1) (C) Java method overloading implements the OOPS concept Polymorphism,

2) True

3) None. No functions can be derived from the base class.

4) Inheritance is used to reduce the use of nested classes.

5) Encapsulation is achieved by combining methods and attributes in to a class.

6) The declaration **double num1, int num2 = 0;** will not compile due to syntax error.

7) A Set must contain a unique element. A set does not allow to store duplicate values.

8) 20

9) The program will give compile error as the Class name "Hello" do not match with the .java file name. The program will give compile error as the Variable Y is not defined in the main method.

11) The output of the program is abc.

12) (D) The program will give compile error because Class B cannot extends A. Final class cannot be inherited by any other class.

13) (D) The program will give compile error because of two methods with same name and parameters but different return type are causing ambiguity.

14) (A)The output of the program is [2 5]. The value of end will be 4 because int end int end has been declared as final. Since the value of end is 4 and the value of start has been declared as 2. The output of the first statement is [4-2 = 2] Since the value of distance has been assigned to 5 the output of the second statement will be 5.

15) (C) The output of the program is (false true). john has been assigned a value in string = “john” A new object is created names jon which contains the value of variable john. Since the value of variable john and object jon are not equal the output is false. Since the value of variable john is equal to the value in the object jon, the output is true(D)

16) (c) Two objects are created student_Name and studentId. Since the object of student_Name has already been created In the first line, new object will not be created. One reference varible is created in the third line.

17) Import java.util.*;

```
Public class oddeven{

public static void main(String [] args){

Scanner sc = new Scanner(System.in);

int N = sc.nextInt();

if(N %2 ==0){

system.out.printlm(“the number is even);

}

else{

system.out.println(“ the number is odd”);

}

}

}
```

18) import java.util.Scanner;

```
public class average {
        public static void main(String[]args){
         int n1,n2;    // declare two variables
        Scanner sc = new Scanner(System.in);
       System.out.println("Enter the first number:"); take 1st input from the user
       n1= sc.nextInt();              // store the value in variable n1
       System.out.println("Enter the second number:");take 2nd input from the user.
       n2 = sc.nextInt();             //store the value in variable n2
       float avg = (n1+n2)/2;  // to calculate the average.
       System.out.println("The average of the two numbers is :- " + avg);
                                                          //print the output.


       }
}
```

19)

```
import java.util.*;
class Swap {
 public static void main(String[] args) {
 int x, y, t;                    // declare variables to swap numbers
 Scanner sc = new Scanner(System.in);
  System.out.println("Enter the value of X and Y");  // take input from the user.
 x = sc.nextInt();  // store the 1st value in X
  y = sc.nextInt();  // store the 2nd value in y
 System.out.println("before swapping numbers: "+x +"  "+ y); //print the value to x and y
                                                                  before swap
   t = x;      // use temporary variable to store the value of X
   x = y;    // the value of Y is assigned to X
  y = t;                // The value stored in t is assigned to y.
 System.out.println("After swapping: "+x +"   " + y);  // to print the value of x and y
                                                          after swap.
 }
}
```

20)
```
import java.util.*;
public class Prime{
        public static void main( String[]args){
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        int n = sc.nextInt();
        if(isPrime(n)){
        System.out.println(n + "is a prime number");
        }
        else{
        System.out.println(n + "is not a prime number");
        }
                }

        public static boolean isPrime(int n) {
         if (n<=1){

         return false;
        }
        for(int i= 2;   i<Math.sqrt(n); i++){
        if(n%i==0){
        return false;

        }
                }
        return true;
        }
}
```

21)

```
public class table {
        public static void main(String[] args)
        {
         int N = 7; // number n for which we have to print the
         int range = 10;  // range of the table to print.
        int i = 1;      // using i variable to count the range value to run the loop.

         // using while loop
        while (i <= range) {

        // printing the N*i,ie ith multiple of N.
                System.out.println(N + " * " + i + " = "  + N * i); // print the value or n*i
                i++;       // increment the value of the util the i is less than or equal to i.
        }
    }
}
```

22)

```
import java.util.Scanner;
public class LargestNum
{
public static void main(String[] args)
{
int a, b, c, largest, temp;  //object of the Scanner class
Scanner sc = new Scanner(System.in);  //reading input from the user
System.out.println("Enter the first number:");
a = sc.nextInt();
System.out.println("Enter the second number:");
b = sc.nextInt();
System.out.println("Enter the third number:");
c = sc.nextInt();
temp=a>b?a:b;  //comparing a and b and storing the largest number in a temp variable
largest=c>temp?c:temp;  //comparing the temp variable with c and storing the result in the variable
System.out.println("The largest number is: "+largest);  //prints the largest number

}
}
```

23)

```
import java.util.Scanner;
public class SimpleInterest{
public static void main(String args[])
{
 Scanner sc = new Scanner(System.in);//Take input from the user
 float p, r, t, si;//Declare variables
 System.out.println("Enter the Principal : ");
 p = sc.nextFloat();
 System.out.println("Enter the Rate of interest : ");
 r = sc.nextFloat();
 System.out.println("Enter the Time period : ");
  t = sc.nextFloat();
 sc.close();
  si = (p * r * t) / 100;//Calculate the simple interest
 System.out.println("Simple Interest is: " +si);//Print the simple interest
  }
}
```

24)

```
import java.util.Scanner;

public class Area{
public static void main(String[] args)
{
float len, bre, area, perimeter; \\declare variables and data type
Scanner s = new Scanner(System.in); // to take input from the user
System.out.print("Enter the Length of Rectangle: ");
len = s.nextFloat();
System.out.print("Enter the Breadth of Rectangle: ");
bre = s.nextFloat();
area = len*bre;  // calculate the area
perimeter = (2*len) + (2*bre); // calculate the perimeter.
System.out.println("\nArea = " +area); // print the value of area
System.out.println("\nPerimeter = " +perimeter); // print the value of perimeter.

 }
}
```

25)

```
import java.util.Scanner;

public class VowelConstant
{
public static void main(String[] args)
{
char ch;           // declare variable
Scanner sc = new Scanner(System.in); // to take input from user.

System.out.print("Enter an Alphabet: ");
ch = sc.next().charAt(0);  // store the user input in the variable ch

if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u' ||          // check the condition
 ch=='A' || ch=='E' || ch=='I' || ch=='O' || ch=='U')
 System.out.println("\nIt is a Vowel."); // print the statement if true
else
System.out.println("\nIt is a Consonant."); // print the statement if false
}
}
```