MCAE-503B

OBJECT ORIENTED PROGRAMMING WITH JAVA

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
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. Answer all questions. 10×1 = 10

(i) What is the result of attempting to compile and run the program?

```
public class Test {
    public static void main(String [] args) {
    int x = 0, y = 0;
            x = 5 + y++;
            System.out.print(x +"" + y);
            x = 0;
            y = 0;
            x = 5 + ++y;
            System.out.print(x + "" + y);
    }//end of main
}//end of test class
```

(A) 5161 (B) 6161
(C) 671 (D) none of these

(ii) What will be the output:

```
public class Test{
        int i;
        public Test(){System.out.println("Hello "+" i ="+i); }
        public Test(int w){
                this();
        }
       public static void main(String args[]) {
                Test obj = new Test(50);
       }//end of main
}//end of test class
```

(A) Hello i=0 (B) Hello i=50

(C) Compilation error (D) none of these

(iii) What will be the output

```
class A{
        String s1 ="A.s1";
        String s2 ="A.s2";
}
Class B extends A{
         String s1 = "B.s1";
}
public class Test{
public static void main(String [] args){
        B b1 = new B();
        A a1 = b1;
        System.out.println(a1.s1+" "+a1.s2);
}//end of main
}//end of test class
```

(A) A.s1 A.s2 (B) B.s1 A.s2

(C) A.s1 B.s1 (D) none of these

(iv) Three of the methods are incorrectly declared, which are they?

```
abstract class abstractA {
        public void test1();
        public final void test2() {};
        public static void test3() {};
        public abstract static void test4();
        public abstract final void test5();
}
```

(A) test1, test2 and test4 (B) test2, test4 and test5
(C) test1, test4 and test5 (D) none of these

(v) What will be the output:

```
abstract interface IOne{ //line 1
        final int x =100;        //line 2
        void m l();
        public static class AOne{} //line 3
}
```

(A) compilation error at line 1 (B) compilation error at line 2
(C) compilation error at line 3 (D) no compilation error

(vi) Which class declaration results in compilation error:

```
class Z{
        void m(){
        abstract class A{ }    //line 1
        final class B{ }              //line 2
        private class C{ }   //line 3
        public class  D { }      //line 4
        }
}
```

(A) line 1 (B) line 2
(C) line 3 (D) line 3 and line 4

(vii) What will be the output:

```
public class Test{
public static void main(String [] args){
        System.out.print("1");
        try{
                return;
        }catch(Exception e){
                System.out.print("2");
        }finally{
                System.out.print("3");
        }
        System.out.print("4");
}//end of main
}//end of test class
```

(A) 1234 (B) 14 (C) 134 (D) 13

(viii) What is the result of attempting to compile and run the program

```
class B{
        private String name;
        public B(String s){
                name =s;
        }
        protected void finalize(){
                System.out.print(name);
        }
}
class E{
        public static void m(){
                B x1 = new B("X");
                B y1 = new B("y");
        }
}
public class Test {
 public static void main(String[] args){
      E.m();
      System.gc();
   }//end of main
}//end of test class
```

(A) YX (B) prints YYXX (C) prints nothing (D) none of these

(ix) What will be output:

```
public class Test{
        public static void main (String [] args){
                String s = "";
                Integer x = 5;
                String Buffer sb = new String Buffer();
                if (x < 15)
                        s.concat("Hi");
                else
                        sb.append("Hello");
                System.out.print(s + sb);
        }//end of main
}//end of test class
```

(A) Hi (B) hello

(C) compilation error (D) no output

(x) Given the following code

File f = new File("myfile.txt");
What method will cause the file "myfile.txt" to be created in the underlying operating system?

(A) f.write(); (B) f.close(); (C) f.flush(); (D) none of these

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. Why does Java have two ways to create child threads (by extending Thread or implementing Runnable) and which approach is better? 5

3. Distinguish between the following terms: $2\frac{1}{2}+2\frac{1}{2}$

(a) Abstract Class and Interface

(b) 'throws' and 'throw'

4. What are the properties of a constructor? Explain the use of overloaded constructors with the help of an example. $1\frac{1}{2}+3\frac{1}{2}$

5. Write a program in JAVA that creates a Child Thread of main using Runnable interface and uses the following methods: 5
   (i) getName()
   (ii) setName()
   (iii) setPriority()

6. What is JAVA Virtual Machine? What is the difference between the JAVA method and native method? 5

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. $3\times15 = 45$

7. (a) What is a package in JAVA? 1+2+(3+3)+6
   (b) What are the benefits of organizing classes into package?
   (c) How can you create your own package and add classes in that? Explain with the help of an example
   (d) Explain how javaget benefited by using Interface with the help of an example

8. Write short note on any *three* of the following 3×5
   (i) Wrapper Class
   (ii) String Tokenizer Class
   (iii) Inter Process Communication
   (iv) Object Oriented Concept

9. (a) Explain the life cycle an Applet. 3+(3+3)+6
   (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 endpoints (25, 30); (75, 80) and (50, 50).

10.(a) What are the uses of exception handling in JAVA? 2+4+6+3

(b) Write a program using java that handles an exception "Entry of negative age of a person".

(c) Write a Multithreading program to generate the square roots of the first 30 natural numbers using Runnable interface

(d) What do you mean by 'Synchronization'? Why do we need it?

11.(a) Write an application that creates a text field and text area and add button. When you click on the add Button the contents of the text field is moved to the Text area. 5+3+3+4

(b) How the garbage collection can be done in java heap?

(c) What are the different types of the inner class? Illustrate with an example

(d) Write a program that displays all integers between the low and high that are sum of cube of their digits. In other words find all numbers xyz such that $xyz = x^3 + y^3 + z^3$, for example $153 = 1^3 + 5^3 + 3^3$. Try 100 for low and 1000 for high.