GARDEN HIGH SCHOOL

CLASS IX

Annual Examination, 2022–23

Computer Applications

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 parts of a question are given in brackets [ ].

SECTION A (40 marks)

Answer all the questions.

Question No 1

Choose the correct options: [10 × 1 = 10]

(a) The ability of an object to take on many forms is known as

(i) polymorphism. (iii) inheritance.

(ii) encapsulation. (iv) abstraction.

(b) The function prototype of a function disp() which accepts two integer arguments and returns 1 or 0 is:

(i) void disp(int a, int b) (iii) int disp(a, b)

(ii) void disp(int a, b) (iv) int disp(int a, int b)

(c) Which among the following keywords is used to allocate memory space for an object?

(i) void (ii) new (iii) extends (iv) this

(d) Which among the following is a keyword but not a literal?

(i) for (ii) true (iii) null (iv) false

(e) Identify the valid octal literal from the following:

(i) 0178 (ii) 675 (iii) 0675 (iv) 0X675

(f) If a is of the type int and b is of the type float, what would be the resultant data type of a + b?

(i) int (ii) float (iii) double (iv) short

(g) Which among the following is the correct statement for creating an object named book of the class Library?

(i) book = new Library(); (iii) Library book = new book();

(ii) Library book = new Library; (iv) Library book = new Library();

(h) Choose the odd one:

(i) nextInt() (iii) nextString()

(ii) nextDouble() (iv) next()

(i) What value will Math.sqrt(Math.ceil(8.1)) return?

(i) 9.0 (ii) 9 (iii) 3.0 (iv) 3

(j) Which of these jump statements can skip processing remainder of the code in its body for a particular iteration?

(i) break (ii) continue (iii) return (iv) exit

Question No 2

(a) Evaluate the following expression: [2]

```
int a = 12, b = 13, c = 11;
b = b++ + ++a * 2 * c– –;
```

(b) Write the Java expression for the following: [2]

$x = (a + b)^n \div (\sqrt{3} + |b|)$

(c) Read the following code and answer the questions: [4]

```
class Academic
{
    int x, y;
   public void access()
    {
        int a, b;
  Academic student = new Academic();
  System.out.println(“Object created”);
 }

}
```

(i) What is the name of the object?

(ii) Name the instance variables.

(iii) Name the local variables.

(iv) Name the access specifier.

(d) What is the significance of the return statement in Java? [2]

Question No 3

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

(i)
```
int x, y;
for(x=1; x<=2; x++)
{
    for (y=1; y<=4; y++)
    {
      if(y==3)
     continue;
    System.out.println(x + "\t" + y);
}
System.out.println("x=" +x);
}
```

(ii) `int n = 1234, d, c = 0; double s = 0.0;` [3]
```
while(n!=0)
{
    d=n%10;
s = s + d * Math.pow(10, c++);
n = n/10;
}
System.out.println(s);
```

(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) Rewrite the following in terms of *switch case*: [2]
```
int code;
code=sc.nextInt();
if(code==1)
    System.out.print("Accountant");
elseif(code==5 || code==6)
    System.out.print("Grade 4");
elseif(code==3)
    System.out.print("Financial Advisor");
```

Question No 4

(a) Differentiate between: [2 + 2 = 4]

(i) *actual parameter* and *formal parameter*

(ii) *break* and *continue* when used in a loop

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

```
int sum = 23;
for(int i=2; i<=5; i++)
{
    for(int j=7; j<=9; j++)
    {
        sum=sum+(i*j);
    }
}
System.out.println("sum= "+sum);
```

(c) [3]

```
public class Myclass
{
    Import java.util.Scanner;
    void func()
    {
        Int a;
        A = sc.nextInt();
        Scanner sc = new Scanner(System.in);
    }
    System.out.println(a);
}
```

Rewrite the above program after removing the errors in the code, if any.

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 menu-driven program to print the sum of the following series as per the user's choice: [15]

(a) S = 1*4 + 2*5 + 3*6 + ……+ 10*13

(b) $S = \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \ldots\ldots + \frac{x^{12}}{12!}$

Question No 6

Write a program to input an integer. Check and print whether it is a special number or not. (A number is said to be special if the sum of the factorial of the digits of the number is equal to the original number. Eg. 145 because 1! + 4! + 5! = 145) [15]

Question No 7

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

(a)
12345
2345
345
45
5

(b)
5
44
333
2222
11111

Question No 8

Write a program to overload the function display() as follows: [15]

(a) void display() – Generate and display the first 10 terms of the Fibonacci series 0,1,1,2,3,5……

(b) void display(int n) – Input a number and print the sum of the digits and the product of the digits of the number.

Question No 9

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

(a) Input a number and check whether it is a three-digit number or not. If it is a three-digit number then print the largest digit in the number.
Sample input: 467
Sample output: 7

(b) Print the sum of all the even numbers between 200 and 300 (both inclusive).

Question No 10

Define a class Hotel with the following description: [15]

Data members: Rno, name, tariff, days, famount

Member functions:

(a) void checkin() – to input the room number, name, tariff and number of days

(b) void calculate() – to calculate the amount to be paid as number of days x tariff
If the amount is more than ₹10000 then a discount of 3% is given on the amount, otherwise a discount of 1.5% is given.

(c) void checkout() – to display the room number, name and the final amount to be paid

Write a main() method to create an object of the class and call the above methods.