GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2630002 **Date: 31-12-2014**

Subject Name: Fundamentals of Java Programming

Time: 10:30 am - 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** State whether the following statements are true or false. Justify yours answer. **07**

1. User-defined data type variable/object is accessed by name of the variable/object in java.
2. One java file which contains more than one class, can be compiled successfully where each class has one main() method.
3. An interface can be derived from a class.
4. One class cannot be derived from more than one class in java.
5. "enum" has constructor which can be declared as public.
6. "final" class can be inherited into another class.
7. Abstract class has constructor.

(b)

1. Explain "Array of Reference Type" using java code. **03**
2. How can we represent an integer constant as octal value and as hexadecimal value in java? **02**
3. Explain the use of finalize() method. **02**

Q.2 **(a)** I. How can "interface" concept eliminate code duplicity problem in java which is generated due to multiple inheritance? **04**

II. What will be the output of following code? Give the proper justification in case of error in code. **03**

```
class Shape  {
   public void chk_shape(){System.out.println("Shape's chk_shape()");    }
}
class Circle extends Shape{
     public void chk_shape(){ System.out.println("Circle's chk_shape()");  }
     public void chk_circle(){ System.out.println("Circle's chk_circle()");  }
}
public class Typecast{
   public static void main(String args[]){
      Shape obj1=new Shape();
      Circle obj2= (Circle) obj1;
      obj2. chk_shape();
      Shape ref_shape;
      ref_shape =new Circle();
      ref_shape.chk_circle();
   }
}
```

(b) I. Can a class be declared as abstract class even if it does not have any abstract method? Justify the answer with a scenario of such situation. **03**

II. Assume the two objects x and y of class "MCAStudent". What would be the output of following statements? **04**

System.out.println(x==y) and
System.out.println(x.equals(y)).

OR

(b) I. Assume a Student class which has id and name as two member variables and only parameterized constructor with parameters as id and name. Consider the following code: **04**

```
int int_arr = new int[5];
Student Student_arr = new Student[5];
```

1. What is the difference between above mentioned array declarations?
2. Write the code snippet for assigning 5 int values in first array and five Student objects in the second array.

II. How can we prevent dynamic method binding in java? Explain with code snippet? **03**

Q.3 **(a)**
1. Differentiate between inner class and top-level nested classes. **05**
2. What is the difference between "public" and "default" access specifier? **02**

(b)
1. What is the contribution of "interface" for avoiding duplicity of code occurred in multiple inheritance? **04**
2. What is the difference between "initialize" and "class-initializer" block? Explain with code. **03**

OR

Q.3 **(a)**
1. Distinguish between "Comparator" and "Comparable" interface. **05**
2. Explain the operator "instanceof". **02**

(b) What are the difference between static variable, static method and instance variable, non-static method? Explain with java program. **07**

Q.4 **(a)**
1. Define "Set" and "List" interface. **04**
2. Differentiate between checked exception and unchecked exception. **03**

(b) Write a java code for displaying a list of files by implementing "FilenameFilter" interface's abstract method accept(). **07**

OR

Q.4 **(a)** What is the difference between "Thread" class and "Runnable" interface? Explain Synchronization in multithreaded application using code. **07**

(b)
1. Explain event delegation model with example. **05**
2. Explain paint() method of Frame class. **02**

Q.5 **(a)** Explain various layout manager available in AWT. **07**

(b)
1. What are Adapter classes? Explain one Adapter class using java code. **05**
2. What is the difference between awt and swing package? **02**

OR

Q.5 **(a)**
1. Explain the lifecycle of an applet. **05**
2. What is the role of FileDialog class. **02**

(b) Create an application which creates a Frame that has four text boxes .Two text boxes for accepting numeric value and third text box to accept arithmetic operator symbol and fourth text box for displaying the result which is computed based on two numeric value using arithmetic operator. Application is capable to handle run time exception (input error or any logical error) using Exception handling technique. **07**

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Extra Question for the Unit No : 2

Q.2 **(a)** I. Consider the following two classes: **05**

```
class ClassA {
    public void methodOne(int i) {}
    public void methodTwo(int i) {}
    public static void methodThree(int i) {}
    public static void methodFour(int i) {}
}
class ClassB extends ClassA {
    public static void methodOne(int i) {}
    public void methodTwo(int i) {}
    public void methodThree(int i) {}
    public static void methodFour(int i) {}
}
```

a. State the methods which are overridden in ClassB if any?

b. State the hidden methods of super class if any?

II. All classes in java are inherited from java.lang.Object class. Are interfaces also inherited from Object class.? Justify your answer. **02**

(b) I. When do you favor abstract class over interface? Justify with an appropriate example. **04**

II. Can a program execute normally if main method is present in an abstract class? Justify. **03**

OR

(b) I. Design the code sample for the cyclic Inheritance? Justify whether java support cyclic inheritance or not? **05**

II. Consider a package hierarchy as com.gtu.mca.semIII created in "d:/".What should be the value of CLASSPATH variable to access the classes of this package? **02**

Q.2 **(a)** Create your own Wrapper Class ParseUtility which stores a real number and must be immutable. Create a method parseFractionalPart() which returns fractional portion of the real number. For example parseFractionalPart () should return 345 value if the value wrapped in it is 12.345. Write the main method to check the applicability of the ParseUtility class you have created. **07**

(b) I. Under what circumstances StringBuffer is preferred over StringBuilder? **04**

II. Why the following code snippet doesn't generate error even though the String class is immutable? **03**

```
String s=Hello";
String s1="MCA Sem III";
String s2="Examination";
s=s1+s2;
```

OR

(b) I. What would be the output of the following code snippet? State errors if any. **03**

```
Integer obj1 = new Integer(10);
int i = obj1;
 Integer obj2=i;
 System.out.println(i);
 System.out.println(obj2);
```

II. Consider the following code: **04**

```
interface ione
{    void fun();
 }
interface itwo
{ void fun();
```

```
}
interface ithree extends ione,itwo
{ void fun();
}
class one implements ithree
{
   //Write your code here
}
```

To complete the above programme, write the necessary code which should be written in the class one.