GREENWOOD HIGH
PRELIMINARY EXAMINATION 2
JANUARY 2020
SUBJECT – COMPUTER APPLICATIONS

Grade: 10
Date:10/01/2020

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 a Java statement to display the position of the last space in a String str. [2]

(b) State the use of return statement in Java. [2]

(c) Name the two types of Java programs. [2]

(d) Assume x[]={2,6,3,5,9}; [2]
What are the values of a and b?
(i) a = x.length (ii) b = x[3] * x[1] + x[0];

(e) Define encapsulation. [2]

Question 2

(a) Differentiate between boolean and Boolean . [2]

(b) Evaluate the value of k when following code gets executed: [2]
int k = 5 j=9;
k+= k++ - --j + k;

(c) Write a Java statement for the following: [2]
$| x^3 + 5pq |$

(d) What are tokens in Java? Give example. [2]

(e) What is the role of keyword void in declaring functions? [2]

Question 3

(a) Write the output of the following: [2]
(i) System.out.println (Character.isUpperCase('G'));
(ii) System.out.println(Character.toUpperCase('a'));

(b) Write the output of the following program statement : [2]
System.out.println("I like String".substring(7,12).concat("is interesting"));

(c) Evaluate the following expression (value of v) if the value of x = 2, y = 3 and z = 1. [2]
v = x + --z + y++ + y;

(d) Write two advantages of using functions in a program.

(e) Name a package in Java which contains all input output related classes.

[5]

Question 4

Write the output of the following program segment :

(a)
```
double x=3.9,y=1.5;
System.out.println(Math.min(Math.floor(x),y));
System.out.println(Math.max(Math.ceil(x),y));
System.out.println(Math.cbrt(Math.abs(-8)));
System.out.println(Math.round(x+y));
System.out.println(Math.sqrt(Math.round(81.3)));
```

[5]

(b)
```
int k = 0,p=5,g=2;
while(k<20)
{
  k = p-- + g++ + 2;
  if (p==1)
  break;
  else
  g++;
}
System.out.println("Value of k " + k);
System.out.println("Value of g " + g);
```

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.***

[15]

Question 5

Write a menu-driven Java program to:

a. **Accept the number of lines (n) from the user and generate the following number pattern.**

Sample Input

Enter number of lines: 6

Sample Output

```
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
6 5 4 3 2 1
```

b. **Generate the following pattern.**

```
F
E F
D E F
C D E F
B C D E F
A B C D E F
```

For an incorrect choice, appropriate error message should be displayed.

Question 6 [15]

Design a class Fun_Over to overload a function print( ) as follows:

(i) **void print(int x,int n)** with two integer arguments that calculates and print the sum of following series:

$S = x - x^3 + x^5 - x^7 + \ldots$ n terms

(ii) **void print(int n)** with one integer argument that display the following series:

1 12 123 1234 .....n terms

Question 7 [15]

Write a program in Java to accept the scores of 10 cricketers in a Single Dimensional array. Search for the score entered by the user using Binary Search. If found, display the score along with its position in the array, otherwise display "Score not found". [Use Streams]

Question 8 [15]

Write a Java program to enter numbers in a n x n double dimensional array. Convert all the elements above the left diagonal to 1's. Display the original and resultant matrix and print the sum of all the elements of the resultant matrix.

Sample Input

Enter dimensions of nxn matrix:
3
Enter element for array
2
Enter element for array
3
Enter element for array
4
Enter element for array
5
Enter element for array
6
Enter element for array
7
Enter element for array
8
Enter element for array
9
Enter element for array
10

Sample Output

Original matrix is

2	3	4
5	6	7
8	9	10

Converted matrix is

2	1	1
5	6	1
8	9	10

Sum of elements of the resultant matrix is 43

[15]

Question 9

Write a program to accept a word and convert it into uppercase. Display the new word by replacing only the consonants with the character following it.

Sample Input : Prelims
Sample Output : QSEMINT

[15]

Question 10

Design a class called **BounceBike** with the following description:

Instance variables/data members:

int bno – to store the bike's number
int phno – to store the phone number of the customer
String name – to store the name of the customer
int days – to store the number of days the bike is taken on rent
int charge – to calculate and store the rental charge

Member methods:

A default constructor to initialize the data members.
void input( ) - to input and store the details of the customer.
void compute( ) - to compute the rental charge

The rent for a BounceBike is charged on the following basis.

First five days Rs 500 per day
Next five days Rs 400 per day
Rest of the days Rs 200 per day

void display ( ) – to display the details in the following format:

Bike No. PhoneNo. Name No. of days Charge

Create an object **borrower** of the class and call the above methods.