Paper id: 252837

Roll No: | | | | | | | | | | | | | |

MCA
(SEM II) THEORY EXAMINATION 2024-25
OBJECT ORIENTED PROGRAMMING

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data, choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

Q No.	Question	CO	Level
a.	Define encapsulation with an example in Java.	1	K2
b.	List the characteristics of Java that support object-oriented programming.	1	K1
c.	What is the purpose of access specifiers in Java?	1	K2
d.	Differentiate between abstract class and interface in Java.	2	K4
e.	Write the syntax to create a user-defined package in Java.	2	K3
f.	Explain the use of the finally block in exception handling.	3	K3
g.	Define multithreading and how it differs from multitasking.	4	K2
h.	What are generic methods in Java? Give an example.	4	K3
i.	List any four Swing components used in GUI programming.	5	K1
j.	What are adapter classes? Mention their use in event handling.	5	K2

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

Q No.	Question	CO	Level
a.	Explain the principles of object-oriented programming. Write a Java program demonstrating inheritance and polymorphism.	1	K4
b.	Describe how interfaces are implemented in Java. Write a Java program using multiple interfaces.	2	K6
c.	Discuss exception handling in Java with the hierarchy of exceptions. Write a program that handles multiple exceptions using try-catch-finally.	3	K5
d.	Explain thread lifecycle with a program to demonstrate thread synchronization.	4	K5
e.	Develop a GUI application using Java Swing that uses at least three components like JButton, JTextField, and JCheckBox. Explain the event handling mechanism used.	5	K4

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

a.	Analyze the significance of object-oriented programming in software engineering. How does it support reusability and scalability?	1	K4
b.	Design a class structure using Java for a University Management System. Use the concepts of inheritance, encapsulation, and constructors.	2	K6

4. Attempt any *one* part of the following: 10 x 1 = 10

a.	Compare classes and interfaces in Java. Create a program to show how Java achieves multiple inheritance using interfaces.	2	K5
b.	Explain the role of packages and classpath in modular programming. Demonstrate with an example of creating and importing custom packages.	2	K4

5. Attempt any *one* part of the following: 10 x 1 = 10

a.	Illustrate exception propagation in Java with the help of a real-life analogy and program.	3	K5
b.	Create a Java application to read data from a file and write the output to another file	3	K6

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	using byte and character streams.		

6. Attempt any *one* part of the following: 10 x 1 = 10

a.	Evaluate the importance of synchronization in multithreading. Write a program that avoids race condition using synchronization block.	4	K5
b.	Create a bounded type generic class and explain the limitations of generics in Java.	4	K5

7. Attempt any *one* part of the following: 10 x 1 = 10

a.	Design a basic event-driven application using Java AWT where mouse click changes the background color. Explain the event handling strategy used.	5	K6
b.	Compare AWT and Swing. Create a login form using Swing with basic validation.	5	K5