SOUTH CITY INTERNATIONAL SCHOOL

FIRST TERM – MODEL PAPER

COMPUTER APPLICATIONS

CLASS – X

SESSION : 2024 – 2025

This Question Paper has 9 printed pages.

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 questions are given in brackets [ ].

SECTION – A (40 Marks)

Attempt all the questions

Question 1

Choose the correct option from the given option. **[20]**

i) When primitive data type is converted to a corresponding object of its class, it is called:

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

ii) **The number of bytes occupied by a character array of 20 elements.**

a) **80 bytes**

b) **60 bytes**

c) **40 bytes**

d) **20 bytes**

iii) **Which one among the following is a keyword?**

a) **every**

b) **all**

c) **case**

d) **each**

iv) **Identify the operator that gets the highest precedence while evaluating the given expression: m + n % o * p – s**

a) **+**

b) **%**

c) *****

d) **–**

v) **Consider the array given below:**

char ch[ ] = {'A', 'E', 'I', 'O', 'U'};

Write the output of the following statement:

System.out.println(ch[0] * 2);

a) **65**

b) **130**

c) **'A'**

d) **0**

vi) **To execute a loop 10 times, which of the following is correct?**

a) **for(int i = 111; i <= 130; i += 2)**

b) **for(int i = 111; i <= 130; i += 3)**

c) **for(int i = 111; i < 120; i++)**

d) **for(int i = 111; i <= 121; i++)**

vii) **The datatype which is specified that the method does not return a value is:**

a) Void
b) void
c) VOID
d) Boolean

viii) **What will be the output of Math.pow(625, 1/2) + Math.sqrt(144)**

a) 17.0
b) 13.0
c) 37.0
d) 73.0

ix) **The correct if statement for the given ternary operation statement is:**

```
System.out.println(n%2 == 0? "true":"false");
```

a)
```
if(n%2==0)
return true;
else
return false;
```

b)
```
if(n%2==0)
return "true";
else
return "false";
```

c)
```
if(n%2==0)
System.out.println("true");
else
System.out.println("false");
```

d)
```
if(n%2==0)
System.out.println(true);
else
System.out.println(false);
```

x) do.. ...while loop is an

a) entry controlled loop

b) infinite loop

c) exit controlled loop

d) finite loop

xi) for(k=1;k<=2;k++)

```
{
   for(m=l ;m<=4;m++)
   {
         System.out.println(m*2);
   }
 }
```

How many times the inner loop is executed?

a) 2 times

b) 4 times

c) 8 times

d) 16 times

xii) Name the type of error that occurs for the following statement:

```
System.out.println(Math.sqrt(24 - 25));
```

a) Syntax error
b) Logical error
c) Run time error
d) No error

xiii) What value will Math.sqrt(Math.ceil(24.3)) return?

a) 25.0
b) 25
c) 5.0
d) 5

xiv) What will be the output of the following Java program?

```
class Output
{
        public static void main(String args[ ])
    {
        int arr[ ] = {1, 2, 3, 4, 5};
        for ( int i = 0; i < arr.length - 2; ++i)
            System.out.println(arr[i] + " ");
    }
  }
```

a) 1 2 3 4 5
b) 1 2 3 4
c) 1 2
d) 1 2 3

xv) Which of the following is not a primitive data type in JAVA?

a) boolean
b) byte
c) string
d) double

xvi) Which of the following is not an OOPS concept in Java?

a) Polymorphism
b) Inheritance
c) Compilation
d) Encapsulation

xvii) Choose the correct statement for declaring a character array.

a) char[ ] ch = new char(5);
b) char[ ] ch = new char[5];
c) char[ ] ch = new char( );
d) char[ ] ch = new char[ ];

xviii) Find the value of A[1] after execution of the following program

```
int[ ] A = {0,2,4,1,3};
for(int i = 0; i < A.length; i++)
{
        A[i] = A[(A[i] + 3) % A.length];
}
```

a) 0
b) 1
c) 2
d) 3

xix) Find the output of the following code.

```
public class Solution
{
        public static void main(String args[ ])
        {
                int i;
                for(i = 1; i < 6; i++)
                {
                        if(i > 3)
                                continue;
                }
                System.out.println(i);
        }
}
```

a) 6
b) 5
c) 4
d) 3

xx) State the type of loop in the given program segment:

```
for (int i = 10; i > 0; i += 2)
        System.out.println(i);
```

a) finite
b) infinite
c) null
d) fixed

Question 2

a) What will be the output of the following program segment and also mention the number of times the loop is executed: [2]

```
int a,b;

for (a = 6, b = 4; a <= 24; a = a + 6)

{

  if (a%b == 0)

  break;

}

System.out.println(a);
```

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

(i) $ax^5 + bx^3 + c$

(ii) What is the value of x1 if x=5?

x1= ++x – x++ + --x

c) String x [ ] = {“SAMSUNG”, “NOKIA”, “SONY”,”MICROMAX”, “BLACKBERRY”}; [2]

Give the output of the following statements:

(i) System.out.println(x[1]);

(ii) System.out.println(x[3].length());

d) Give the output of the following program segment and also mention the number of times the loop is executed: [2]

```
int a,b;
for (a = 6, b = 4; a <= 24; a = a + 6)
{
  if (a%b == 0)
  break;
}
System.out.println(a);
```

e) Convert following do-while loop into for loop. [2]

```
int i = 1;
int d = 5;
do
{
  d=d*2;
  System.out.println(d);
  i++;
} while ( i<=5);
```

f) What is the significance of '*' while importing a package. [2]

g) Define Pure Function. [2]

h) Name the type of error (syntax, runtime or logical error) in each case given below: [2]

(i) Math.sqrt (36 – 45)

(ii) int a;b;c;

i) What are the types of casting shown by the following examples: [2]

(i) char c = (char) 120;

(ii) int x = 't';

j) Differentiate between formal parameter and actual parameter. [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

A company announces revised Dearness Allowance(DA) and special Allowances(SA) for their employees a per the tariff below :

BASIC	DA	SA
Up to ₹ 10,000	10%	5%
₹ 10,001 - ₹ 20,000	12%	8%
₹ 20,001 - ₹ 30,000	15%	10%
₹ 30,001 and above	20%	12%

Write a program to accept the name and Basic Salary(BS) of an employee. Calculate and display gross salary.

Gross Salary = Basic + DA + SA

Display the information in the given format :

Name	Basic	DA	SA	Gross Salary	
XXXX	XXXX	XXXX	XXXX	XXXX	[15]

Question 4

Define a class to accept values in integer array of size 18. Sort them in an ascending order using selection sort technique. Display the sorted array. [15]

Question 5

Define a class to accept values into a 3 × 3 array and check if it is a special array. An array is a special array if the sum of the even elements = sum of the odd elements.

Example:
A[ ][ ]={{ 4 ,5,6}, { 5 ,3, 2}, { 4, 2, 5}};
Sum of even elements = 4 + 6 + 2 + 4 + 2 = 18
Sum of odd elements = 5 + 5 + 3 + 5 = 18 [15]

Question 6

Define a class to accept a 3 digit number and check whether it is a duck number or not.
Note: A number is a duck number if it has zero in it.

Example 1:
Input: 2083
Output: Invalid

Example 2:
Input: 103
Output: Duck number [15]

Question 7

Define a class to overload the method display as follows:

void display( ): To print the following format using nested loop

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

void display(int n): To print the square root of each digit of the given number.

Example: n = 9234
Output :

2.0

1.732050808

1.414213562

3.0 **[15]**

Question 8

Define a class to accept values into a double array of size 20 and print the range of the array, range is the difference between the largest and the smallest elements of the array. **[15]**
