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

Autonomous Institute Affiliated to VTU

October / November 2021 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 **Date: 25.10.2021**

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

UNIT - I

1. a) Explain narrowing and widening conversions with an example program. **06**

b) Analyze the erroneous program given below. Write the corrected program and underline the places where errors are corrected and write your comments. **06**

```
class BoolTest
{
   public static void main (String args)
   {
      boolean b;
       b = "false";
       System.out.println("b is " , b);
       b = "true";
       System.out.println("b is " , b);
       if(b)
           System.out.println("This is executed.");
        b  = "false";
        if(b)
            System.out.println("This is not executed.");
        System.out.println("10 > 9 is " , (10 > 9));
     }
 }
```

c) Develop a Java program to create a two-dimensional integer array of size say M x N and the values for this are accepted from the user. Count the number of positive numbers and negative numbers and display them. Create two single dimensional arrays - one with the positive numbers and the other with negative numbers from the above two-dimensional array and print them. **08**

UNIT-II

2. a) Demonstrate any two uses of static keyword with an example program and discuss. **06**

b) Analyse the given program and write the expected output. **06**

```
class Test
{
 int a;
 Test(int i) {  a = i;  }
 Test incrByTen( ) {  Test temp = new Test(a+10);  return temp;
}
}
class RetOb {
 public static void main (String args[]) {
 Test ob1 = new Test (2);
 ob1.a+=10;
 Test ob2;
 ob2 = ob1.incrByTen( );
 ob2.a+=10;
 System.out.println("ob1.a: " + ob1.a+"\nob2.a: " + ob2.a);
 ob2.a-=10;
 ob1.a+=ob2.a;
 ob2 = ob2.incrByTen( );
 System.out.println("Updated ob1.a: " + ob1.a +"\nUpdated ob2.a:
" + ob2.a);
  ob1.a+=ob2.a;
 System.out.println("Updated ob1.a: " + ob1.a + "\nUpdated
ob2.a: " + ob2.a);
 }
}
```

c) Develop a Java program to create a class Student with members- usn, name, marks in three courses, sum and average. Create an array of n Student objects. Accept the details and calculate the sum and average. Include the functionality to print the details of the topper. **08**

UNIT - III

3. a) Demonstrate the concept dynamic method dispatch with an example program**.** **06**

b) Complete the given program and discuss about the code inserted **06**

```
abstract class Figure {
 double dim1;
 double dim2;
 Figure(double a, double b) {
 dim1 = a;
 dim2 = b;
 }

 abstract double area( );
}
class Rectangle extends Figure {
 …….
```

```
}
class Triangle extends Figure {
 …….
}
class AbstractAreas {
 public static void main (String args[]) {

 Rectangle r = new Rectangle (9, 5);
 Triangle t = new Triangle (10, 8);

 System.out.println("Area of Rectangle is " + r.area( ));
 System.out.println("Area of Triangle is " + t.area( ));

Figure figref;
 figref = r;  System.out.println("Area is " + figref.area( ));
 figref = t;  System.out.println("Area is " + figref.area( ));
 }
}
```

c) Implement the following classes with given specification. **08**

- Create a superclass, Student, and two subclasses, Undergrad and Grad. The superclass Student should have the following data members: name, ID, grade, age, and address. The superclass, Student should have at least one method: boolean isPassed (double grade). The purpose of the isPassed method is to take one parameter, grade (value between 0 and 100) and check whether the grade has passed the requirement for passing a course. In the Student class this is an abstract method.
- For the UnderGrad class, if the grade is above 70.0, then isPassed returns true, otherwise it returns false.
- For the Grad class, if the grade is above 80.0, then isPassed returns true, otherwise returns false.
- Create a test class for your three classes. In the test class, create m Grad objects and n Undergrad objects. For each object, provide a grade and display the results of the isPassed method.

UNIT – IV

4. a) Tabulate the various levels of access protection available for packages and briefly discuss about the same. **06**

b) Apply the concept of inheritance in interfaces and demonstrate the same using an example program. **06**

c) Define a class Fuel with the following data members: Fuel_Type, Quantity, and a method: check_Fuel ( ). Develop a Java program that accepts the Fuel_Type and quantity. The quantity is added to existing quantity. An exception is thrown if the Fuel_Type is "Petrol" or updated Quantity exceeds 50 else an updated info of the fuel name and quantity is printed. **08**

OR

5. a) Demonstrate how Generics works with a single parameter using an example program. **06**

b) Create a try block that is likely to generate any three types of exceptions and then incorporate necessary catch blocks to catch and handle them appropriately. **06**

c) Create a user-defined package Employee_personal with a class Employee with members- id, name, age, deptid. Include methods to accept and display Employee details. Import this package in the default package which creates n Employees and accepts an age from the user, displays all the employees who are above the given age. **08**

UNIT - V

6. a) Explain delegation event model. **06**

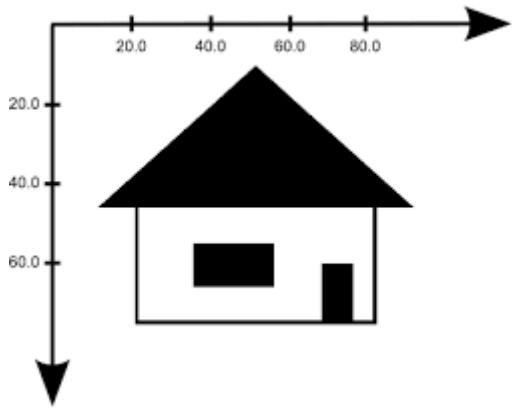
b) Write the syntax of the graphic methods drawArc() and drawPolygon() and discuss with an example program. **06**

c) Write a Java program to create a thread which finds the sum of odd numbers from 1 to 100 and print the sum. Find the sum of even numbers for the same range and print in the main thread. **08**

OR

7. a) Write about wait( ), notify ( ) and notifyAll ( ) methods. **06**

b) Develop a Java program to obtain the following output. The X and Y axis are given only for reference. **06**



c) Develop a Java program that implements any four methods in listeners associated with mouse. **08**

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