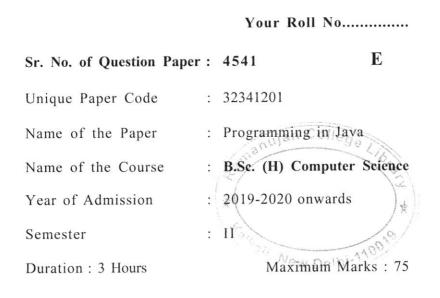
[This question paper contains 10 printed pages.]



Instructions for Candidates

- 1. Write your Roll No. on the top immediately on receipt of this question paper.
- The question paper consists of two sections. Section A is compulsory. Attempt any four questions from Section B.
- 3. State the assumptions taken, if any, in your answers.
- 4. All parts of a question must be answered together.
- 5. The data types of variables/data members/arrays and return types of the methods should be clearly stated.

SECTION A

(Compulsory)

- (a) Identify valid and invalid literals from the following: (1×5=5)
 - (i) int $a = 0_x56$;
 - (ii) byte b = \$xyz;
 - (iii) char c = a4;
 - (iv) float $pi = 3.14_{15}F;$
 - (v) int $d = 0x85_;$
 - (b) What is the purpose of Dynamic Method Dispatch? How can this method be implemented? Explain with the help of an example. (5)
 - (c) Assuming that all necessary packages have been imported (where required) in the following Java code snippets, write the output(s) of the following : (2+3=5)
 - (i) class ABC {
 public static void main(String [] args) {
 int a = 5;
 int b = 6;

```
String s1 = "7";
System.out.println (s1 + a + b);
System.out.println (a + b);
}
}
(ii) class Demo {
static {
System.out.println ("In static block");
}
public static void main(String [ ] args) {
System.out.println ("In main method");
}
}
```

- (d) (i) How is a class prevented from being inherited? Illustrate with the help of an example.
 (3)
 - (ii) Given the following hierarchy of Java classes, write the order in which the constructors are called when an object of class z is instantiated.
 (2)

class A {...}
class B extends A {...}
class C extends B {...}

- (i) When a mouse is pressed.
- (ii) When a component gains focus.
- (iii) When a key is typed.
- (iv) When a mouse is dragged.
- (v) When a window is activated
- (f) Write statements in Java to create a twodimensional array that has 3 rows. Row 1 has 3 columns; row 2 has 1 column and row 3 has 2 columns. Also write a for-each loop statement to print this array.
- (g) Given two integer variable x = -1 and y = 0, write the value of x and y after the following expressions are executed : (5)

(i)
$$x++;$$

(ii) $y = x++,$
(iii) $x > 24;$

(iv) x >> 24;

(v) x >>> 24;

SECTION B

- (a) What is the purpose of the super keyword in Java? (2)
 - (b) Assuming that all necessary packages have been imported (where required) in the following Java code snippets, write the output(s) of the following: (4+4=8)

(i) class X {

int 1 = 9;

class Y extends X {

int i = 90;

void showSuper () {

System.out.println (i);

System.out.println (super.i);

}

}

```
class Demo {
```

public static void main (String args[]) {

```
Y a = new Y();
a.showSuper();
}
```

(ii) class Show {

}

3

public static void main (String [] args) {

int x = 9, y = 0; if (++x == 1 && ++y == 1) System.out.println (x); System.out.println(y); }

 (a) What is AWT in Java? How are events handled using AWT? Explain using an example. (5)

- (b) Using Java AWT, write a program to create two buttons named "Alpha" and "Beta". When a user clicks on the Alpha button, the background color changes to Red color while clicking on the Beta button, the background color changes to Blue color. (5)
- 4. (a) How can a protected member of Java class be accessed by its subclass in a different package? Illustrate with an example. (4)
 - (b) Explain the use of try with resources statement in Java.(2)
 - (c) Write a program in Java using enhanced for loop to find out the sum of values in an array. (4)
- 5. (a) Explain the usage of the keywords throw, throws and finally used in managing exception handling in Java. Is it possible to use multiple catch blocks with a single try block? Explain with an example. (6)
 - (d) Rewrite the following code segment to handle the exception(s) that will occur on executing the following codes segments : (2+2=4)

(i) public static void main (String [] args) {

```
int x = 97, y = 0;
int z = x/y;
System.out.println (z);
```

(ii) int a[] = new int [20];

```
a[20] = 20;
```

}

- 6. (a) Explain with suitable example, the concept of method overloading and method overriding in java. (4)
 - (b) Differentiate between final and abstract modifier in Java. (2)
 - (c) Assuming that all necessary packages have been imported (where required) in the following Java code snippets, write the output(s) of the following:

.

9

```
class Base {
```

public final void show() {

System.out.println("Base class function called");

}

}

class Derived extends Base {

```
public void show()
```

System.out.println("Derived class function called");
}

}

class Main {

public static void main (String[] args) {

Base b = new Derived ();

b.show();

}

}

 7. (a) What are Event Listeners in Java? Mention its two major requirements. How they are helpful in the delegation event model? (4)

- (b) Write a program in Java using AWT to display a string "Hello" in frame window and set its background color as Red.
 (3)
- (c) Write the prototypes of any three methods of the MouseListener interface. (3)
- 8. (a) Write a program in Java to print the following pattern. (5)

(b) Write a program in Java to input a 2-dimensional array of integers and print the greatest odd number and the smallest even number present in the array.
 (5)

(500)

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