BSc
CBCS

[This question paper contains 8 printed pages]

Your Roll No. : .....

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()

P.T.O.

(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}
```

(j) 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 40

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; }
```

```
    }
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

4. (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  }
```