GREENLAWNS HIGH SCHOOL

PRELIMINARY EXAMINATION FOR THE YEAR 2024

COMPUTER APPLICATION

STD X

MARKS : 100

TIME : 2 HRS

You will not be allowed to write during the first 10 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 questions are given in brackets[]

SECTION A (40 Marks)

(Attempt all questions from this Section)

Question 1   [20]

Choose the correct answers to the questions from the given options.

(Do not copy the question, write the correct answers only.)

(i)   A mechanism where one class acquires the properties of another class:
   (a) Encapsulation
   (b) Polymorphism
   (c) Inheritance
   (d) Abstraction

(ii)   Which of the following represents a character literal?

   (a) "p"   (b) '??'   (c) '\c'   (d) "9"

This paper consists of 8 printed pages.

(iii) _____ variables are created once for entire class and are shared by all the objects.

    (a) Static or class variables
    (b) Instance variables
    (c) Shared variables
    (d) Mixed variables

(iv) Consider the following code:

int number[]= new int[5];

After execution of this statement, which of the following are True?

    (a) number[0] is undefined
    (b) number[5] is undefined
    (c) number[2] is 0
    (d) number.length is 5

(v) The number of values that a method can return is

    (a) one
    (b) two
    (c) three
    (d) none

(vi) The absence of which statement leads to fall through situation in switch case statement?

    (a) return
    (b) break
    (c) continue
    (d) default

(vii) When an object of a Wrapper class is converted to its corresponding primitive data type, it is called as _____.

    (a) Boxing
    (b) Explicit type conversion
    (c) Unboxing
    (d) Implicit type conversion

(viii) A method which does not modify the value of variables is termed as:

(a) Pure method

(b) Impure method

(c) Primitive method

(d) User defined method

(ix) The number of bytes occupied by the value 'u' is

(a) 4 bytes

(b) 2 bytes

(c) 3 bytes

(d) 8 bytes

(x) Java ternary operator is also called _____

(a) relational operator

(b) conditional operator

(c) logical operator

(d) bitwise operator

(xi) Which of these is control statement in Java?

(a) if()

(b) break

(c) continue

(d) for()

(xii) When an expression consists of int, long, float, double, then the entire expression will get promoted to a data type that is:

(a) int

(b) long

(c) float

(d) double

(xiii) Implicit type conversion is also known as :

(a) narrowing type conversion   (b) coercion

(c)explicit type conversion   (d)typecasting

(xiv) Which among the given methods is used to pick a single character from a string object

    (a) compareTo()
    (b) indexOf()
    (c) charAt()
    (d) substring()

(xv) Assertion : In Java, the new keyword is used to create an object of a class.

    Reasoning : Objects are instances of classes, and the new keyword is used to allocate memory and initialize objects.

    (a) Both Assertion (A) and Reason (R) are true and Reason (R), is correct explanation of Assertion (A)

    (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion(A)

    (c) Assertion (A) is true and Reason (R) is false
    (d) Assertion (A) is false and Reason (R) is true

(xvi) Given this code snippet:

```
double a= 12.9;
double b=method(a);
System.out.println(b);
```

    If the above snippet displays 13.0 as output, which of the following Math method(s) is correct.

    (a) ceil() and round()
    (b) floor() and round()
    (c) floor()
    (d) round()

(xvii) In Java, to retrieve an individual array element, array name along with its subscript should be specified.
    (a)true   (b) false

(xviii) The code given below, on execution displays:
    String x= "Computer";

String y= "Application";
System.out.println(y+x.substring(5));

   (a) Applicationter
   (b) ApplicationCompu
   (c) Applicationuter
   (d) Application uter

(xix) Given an array 12,3,8,5. What will be array like after two passes of selection sort.
   (a) 12,3,8,5
   (b) 3,8,12,5
   (c) 3,5,8,12
   (d)12,3,5,8

(xx) Give the output of the following code:

   String A ="45.0",B="65.0";
   double C=Double.parseDouble(A);
   double D=Double.parseDouble(B);
   System.out.println((C+D));

   (a) 45
   (b) 65
   (c) 110.0
   (d) 4565

Question 2.

  (i) State the number of bytes occupied by float and int data types. [2]

  (ii) Write Java expression for $\dfrac{ax^2+b}{cx+d}$ [2]

  (iii) Give the output of the following Character class methods: [2]
    (a) Character.toUpperCase('y')
    (b) Character.isLetterOrDigit('$')

  (iv) int x=2,y=4,z=1;   [2]

    int res=(++z)+y+(++x)+(z++);

(v)Give the output of the following program segment and also mention how many times the loop is executed: [2]

```
int k;
for(k=5;k>10;k++)
    System.out.println(k);
System.out.println(k*5);
```

(vi)Give the output of the following code : [2]

```
String s="WORLD CUP";
System.out.println(s.substring(5));
System.out.println(Character.toLowerCase(s.charAt(4)));
```

(vii) Write the value of x after execution: [2]

```
char ch= 'H';
int x=ch+ 10;
```

(viii) Name the following: [2]

(a) The method which has the same name as that of the class name.

(b) What is an instance of the class called?

(ix) Convert the following do... while loop to for loop: [2]

```
int a=40;
do
{a--;
System.out.print(a);
}while(a>=1);
```

(x) Given that in m[][]={{1,2,3},{3,5,7}}, what will be the value of m[1][0] and m[0][2]? [2]

SECTION B (60 Marks)

(Answer any four questions from this Section)

The answers in this section should consist of the programs in either BlueJ
environment or any program environment with Java as the base.
Each program should be written using variable description/mnemonic codes so
that the logic of the program is clearly depicted.
Flowcharts and algorithms are not required.

Question 3.   [15]

A private Cab service company provides service within the city at the following
rates:

	AC CAR	NON AC CAR
UPTO 5 KM	₹ 150 /-	₹ 120 /-
BEYOND 5 KM	₹ 10/-PER KM	₹ 08/- PER KM

Design a class CabService with the following description:

Member variables /data members:

String car_type	- To store the type of car (AC or NON AC)
double km	- To store the kilometer travelled
double bill	- To calculate and store the bill amount

Member methods :

void accept ()	- To accept car_type and km (using Scanner class only).
void calculate ()	- To calculate the bill as per the rules given above.
void display()	- To display the bill as per the following format

CAR TYPE:

KILOMETER TRAVELLED:

TOTAL BILL:

Create an object of the class in the main method and invoke the member
methods.

Question 4. [15]
Write a program to input and store weight of ten people. Sort and display them in descending order using selection sort technique.

Question 5. [15]
Define a class to overload the function print as follows:
void print()   To print the following series.
            1,2,5,12,29,70,169,408

void print(int n)   To check whether the number is a Disarium number.
            A number is called Disarium if sum of its digits powered
            with their respective positions is equal to
            the number itself.
                For eg 175 : $1^1+7^2+5^3$
                        1+49+125
                175 is a Disarium number.

Question 6. [15]
Define a class to accept a string and print the same in reverse.
Eg: Str= "GREENLAWNS"   Output : SNWALNEERG

Question 7. [15]
Write a program to perform binary search on a list of integers, given below to search for an element input by the user. If it is found, display the element along with its position, otherwise display the message "Search element not found".
        5,7,9,11,15,25,35,45,85,98

Question 8. [15]
Write a program to input a double dimensional array of N rows and N columns. Perform the following operation in your program.

    (i)   Print the array in the form of matrix of N x N.
    (ii)   Print sum of left diagonal elements of matrix.