GREENWOOD HIGH
PRELIMINARY EXAMINATION 1- NOVEMBER 2019
SUBJECT – COMPUTER APPLICATIONS

Grade 10:
Date:21/11/2019

Time : 2 hrs
Max. Mark: 100

Answers to this paper must be written on the paper provided separately
You will not be allowed to write during the first 15 minutes.
This time is to be spent in reading the question paper
The time given at the head of this paper is the time allowed for writing the answers.

This paper is divided into two Sections
Attempt all questions from Section A and any four questions from Section B
The intended marks for questions or parts of the question are given in brackets [ ]

Section A [40 Marks]
Attempt all questions

Question 1

(a) Write the five characteristics of Java. [2]
(b) State the differences between Syntax errors and Logical errors. [2]
(c) What is a constructor? [2]
(d) Why is a class called a user-defined data type? [2]
(e) Define nongraphic characters. [2]

Question 2

(a) Differentiate between Source code and Byte code. [2]
(b) Define Function prototype? [2]
(c) State two conventions you should follow while naming a class. [2]
(d) Analyze the following program segment and determine how many times the body of loop will be executed (show the working). [2]

```
x=5;
y=50;
while(x<=y)
        {
           y=y/x;
           System.out.println(y);
        }
```

(e) Write the advantages of using constants. [2]

Question 3

(a) What is a class variable ? [2]
(b) What are the differences between Entry controlled loop and exit controlled loop ? [2]
(c) Write the return type of the following methods [2]
(i) toString(short n)
(ii) toUppercase( )
(d) Differentiate between call by value and call by reference. [2]
(e) State the disadvantages of an array. [2]

Question 4

Write the output for the following program snippets?

(a)
```
public class a
{
public static void main( )
  {
 int x[ ] = { 60 , 50 , 30 , 40 };
 int y = 3 , size = 4;
 for ( int  i = size-1  ;  i >= 0  ;  i - - )
   switch( i )
  {
     case 0:
     case 2:
        System.out.println( y * x[i]);
        break;
    case 1:
    case 3:
       System.out.println( y + x[i]);
 }}}
```

(b)
```
public class a
{
static int a=100,b=200;
      public static int function(int x)
      {
         int c = ( x < 50 ) ? ( a + x ) : ( b - x );
         return(c);
      }
 public static void main()
 {
 int count , c;
 for(count = 1 ; count <= 5 ; ++count)
 {
    c = 4 * count * count;
    System.out.println(function(c));
}} }
```

(c)
```
public class q4
{
public static void main( )
{
  String s="Object";
  int l=s.length( );
  for(int c = 0 ; c < l ; c++ )
  {
    if(Character.isLowerCase( s.charAt(c) ) )
       System.out.print( Character.toUpperCase (s.charAt(c)) );
    else if(  c%22  = = 0)
          System.out.print( 'E' );
       else
         System.out.print(Character.toLowerCase (s.charAt(c)) );
}
}}
```

SECTION B [60 Marks]

Attempt **any 4** questions from this Section. **[4* 15]**

The answers in this Section should consist of the ***Program in either Blue J environment or any program environment with Java as the base.***

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 5 **[15]**

Write a Java program to accept numbers into an array of size 5 x 5. Then display the numbers present in the portion below the right diagonal of the matrix.

Sample input:

```
4 5 8 1 0
2 8 7 4 2
3 4 5 6 7
1 2 7 8 3
9 2 6 8 4
```

Sample output:

```
    0
  4 2
5 6 7
2 7 8 3
9 2 6 8 4
```

Question 6 **[15]**

Write a Java program to accept a sentence and print the word containing maximum number of vowels and the number of vowels in it.[using Scanner]

SAMPLE INPUT :

HAPPY NEW YEAR

SAMPLE OUTPUT:

THE WORD WITH MAXIMUM NO OF VOWELS : YEAR
THE NO OF VOWELS : 2

Question 7 **[15]**

Write a program to get the following pattern

```
- - - a
- - - b  b
- - c    c
- d      d
e        e
```

Question 8 **[1**

Write a program to enter 10 names in an array and sort it in descending order using bubble sort method and print it.[using Streams]

Question 9 [15]

Design a class to overload a function **overload_calc( )** as follows:

(i) **int calc (int a, int b)** - with two integer arguments (**a** and **b**), calculates and return the GCD of two numbers **a** and **b** using continued division method.

[**Hint :** GCD (Greatest Common Divisor) using continued division method is calculated as follows. Divide the larger number by the smaller number; the remainder then divides the previous divisor. This process is repeated till the remainder is zero. The divisor then results the GCD.]

(ii) **void calc (double N)** - with one double arguments(N) calculate and prints the sum of the following series:

sum = 1.0 + 1.2 + 1.4 +..... + N terms

Write a main method to create an object and invoke the above methods.

Question 10 [15]

Rahul parcel company charges for the parcels of its customers as per the following specifications given below:

Class name : Parcel

Member variables:

String name – to store the name of the customer

int wt – to store the weight of the parcel in Kg

int charge – to store the charge of the parcel

Member functions:

void accept ( ) – to accept the name of the customer, weight of the parcel from the user (using Scanner class)

void calculate ( ) – to calculate the charge as per the weight of the parcel as per the following criteria.

wt <100 Kgs Rs.100 and

for each additional 100gm or part thereof Rs20.

void print ( ) – to print the name of the customer, weight of the parcel, bill amount in a tabular format as shown below :

Name	Weight	Bill amount
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Define a class with the above-mentioned specifications, create the main method, create an object and invoke the member methods.