MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : EC-605A

OBJECT ORIENTED PROGRAMMING

Time Allotted : 3 Hours   *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i)   Which one of the following statements is wrong ?

   a)   A base class reference can refer to an object of a derived class

   b)   The dynamic method dispatch is not carried out at the run time

   c)   The super() construct refers to the base class constructor

   d)   The super base-class-method-name() format can be used only within a derived class.

   ii) In Java. by default every thread is given a ....

   a)   MIN_PRIORITY (0)

   b)   NORM_PRIORITY (5)

   c)   MAX_PRIORITY (10)

   d)   HIGH_PRIORITY (7).

   iii) Super keyword in Java is used for ?

   a)   to refer to immediate child class of a class

   b)   to refer to immediate parent class of a class

   c)   to refer to current class object

   d)   to refer to static member of parent class.

   iv) What is process of defining two or more methods within same class that have same name but different parameters declaration ?

   a)   method overloading   b)   method overriding

   c)   method hiding   d)   none of these.

   v)   Which of the following is the functionality of 'Data Encapsulation ?

   a)   Reduce Complexity

   b)   Binds together code and data

   c)   Parallelism

   d)   None of these.

vi) In Java a thread can be created by

 a) extending the thread class

 b) implementing runnable interface

 c) both (a) and (b)

 d) none of these.

vii) How many objects and reference variables are created by the following lines of code ?

 Employee emp1, emp2

 emp1 = new Employee();

 Employee emp3 = new Employee();

 a) Two objects and three reference variables

 b) Three objects and two reference variables

 c) Four objects and two reference variables

 d) Two objects and two references variables.

viii) Predict Output, if the below code is run with given command ?

 Command Line : java myprog god morning everyone

 Public class myprog

 ```
 {      public static void main(String argv[])

     {      System.out.println(argv[1])

     }

 }
 ```

 a) myprog   b) good

 c) morning   d) everyone.

ix) What will happen if you try to compile and run the following code ?

 public class Test

 ```
 {      public static void main(String argv[])

     {      int[]arr=new int[]{1,2,3};

         System.out.println(arr[1]);

     }

 }
 ```

 a) 1

 b) Error: arr is referenced before it is initialized

 c) 2

 d) Error : size of array must be defined.

x) A package may be collection of

 a) classes

 b) interfaces

 c) editing tools

 d) both class and interfaces.

xi) The following code contains one compilation error. find it ?

 public class Test

 ```
 {   Test() {  } // line 1
     static void Test() {this();} // line2
     public static void main(String[]args) {//line 3
     Test();//line4
     }
 }
 ```

 a) At line 1, constructor Tester must be marked public like its class

 b) At line 2, constructor call

 c) At line 3, compilation error, ambiguity problem, compiler can't determine whether a constructor

 d) At line 4.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. a) Why are constructors needed in JAVA ?

   b) Differentiate between Link and Association.

   c) How does abstract class differ from interface ?

                                        2 + 1 + 2

3. What are different types of inheritance supported by Java ? Explain using examples.   5

4. Explain Dynamic method dispatch. What is the use of it ? Explain with Example.   2 + 3

5. Discuss various levels of access protection available for packages and their implementation. What is static import ?   4 + 1

6. What are parametric and non-parametric constructors ? Explain with program.   2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. a) Explain the life cycle of an Applet.

   b) List various attributes of Applet tag used in HTML. Explain the purpose of these attributes.

   c) Write a Java program that uses the draw Polygon() method of Graphics class to draw a triangle with end points (25, 30); (75, 80) and (50, 50).

                                        3 + (3 + 3) + 6

8. What do you mean by Exception ? How Exceptions can be managed ? Explain custom Exceptions ? Explain how custom exception classes can be created. Create a class Birthday with parameterized constructor which takes three arguments date, month and year. Raise an exception if birth date is invalid.   2 + 2 + 2 + 3 + 6

9. a) Define multithreading. Give an example of an application that needs multithreading.

   b) How multithreading in single processor system is different from multithreading in multiprocessor system. Explain.   7 + l

10. a) Differentiate between 'up casting' and 'down casting' with suitable examples.

    b) What are the uses of super keyword in Java ?

    c) How does String class differ from String buffer class ?

    d) Explain Base class and Derived class in Java.

    e) What is "Data abstraction" ?   5 + 3 + 3 + 2 + .

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11. Write short notes on any *three* of the following :   3 × 5

a)   Wrapper Class

b)   Garbage Collection

c)   Runtime-Polymorphism

d)   Thread Life-Cycle

e)   Synchronization.