BOYS' HIGH SCHOOL AND COLLEGE
FINAL TERM EXAMINATION (2024-25)
CLASS - IX
COMPUTER APPLICATIONS

Estd. 1861

Maximum Marks:100
Time allowed: Two hours
This paper is divided into two sections.
Attempt all questions from Section A and any four questions from Section B.
SECTION A
(Attempt all questions from this section)

Question 1:

Choose the correct answers to the questions from the given options. [20]
(Do not copy the questions, write the correct answers only.)

(i) Which of the following principle uses the concept of reusability?
- (a) Polymorphism
- (b) Inheritance
- (c) Encapsulation
- (d) Abstraction

(ii) JVM combined with _____ makes Java platform.
- a) Java Programs
- b) Java API
- c) Java byte
- d) All of the above

(iii) for(int i=1; i<=3; i++)
```
{
    for(int j=1; j<=2; j++)
    {System.out.println("*");}
}
```
How many times will this code print '*'?
- a) 2
- b) 4
- c) 5
- d) 6

(iv) In which of the following conversions, we can assign a value of larger datatype to a smaller data type?
- a) Explicit Type Conversion
- b) Implicit Type Conversion
- c) Both (a) and (b)
- d) None of these

(v) Which of the following loop executes at least one time in a program?
- a) do while
- b) for
- c) while
- d) All of the above

(vi) Assertion(A): In Java, statements written in lowercase letters or uppercase letters are treated as the same.
Reason(R): Java is a case sensitive language.
- a) Both Assertion(A) and Reason (R) are true and Reason (R) is a 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

(vii) Which of the following for loop statement will execute 10 times?
- a) for(i=10; i>=1; i--)
- b) for(i=0; i<10; i++)
- c) for(i=3; i>=30; i=i+3)
- d) All of the above

(viii) What will be the output of the following code segment?
```
double x=4.5, y=6.8;
double z= Math.floor( Math.max(x,y);
System.out.println(z);
```
- a) 6.0
- b) 6.9
- c) 7.0
- d) 7.5

(ix) _____ are also known as Spam where email messages are send to different people to get personal information.
- a) Phishing
- b) Cyberstalking
- c) Both (a) and (b)
- d) Hacking

(x) To protect creations, there are some legal rights known as _____
- a) Civic property right
- b) Traffic right
- c) Intellectual property right
- d) All of these

(xi) _____ are the subdivision of knowledge that deals with moral ideologies.
- a) Ethics
- b) Non-ethical
- c) Intellectual Property
- d) Passion

(xii) Data Protection Act was implemented in
- a) 1998
- b) 1988
- c) 1968
- d) 1978

(xiii) To protect Data Privacy, we need
- a) A good firewall
- b) A good antivirus
- c) Both (a) and (b)
- d) None of these

(xiv) Math.sqrt(-4) method returns
- a) 2.0
- b) -2.0
- c) NaN
- d) 4.0

(xv) If the break statement is executed within the outer loop, then the control of the program will exit from the _____ loop?
- a) Outer
- b) Inner
- c) Both (a) and (b)
- d) None of these

(xvi) What does the following code print?
```
int x=-5;
while(x<0)
{
        x++;
        System.out.print( x + " ");
```

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}
a) 5 4 3 2 1
b) -5 -4 -3 -2 -1
c) -4 -3 -2 -1 0
d) 4 3 2 1`0

(xvii) Which type of value does Math.max(int, double) return?
a) int
b) double
c) float
d) All of these

(xviii) for(i=1; i>=0; i++)
```
{
 System.out.print( " Loop");
}
```
It is an example of _____
a) Finite loop
b) Infinite loop
c) Null loop
d) Body less loop

(xix) If the test condition is checked after executing the body of the loop, then it is called
a) Exit control loop
b) Entry control loop
c) Both of these
d) None of these

(xx) What is the result stored in z, after evaluating the following expression

int z= (++y * (y++ + 5))   [when y=10]

a) 150
b) 176
c) 125
d) 136

Question 2:

(i) What will be the result stored in after evaluating the following expression?   [2]
```
int y=8;
y+= ++y + y-- + --y
```

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

$$A= \frac{a^2+b^3}{a-b}$$

(iii) Convert following do- while loop into for loop: [2]
```
int i=1, d=5;
do
{
   d=d*2;
   System.out.println(d);
   i++;
}while(i<=5);
```

(iv) Write the syntax of nested for loop.   [2]

(v) What will be the output?   [2]
```
int i,j;
for (i=1; i<=3; i++)
{for (j=2; j>=1; j--)
   {System.out.println((i+j)+ " : ");
}}
```

(vi) Analyze the given segment and answer the following questions: [2]

```
for( int i=3; i<=4; i++)
{
        for(int j=2; j<I; j++)
        {
           System.out.print(" ");
        }
            System.out.println("WIN");
}
```

(a) How many times does the inner loop executes?

(b) Write the output of the program segment.

(vii) What is the final value of ctr when the iteration process given below executes? [2]

```
int ctr=0;
for( int i=1; i<=5; i++)
{
        for( int j=1; j<=5; j++)
        {
                ctr++;
        }
}
```

(viii) Name the two types of Java program. [2]

(ix) What are literals? Give two examples. [2]

(x) Give the output : [2]

```
double x=2.9, y=2.5;
System.out.print(Math.max(Math.ceil(x),y));
```

SECTION B
(Answer any four questions from this section)
Each program should be written using variable description codes so that the logic of the program is clearly depicted

Question 1:
Define a class ElectricBill with the following specifications:
class : ElectricBill
Instance variables / data member:
String n — to store the name of the customer
int units — to store the number of units consumed
double bill — to store the amount to be paid
Write a program to calculate the bill as per the following tariff:

Number of units	Rate per unit
First 100 units	Rs.2.00
Next 200 units	Rs.3.00
Above 300 units	Rs.5.00

A surcharge of 2.5% charged if the number of units consumed is above 300 units.
Print the details as follows:
Name of the customer: ………………………
Number of units consumed: ………………………
Bill amount: ………………………

Question 2:
Write to compute and display the sum of the following series:

(i) S= (1+2)/(1*2) + (1+2+3)/(1*2*3) + ……..+ (1+2+3……n)/(1*2*3…n)   [8]

(ii) S=a^1+a^2+a^3+a4…….+n^{th} term (value of a and n -input by the user)   [7]

Question 3:   [15]
Define a class to accept a number and check whether it is a SUPERSPY number or not. A number is called SUPERSPY if the sum of the digits equals to the number of the digits.
Example:
Input: 1021
Output: SUPERSPY number [SUM OF THE DIGITS= 1+0+2+1=4,
                                                    NUMBER OF DIGITS=4]

Question 4:   [15]
Using the switch statement, write a menu driven program:
   1. To check and display whether a number input by the user is a composite number or not.
      A number is said to be composite, if it has one or more than one factors excluding 1 and the number itself.
      Example: 4, 6, 8, 9...
   2. To find the smallest digit of an integer that is input:
      Sample input: 6524
      Sample output: Smallest digit is 2
For an incorrect choice, an appropriate error message should be displayed.

Question 5:
Display the following pattern using iteration statement:
(i)   1
             1   2
             1   2   3
             1   2   3   4
             1   2   3   4   5   [7]

(ii)   9   7   5   3   1   [8]
        9   7   5   3
        9   7   5
        9   7
        9

Question 6:
Write a program to display the following pattern:
   (a) 1   [7]
       2   3
       4   5   6
       7   8   9   10

   (b) a   [8]
       b c
       d e f
       g h I j

****

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