U.S.N. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E.   **Semester: V**
Branch: Artificial Intelligence and Machine Learning   **Duration: 3 hrs.**
Course Code: 22AM5PCOPJ   **Max Marks: 100**
Course: Object Oriented Programming using Java

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
                 2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Design a class to represent a bank account which includes account number, name of the depositor, type of the account, balance amount in the account. Use constructors to assign initial values, methods to Deposit an amount, withdraw amount after checking balance and display name and balance.   **10**

   b) How "compile once and run anywhere" is implemented in Java, explain. Differentiate between JDK, JRE, JVM.   **6**

   c) Write a Java program to sum first five elements of the array using for each loop.   **4**

UNIT - II

2 a) To create an abstract class named shape that contains two integers and an empty method named printArea.Provide three classes named Rectangle, Triangle and Circle extends the Class Shape. Each one of the classes contains only the method printArea() that prints the area of respective shape.   **10**

   b) Demonstrate how to design, create and access a package? Discuss with a suitable example.   **10**

OR

3 a) Assume that there are two different companies: one develops a student package and other develops a staff package containing relevant classes. Implement a simple university system that makes use of classes provided by these two packages.   **10**

   b) Discuss the need of inheritance in java with a sample code. Explain different types of inheritance with suitable examples.   **10**

UNIT - III

4 a) Infer the characteristics of enum in java. Create a public enum Weekday with constants for MONDAY, TUESDAY,... until SUNDAY. The enum should   **10**

have an instance method boolean isWeekDay() and an instance method boolean isHoliday(). The isHoliday() method should return the opposite of isWeekDay(). Write a program which demonstrates how this enum could be used, which has a method which takes a Weekday as the argument and prints a message depending on whether the Weekday is a holiday or not.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line. **10**

UNIT - IV

5 a) You will be given two integers x and y as input, you have to compute x/y. Implement a class which raise an exception if x and y are not signed integers or if y is zero. **8**

b) Describe life cycle of a thread with a suitable diagram. Demonstrate with an example two different ways of creating Java threads. **12**

OR

6 a) Write a java program that implement synchronized producer consumer program, where producer produces an integer item and consumer consumes the same. **10**

b) Elucidate Exception hierarchy in java and also explain the following with examples: **10**
   1. Uncaught exceptions
   2. Multiple catch clauses

UNIT - V

7 a) Write a simple java applet program which draw several shapes like circle,oval, rectangle, line and an arc. **10**

b) Describe delegation event model in java. Develop a program which draws an oval (filled with blue color) on mouse clicks. **10**

******