generally preferred over extending 'Thread'?
 - a) It allows separation of task logic from thread management
 - b) It avoids exception handling
 - c) It guarantees thread safety
 - d) It improves JVM memory allocation

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. Distinguish between a JDK, JRE, and JVM. (3)
- 3. Describe the process of compilation and interpretation in Java. (3)
- 4. Write a simple Java program to demonstrate the use of if-else branching. (3)
- 5. Analyze the structural advantages of using an interface to achieve multiple inheritance in Java. (3)
- 6. Compare the use of the Thread class versus the Runnable interface for creating a multi-threaded task. (3)

OR

Analyze how unhandled exceptions in a child thread affect the execution of the main thread. (3)

Group-C

(Long Answer Type Questions)

5 x 3=15

- 7. Write a Java program to define a class 'Student', create an object of the class, and access its data members and method. (5)
- 8. Analyze the advantages and limitations of arrays in Java when used for storing and processing structured data. (5)
- 9. Evaluate the design choice of creating lightweight user-defined exceptions in concurrent systems. (5)

OR

Assess how proper exception handling contributes to fault tolerance in multithreaded Java applications. (5)

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