Question Paper

Exam Date & Time: 07-Oct-2020 (02:00 PM - 05:30 PM)

BMS COLLEGE OF ENGINEERING

Autonomous Institute Affiliated to VTU, Supplementary Semester End Examination October 2020

Object Oriented Java Programming [19CS3PCOOJ]

Marks: 100 **Duration: 210 mins.**

Computer Sciecne and Eng, III SEM

Answer all the questions.

Instructions: 1. Answer Five Full questions using given internal choices.
2. Missing data, if any, may be suitably assumed.

1) List Java Buzzwords. (5)

a)

b) Write the output of the following code snippets with justification: (6)

i)
```
class Conversion{
        public static void main(String args[]) {
                byte b;
                int i = 278;
                double d = 300.123;
                b = (byte) i;
                System.out.println("i and b " + i + " " + b);
                i = (int) d;
                System.out.println("d and i " + d + " " + i);
                b = (byte) d;
                System.out.println("d and b " + d + " " + b);
        }}
```

ii)
```
class Conversion {
    public static void main(String args[]) {
                int b = -1;
                b=b>>1;
    System.out.println("b>>1 : " + b);
    b=b>>5;
    System.out.println("b>>5 :  " + b);
      }}
```

c) Analyse the following structure and write code to create a 2D array with the following shape. (4)

```
[]
[] []
[] []
[] [] [] []
```

d) Design a program to calculate the sum of each row in 2D array using for each loop. (5)

2) Explain method overloading with example program. (5)

a)

b) **Analyze the following program to identify the errors in the programs (if any). Justify your answer. Rectify the errors and predict the output of the corrected program.** (8)

```
class A{
        static int i;
        final int j=9;
        A(int m)
        {
           j=m;
        }
      }
```

```
class Demo{
void meth()
{System.out.println("Method!!");}
public static void main(String args[]){
   A ob1=new A(3);
   A ob2=new A(4);
   ob1.i=2;
   ob2.i=3;
    System.out.println(ob1.i + "-"+ ob2.i);
   System.out.println(ob1.j + "-"+ ob2.j);
    meth();
} }
```

c) Write a Java class Student to meet the following specification: The class should be able to support a USN, student name, marks for 3 subjects. You should have methods to set and get each of the attributes, and calculate the average for the student. Write a program to test your class. You should create an array of n students. (7)

3) Demonstrate the different uses of super keyword with example program and discuss. (5)

a)

b) **Analyze the following program to identify the errors in the programs (if any). Justify your answer.** (4)

```
class Figure{ int length;
void area(){ System.out.println("Area
of figure");
}}

class circle extends Figure{
   int radius;
}
class rectangle extends Figure{
  int width;
  void area_rect(){
System.out.println("Area of
rectangle");}}

class Demo{
public static void main(String args[]){
            Figure ref;
            Figure f=new Figure();
```

```
    circle c=new circle();
     c=ref;
     f.area();
     rectangle r=new rectangle();
     ref=c;
    double area=
3.14*ref.radius*ref.radius;
System.out.println("Area of
circle"+area);
      ref=r;
      ref.area_rect();
          }}
```

c) What will be the output of the following code? (4)

```
public class RuntimePolymorphism {
public static void main(String[] args) {
```

```
A a = new B();
B b = new B();
System.out.println(a.c + " " + a.getValue() + " " + b.getValue() + " " + b.getSuperValue());
} }
class A {
protected char c = 'A';
char getValue() {
return c;
} }
class B extends A {
protected char c = 'B';
char getValue() {
return c;
}
char getSuperValue() {
return super.c;
} }
```

d) Consider an incomplete class called vehicle with a prototype method numberOfTyres() & a concrete method steering() and complete subclasses called Lorry, Car, Cycle. Write a program to demonstrate the above concept. (7)

4) Demonstrate generics with a single parameter in Java with a sample program. (5)

a)

b) Complete the following chart for Java access modifiers and write code to explain the same. (10)

Modifier	Same Class	Subclass in same Package	Subclass in different package	Nonsubclass in different package
Public				
Protected				
no modifier				
Private				

c) Create a user defined exception named NumberOfArgumentException to check the number of arguments passed through command line. If the number of arguments is less than 3, throw the NumberOfArgumentException exception; else print the multiplication of all the three numbers. (5)

[OR] Demonstrate interfaces in Java with a short example. (4)

5)

a)

b) Apply the knowledge of Generics to develop a Java program to demonstrate how a stack class can be written for different types of data (String, Integer and Float). (8)

c) Create a program that demonstrates handling of exceptions. Create a class called "Employee" with the personal details like empid, empname, empsalary, empaddress. Exceptions are raised when the following conditions are violated: (8)
1. The age of the employee should be between 18 and 60
2. Minimum salary of an employee is 5000

6) Explain - Delegation Event Model with its advantage. (4)

a)

b) Apply the concept of thread synchronization to develop a Java program that shows the solution to (9)

producer-consumer problem.

c) **Analyse and complete the following program which starts a new frame from applet window.** (7)

```
class SampleFrame extends Frame {
   ..............
}
class MyWindowAdapter extends
WindowAdapter {
 ..........................................
}
public class AppletFrame extends
Applet {
  Frame f;
  public void init() {
    ..........................
  }
```

```
public void start() {
    f.setVisible(true);
  }
  public void stop() {
    f.setVisible(false);
  }
  public void paint(Graphics g) {
    g.drawString("This is in applet
window", 10, 20);
  }
}
```

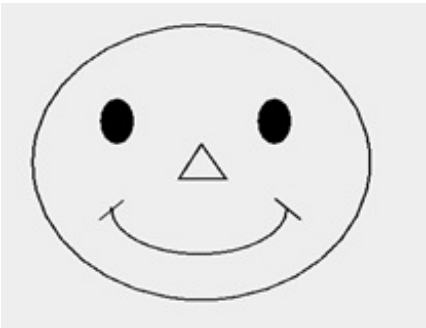
[OR] 7) Demonstrate the two thread methods - isAlive() and join() with example. (5)

a)

b) Analyze and complete the following code for handling mouse events in Java. (7)

```
public class MouseEvents extends Applet
implements MouseListener, MouseMotionListener {
String msg = "";
int mouseX = 0, mouseY = 0; // coordinates of mouse
public void init() {
addMouseListener(this);
addMouseMotionListener(this);
}
.....
.....
public void paint(Graphics g) {
g.drawString(msg, mouseX, mouseY);
}
}
```

c) **Create a java program to draw the following figure.** (8)



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