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

Autonomous Institute Affiliated to VTU

August 2024 Supplementary 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

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) Discuss why Java is a Robust and Architecture-Neutral programming language. **05**

b) Analyze each of the program segments and determine the output of the following. Justify your answer with appropriate reason. **05**

```
class conversion{
 public static void main(String args[])
 {
        byte b;
       int i=258;
       double d=324.142;
       System.out.println("\nConversion of int to byte");
       b=(byte)i;
        System.out.println("i and b"+ i +" "+b);
        System.out.println("Conversion of double to int");
       i=(int)d;
       System.out.println("d and i" +d + " "+i);
       System.out.println("\n Conversion of double to byte");
         b=(byte)d;
        System.out.println(" d and b"+d+ "  "+b);
       } }
```

c) Write a Java program to implement a class Matrix with instance variables- rows, columns and data values and methods to perform following operations - read, display, Addition of two matrices, Multiplication of two matrices. **10**

UNIT - II

2 a) Write a Java program to demonstrate static variables, methods, and blocks. **5**

b) Analyze the following code segment and the output generated. Write the missing class for the below code **5**

```
class RetOb {
```

```
public static void main(String args[]) {
Test ob1 = new Test(2);
Test ob2;
ob2 = ob1.incrByTen( );
System.out.println("ob1.a: " + ob1.a);
System.out.println("ob2.a: " + ob2.a);
ob2 = ob2.incrByTen( );
System.out.println("ob2.a after second increase: " + ob2.a);
}
}
```

output :

ob1.a: 2
ob2.a: 12
ob2.a after second increase: 22

c) Create a class Cricket with instance members - playerid, pname, total_scores, total_wickets, no_of_matches_played. Write a Java program to create an array of n Cricket objects. Include methods that display the following according to requirement. **10**

1. Name and Id of the player who has played least number of matches
2. Name and Id of the player(s) with wickets above 200.

UNIT - III

3 a) Demonstrate the use of final with inheritance with an example. **05**

b) Write a Java program to create a class called DMD_Parent. Derive a class DMD_Child from this. Show that the superclass reference can hold a subclass object. **05**

c) Create a class Student with members- usn, name, age, dept and sem. Include methods to set and print the values. Derive two subclasses- one being PG_student with a member intern_companyname and another ResearchScholar with a member no_publications. Create n objects for each of the classes. Include methods to do the following **10**

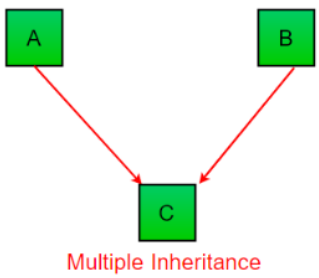
i) Print the name of the PG_students who have internship in a company of user's choice

ii) Print the details of scholars who have zero publications.

UNIT - IV

4 a) Develop a Java program to get illustrate multiple catch clauses**.** **05**

b) Analyze the given code segment. Add the required code to the program segments to demonstrate the usage of the concept shown in the diagram and to display the output shown below. **05**



Multiple Inheritance

OUTPUT :

ABC
DEF
ABC

```
public class Main
{
   public static void main(String[] args)
   {
      child c = new child( );
      c.print_ABC();
      c.print_DEF();
      c.print_ABC();
   }
}
```

c) Create a user defined exception named Reorder. Create a class called Item with members- Id, name, price, quantity, reorder_level. Include methods - i)purchase - which adds items to the existing quantity and ii)sell - which reduces the same. Create two objects of Item and set the values given by the user. Raise the exception Reorder when the quantity of any item goes below reorder_level. 10

OR

5 a) Demonstrate Generics with an example program. 05

b) What is exception? Discuss the exception hierarchy. 05

c) Design a package to contain the class Student that contains data members such as name, roll number and another package contains the interface Sports which contains some sports information. Import these two packages in a package called Report which processes both Student and Sport and give the report. 10

UNIT - V

6 a) Write a Java program to display the cursor position when the mouse is moved or mouse is dragged. Include code that supports closing of the window appropriately 10

b) Write a Java program to create three threads where every thread sleeps for a second and displays its name when activated. 10

OR

7 a) Discuss how Java supports inter- thread communication mechanism. Illustrate the same with producer-consumer program generating following output. 10

```
Put: a
Got: a
Put: b
Got: b
Put: c
Got: c
Put: d
```

Got: d
Put: e
Got: e

b) Write a Java program to print the output in the following order only 10
[Object]
[Oriented]
[Java]
[Programming] using threads.

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