DELHI PUBLIC SCHOOL
NEWTOWN SESSION: 2020-21
ANNUAL EXAMINATION (ONLINE)

CLASS: IX **FULL MARKS: 60**
SUBJECT: COMPUTER APPLICATIONS **TIME: 1 Hour 30 minutes**

Instructions:

- **Section A is compulsory.**
- **Answer any three questions from Section B.**
- **This paper consists of four printed pages.**
- **All working including rough work must be clearly shown on the same sheet as the rest of the answers.**
- **VDT should be written for every program.**

Section A (15 Marks)
[Attempt all questions from this section.]

Question 1

a) In what way data hiding is related to data abstraction? Discuss with a real life example.

[2] Convert the following if-else-if construct into switch case:

[3]

```
if(var==1)     System.out.println("Distinction");
else if(var==2)    System.out.println("First Division");
else if(var==3)    System.out.println("Second Division");
else    System.out.println("invalid");
```

b)The main function in a Java program is declared as:

[2]

public static void main( )

How this method is treated differently with other member methods of a class.

What is the significance of the word *void*?

d) What will be the output of the following code:

[2]

```
int k = -1; float j = 2.2f;
k / =  - -k / ++j - k++ % ++j ;
k = k/( - -k / ++j - k++ % ++j );
k= -1/(0
System.out.println(j);
System.out.println(k);
```

e) Predict the output of the following functions:

[2]

i) Math.rint(16.5); **ii) Math.round(-18.7);**

f) Write the equivalent java expression for the following:

[2] $$\frac{1}{2a^{2i}}\left(\frac{\sqrt{b^2-4a}}{2a}\right) + y^3$$

g) $+0000000000000000000000000$

h) Predict output of the following program,

if the method is invoked as *call("A24"):*

```
[2]     void call(String n)
{   String st= n + "comp";
    System.out.println("n= " + (n+32));
    System.out.println("st= " + 12+st);    }
```

Section B (45 Marks)

[Attempt any three questions from this section.]

The answers in this Section should consist of the Programs in BlueJ environment. Each program should be written using Variable descriptions/Mnemonic Codes so that the logic of the program is clearly depicted. Flow-Charts and Algorithms are not required.]

Question 2

[15]

Write a program to input a number. Count and print the frequency of each digit present in that number. (do not use nested loop to do the program)

The output should be given as:

Sample Input: 44514621

Sample Output:

==========

Digit Frequency

==========

1 2

2 1

4 3

5 1

6 1

Question 3

[15]

Create a *class Tax_calculation* as given

Class Name *: Tax_calculation*

Data Members/ Variables : *name, age, monthly_salary, phone_no, designation*

Member Functions/ Methods:

i. *void accept( )* :accepting the required data members.

ii. *double calculate( )* :to calculate the income tax of the employee based on the following condition:

Annual income (in ₹)	Tax
Upto 130000	No tax
Between 130000 – 200000	15% of the amount
From 200000 – 250000	₹ 5000 + 20% of the amount

From 250000- 330000	**10000 + 30% of the amount**
Above 330000	**10000 + 35% of the amount**

iii. ***void print( )*** **: to display all the details of the employee with annual income and income tax in a tabular format.**

Create the above class and implement all the functions. Write a ***main( )*** **method to show the necessary action.**

Question 4

[15]

Design a class Armstrong_series with two methods:

- **boolean getArmstrong(int n) it checks and returns true if number n is armstrong otherwise returns false. A positive integer of n digits is called an Armstrong number of order n (order is number of digits) if,**

  abcd... = pow(a,n) + pow(b,n) + pow(c,n) + pow(d,n) + ...

  Example: Input : 153

  Output : Yes, 153 is an Armstrong number. (1*1*1 + 5*5*5 + 3*3*3 = 153)

- **void printSeries() to generate first ten armstrong numbers by calling getArmstrong(int n) method to determine if the number is armstrong or not.**

  [Hint: 1,2,3,4,5,6,7,8,9,153]

Question 5

[15]

Write a program to generate a triangle or an inverted triangle based

upon user's choice of triangle to be displayed. (do not use nested loop to do the program)

Example 1:

Input: Type 1 for a triangle

Enter your choice: 1

Sample Output:

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

Example 2:

Input: Type 2 for an inverted triangle

Enter your choice: 2

Sample Output:

5 5 5 5 5

4 4 4 4

3 3 3

2 2

1