GARDEN HIGH SCHOOL

CLASS IX

Annual Examination 2018

Computer Applications (Theory)

Time: 2 hours | Full Marks: 100

This Question Paper has five printed pages.

Answers must be written in the script/s provided. You will not be allowed to write for the first 15 minutes. This time must be spent in reading the Question Paper.

The time given at the head of this Paper is the time allowed for writing answers.

This Paper is divided into two sections.

Answer all the questions of Section A, and any four of Section B.

Maximum marks for a question or part of a question are given in brackets [ ].

SECTION A (40 marks)

Answer all the questions.

Question No 1

(a) Define: *bytecode* [2]

(b) Mention any two rules for forming identifiers in Java. [2]

(c) What is a *null loop*? [2]

(d) State one similarity and one difference between a *for loop* and a *while loop*. [2]

(e) Name the following: [2]

(i) An OOP principle which implements data abstraction

(ii) A function which converts a String type value to double

Question No 2

(a) What is an *arithmetic assignment operator*? Give an example. [2]

(b) Write the prototype of a function calc( ), with two integer arguments and one character argument, with a return type of boolean data type. [2]

(c) Differentiate between: [2 × 3 = 6]

(i) *static variable* and *instance variable*

(ii) *pure* and *impure functions*

(iii) = and = = *operators*

Question No 3

(a) Write the default initial values of variables with the following data types: [2]

(i) long (ii) char

(b) Convert the following to a *do while* loop: [2]

```
int x, c;
for (x = 10, c = 20; c > 10; c = c–2)
    x + +;
```

(c) Find the output of the following: [2]

```
int cnt = 10, k = 0;
for (int j = 1; j < = cnt; j++)
    {
        System.out.print (j + "\t");
        if (k = = j && j! = cnt)
            {
              j = 0;
               k + +;
               System.out.println( );
             }
            }
```

(d) Find the output of the following: [2]

```
byte x = 8;
System.out.println ((x < <2));
```

(e) Give the Java expression for the following: [2]

$1/3a^3 + 1/4b^3 + \sqrt{a^2 + b^2}$

Question No 4

(a)
```
switch(num)
        {
          case 10:
         case 100: System.out.println ("ten and hundred");
                        break;
          case 1000:
```

```
        case 400: System.out.println ("thousand and four hundred");
        default: System.out.println ("invalid input");
      }
```

(i) Convert the above to an equivalent if construct.

(ii) Find the output of the above program when: [2 + 2 = 4]

(A) num = 10 (B) num = 400

(b) Find the output of the following: [3]

```
int j = 0, g = 0, result = 1;
for (j = 3; j < = 5; j++)
{
   result = j;
   for ( g = 5; g > = 3; g– –)
    {
      result=result*g;
    }
 System.out.println("result is"+result);
}
System.out.println ("out of the loop values of j and g are" +j + " " + g);
```

(c) Find the output of the following: [3]

(i) System.out.println (Math.ceil (–12.56));

(ii) System.out.println (Math.rint (14.562));

(iii) System.out.println (Math.round (15.45));

SECTION B (60 marks)

Answer any <u>four</u> questions.

Answers should consist of programs in either Blue J environment or any program environment with Java as the base. Variable Descriptions/Mnemonic Codes should be used to write each program so that the logic of the program is clearly demonstrated.

Flow charts and algorithms are not required.

Question No 5

Write a program to input an integer and check whether it is a three-digit number or not. If it is, then print the largest digit in the number. [15]

Question No 6

Write a menu-driven program to find the sum of the following series: [15]

(a) $a^2/3! + a^3/4! + a^4/5! + \ldots\ldots + a^{10}/11!$

(b) $1*3 + 2*4 + 3*5 + \ldots\ldots + 9*11$

Question No 7

Write a program to overload a function calc( ) in the following manner: [15]

void calc(int n, int *l*1, int *l*2) : Inputs a number and inputs the two limits *l*1 and *l*2 and prints the multiplication table of n from *l*1 to *l*2.

void calc(int n1): Inputs a number n1 and displays whether it is a palindrome number or not. (A number is said to be a palindrome if it is the same after reversing its digits. eg. 12321 is a palindrome number).

Question No 8

The basic salary of the employees of an organization is undergoing a revision. Define a class called GradeRevision to input the name, basic salary and years of experience of an employee and calculate the increment according to the following specifications: [15]

Experience (in years)	Increment
up to 3	₹1000 + 10% of basic
> 3 and < = 5	₹3000 + 12% of basic
> 5 and < = 10	₹5000 + 15% of basic
> 10	₹8000 + 20% of basic

Display the name, basic salary and the revised basic salary of an employee of the organization.

Question No 9

Write a menu-driven program to perform the following as per the user's choice: [15]

(a) Input a number and print the product of the odd digits of the number.

(b) Generate and display the first ten terms of the Fibonacci series: 0, 1, 1, 2, 3, ...

(In a Fibonacci series the first two numbers are 0 and 1 and each subsequent number is the sum of the previous two.)

Question No 10

Design a class called Number with the following specifications: [15]

Data member: int n

Member functions:

(a) void getval(int x): to initialize n with x

(b) void display(int y): checks and displays whether the number is a prime number or not

(c) A main( ) function to create an object of the class and call the above methods.