

[This question paper contains 8 printed pages]

**Your Roll No.** : ..... 15

**Sl. No. of Q. Paper** : 2206 **IC**

**Unique Paper Code** : 32341201

**Name of the Course** : **B.Sc. (Hons.) Computer Science**

**Name of the Paper** : Programming in Java

**Semester** : II

**Time : 3 Hours** **Maximum Marks : 75**

**Instructions for Candidates :**

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) The question paper consists of **two** Sections.
- (c) **Section-A** is compulsory.
- (d) Attempt any **four** questions from **Section-B**.

**Section-A** **35**

1. (a) What is the difference between Java Application and Applet ? 2
- (b) What is the result after execution of following expression in Java ? 2

P.T.O.

(i) int n=4, m=6, p=5;  
     n += m % p + 2;

(ii) int p=2, n=4 ;  
     int k= n<<p ;

~~(c)~~ How is the class prevented from being inherited ? Give an example. 3

~~(d)~~ Give output for the following code : 3

class A

{ static

{ System.out.println( "THIRD"); }

}

class B extends A

{ static

{ System.out.println( "SECOND"); }

}

class C extends B

{ static

{ System.out.println( "FIRST"); }

}

public class X

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

{ C ob = new C( ) ; }

}

(e) Given the following hierarchy of classes 3

class Alpha {.....}

class Beta extends Alpha {.....}

class Gamma extends Beta {.....}

In what order are the constructors called when "Gamma" object is instantiated ?

(f) Given a class **TwoDshape** as below : 4

class TwoDshape

{ private double radius;

    TwoDshape( double r )

    { radius=r; }

    double Getr() { return radius; }

    void setr( double r ) { radius = r; }

    void show() { System.out.println ("radius: " + radius); }

}

Create a subclass **Circle** of superclass **TwoDshape**. Define a method **area()** that computes the area of the circle and a constructor that uses "super" to initialize the radius in the class **Circle**.

(g) What is an Interface ? Show with a suitable example how does a class implement more than one interfaces ? 4

(h) Describe the following methods, each with suitable example along with their prototypes : 4

(i) equals()

(ii) indexof()

- ~~(i)~~ Given the following enumeration, write a Java program that uses "values( )" to show the list of constants. 4

enum Tools

{ SCREWDRIVER, WRENCH, HAMMER,  
PLIERS}

- ~~(ii)~~ Given a superclass **shape** as shown below : 6

```
class shape
{ void show()
  { System.out.println("superclass show");}
}
```

Create two subclasses **rectangle** and **triangle**. Override method **show()** and illustrate dynamic method dispatch.

### Section - B

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- ~~2.~~ ~~(a)~~ Rewrite the following statement using ternary operator '?:' 2

```
if ( num != 0 )
  result= 100/num ;
else
  result=0;
```

- ~~(b)~~ Give output for the following code 3

```
public class T
{ public static void main (String str[])
}
```

```

{ char ch='5';
int a=4, d, e;
//Character '4' has Unicode 52
char f='4',p='3';
String city="Delhi";
System.out.println("City="+city+5+6);
System.out.println("City="+city+(5+6));
e = a+ch;
d = e+2;
long z=p+a;
System.out.println("f="+f+"e="+e);
System.out.println("d="+d+"z="+z);
}
}

```

- (c) Write a method called **sum()** that takes a variable number of integer arguments and returns the sum of arguments as integer value. 5

3. (a) Find the error from the following snippet :4

```

class X
{
    int a;
    X( int i )
    {
        a = i;
    }
}

```

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```
        }  
class Y extends X  
{    int b;  
    y ( int i , int j )  
    { b = i ; }  
}  
class M  
{ public static void main( String args[] )  
{    X xob1 = new X(10);  
    X xob2;  
    Y yob = new Y(5,6);  
    xob2 = xob1;  
    System.out.println( " xob2.a = " + xob2.a );  
    xob2 = yob;  
    System.out.println( " xob2.a = " + xob2.a );  
    xob2.a = 21;  
    xob2.b = 32;  
} }
```

- (b) Write a program to read file **A.txt** and copy the text in **B.txt** file after removing the vowels.

6

~~a.~~ (a) How can a protected member of a class be accessed by its subclass in a different package ? Illustrate with an example. 4

**(b)** Create a user defined exception class **MyException** and use this class to signal an error condition if the number is negative. Write a program to compute the square root of a number using user defined method **MySqrt()** which raises exception of type **Myexception** for negative number. 6

**5.** **(a)** Describe the following "Applet" class methods with an example along with the prototype 4

- (i) paint( )
- (ii) destroy( )

**(b)** Create a child thread using "Runnable" interface to print the even numbers from 1 to 10, with the sleep time of 500 ms. 6

**6.** **(a)** Write the prototype for methods handling following Frame window functions : 4

- (i) Hiding and showing window
- (ii) Setting window dimension
- (iii) Setting window title
- (iv) Closing a frame window

**(b)** What are EventListeners ? Explain any **three** methods of "MouseListener" interface along with respective prototypes. 6

7. (a) Create two push buttons '**No**' and '**Yes**' on Applet window and write a program to display the label of the button when the button is pressed. 5

(b) What is Autoboxing and Autounboxing ? Identify statements where autoboxing and auto-unboxing takes place in the following code and find the output : 5

```
1 class AB
2 { static int m(Integer v)
3 { return v;}
4 public static void main( String args[ ] )
5 {
6 Integer iob = m(1000);
7 System.out.println( iob );
8 }
9 }
```