

**END TERM EXAMINATION**

FIRST SEMESTER [MCA] FEBRUARY 2023

Paper Code: MCA-109

Subject: Object Oriented Programming  
and Java

Maximum Marks: 75

Time: 3 Hours

Note: Attempt five questions in all including Q. No. 1 which is compulsory. Select one question from each unit.

(2.5x10=25)

- Q1 Answer **all** the following questions briefly:-
- Class Test** { short a; int l; l=a; }  
Interpret the compiler output of the above code in terms of why it is permitted in Java?
  - Determine the significance of Magic Number in a .class file. What is the valid magic number for bytecode files in java?
  - Compare (in tabular format) process based and thread based multitasking.
  - Identify 4 scenarios when an object becomes eligible for Garbage Collection. How can we suggest the garbage collector for running (function calls)?
  - Enlist the different jdbc drivers?
  - Elaborate the different layers of RMI architecture?
  - List the advantages of swings over AWT?
  - Describe object serialization and when is it required?
  - Analyze nested and inner classes in Java?
  - Contrast TreeSet and TreeMap in Java?

**UNIT-I**

- Your application displays the number of days in a month which is input by the user as an integer value. Elaborate the Java class for the same through a multiway branch statement? (6.5)
- What do you understand by runtime polymorphism. How is it achieved in Java? (6)

**OR**

- Create a stack to maintain plates in a birthday party. Ask the organizer how many plates they want initially. Maintain track of each plate used and number of plates added. Finally print the number of total number of plates in the stack, plates used and number of plates left in the stack. (6.5)
- Illustrate dynamic method dispatch through a suitable solution? (6)

**UNIT-II**

- Design an appropriate solution to change the name and priority of main thread of a program and display the same? (6.5)
- Differentiate between Socket and ServerSocket? (6)

**OR**

- Model a Person with name and age. Manage instances of Person by ensuring that no two instances are duplicated? (6.5)
- Create a Calculator class. Raise a Custom Exception code that raises an 'Invalid Numeral' exception each time the user tries to enter any character except a number for calculation. (6)

P.T.O.

MCA-109  
P<sub>1/2</sub>

**UNIT-III**

- Q6 (a) Create a class called fruits that has a method mango() that tells if the mango is sweet or sour. Suppose we need a sour mango in taste for only 1 time. Realize this temporary requirement through an anonymous inner class? (6.5)  
(b) Illustrate the need of Layout Managers in a Java application? ✓ (6)

**OR**

- Q7 (a) Create a class AWT Counter that starts a counter from 0 and increments its value on every button click? (6.5)  
(b) Compare nested and inner classes in Java? ✓ (6)

**UNIT-IV**

- Q8 (a) Through suitable example elaborate the necessary steps to create a JDBC application? (6.5)  
(b) Discuss the Stream Hierarchy for Byte Stream IO classes. Illustrate each class with small code snippets to instantiate file pointer and read/write from file. (6)

**OR**

- Q9 (a) Elaborate in detail the concept of Remote Method Invocation (RMI). Discuss the significance of marshalling and un-marshalling in the RMI concept. (6.5)  
(b) Demonstrate functional interfaces through appropriate example? (6)

\*\*\*\*\*

MCA-109

P 2/2