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

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Computer Science And Engineering **Duration: 3 hrs.**
Course Code: 19CS3PCOOJ **Max Marks: 100**
Course: Object Oriented Java Programming **Date: 12.05.2023**

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

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
Revealing of identification, appeal to evaluator will be treated as malpractice.

B.M.S.C.E. ODD SEM 2022-23

UNIT - I

1 a) Describe the features of Java that makes it a powerful language. With an example, explain the structure of Java program and describe the benefits of bytecode. **8**

b) Perform automatic type promotion for the following program and determine the output **6**

```
class promote{
        public static void main(String args[]){
         byte b=42;
         char c='a';
         short s=1024;
          int i=5000;
          float f=5.67f;
          double d=0.1234;
          double result=(f*b)+(i/c)-(d*s);
      System.out.println((f*b)+" + "+(i/c)+" - "+(d*s));
      System.out.println("the value of Result is="+result);
      }}
```

c) Illustrate widening conversion and narrowing conversion in Java with an example program. **6**

UNIT - II

2 a) Create a class Student with their members usn, name and section. Show how different overloaded constructors can initialize the data members. Create a method called display() to print their usn, names and section by creating three Student details. **6**

b) Create a Java program to perform pass by value and pass by reference by using suitable methods. **8**

c) Explain the concept of static methods and static variables. With an example Java program show how the above methods and variables are used. **6**

UNIT - III

3 a) Create a superclass called A and a subclass called B. Class A has instance variables i, j (type integer) and a method named showij() whose return type is void. Class B has an instance variable k (type integer) and a method named showk() whose return type is void. Write a Java program to illustrate the concept of inheritance. **8**

b) Create an abstract class Shape consisting of two variables dim1 and dim2. Initialize these variables and define an abstract method area() under this class. Using this, find the area of Rectangle and Triangle. **6**

c) Differentiate the concept of method overriding and overloading in Java. With an example program, show how methods in Java perform these two. **6**

UNIT - IV

4 a) Write a Java program to show how nesting of interfaces takes place and invoke suitable methods. **6**

b) Create a user defined exception class called NegativeNumberException extended from the class Exception. This class should contain a constructor catch the exception created with the message "You should enter a positive number". **8**

c) Implement Generic class with single parameter by writing a Java program. **6**

OR

5 a) Create two user defined package **Mybank** & **Mycustomer.** Package Mybank contains a class called Customer and a method balance and package Mycustomer contains a class MyProfile and a method display. Demonstrate simple Java application class that import/make use of classes/capabilities provided by these two packages. **10**

b) Write about the Exception class in Java and its divisions. Explain the general form of handling exceptional block. Write a Java program to demonstrate nested try block in which inputs are passed through command line. If zero or one command line argument is passed, throw ArithmeticException, and if two arguments is passed, throw ArrayIndexOutOfBounds Exception. **10**

UNIT - V

6 a) What is the need of synchronization? Implement an inter process communication of producer consumer problem using the concept of Threads. **10**

b) Write a Java program to perform keypressed(), keyrelease(), keyTyped() event by implementing KeyListener interface. **5**

c) Mention three color constructors used to specify any color using AWT color system. List and explain several methods to manipulate colors. **5**

OR

7 a) Create three new threads (say A, B, C) by implementing Runnable Interface. Implement thread priority by setting Thread A using minpriority, Thread B maxpriority, increment current priority by one and set as priority to Thread C. Determine the output. **10**

b) With a neat diagram explain the AWT class hierarchy .Create the child frame window, set the title of the frame and handle window closing event using a suitable adapter class. **10**

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