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Class 10

Computer Application

Questions ONLY

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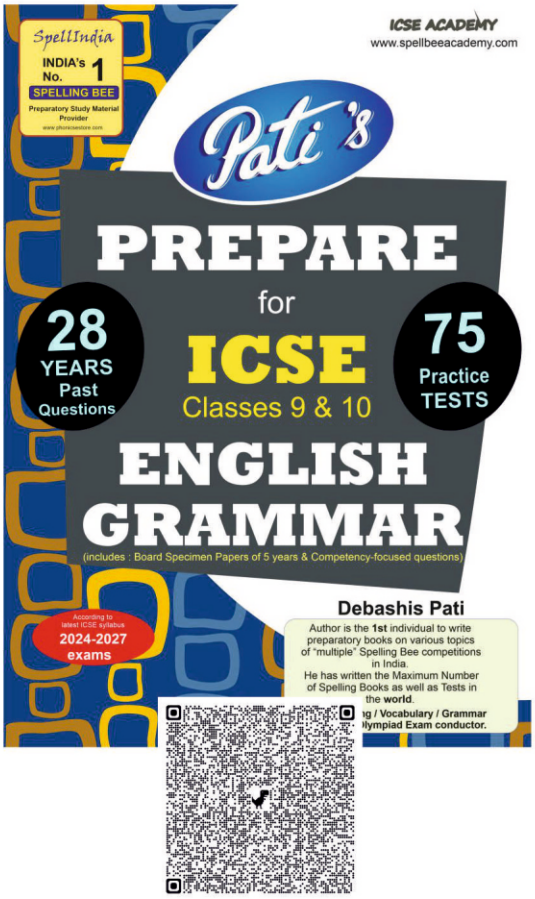

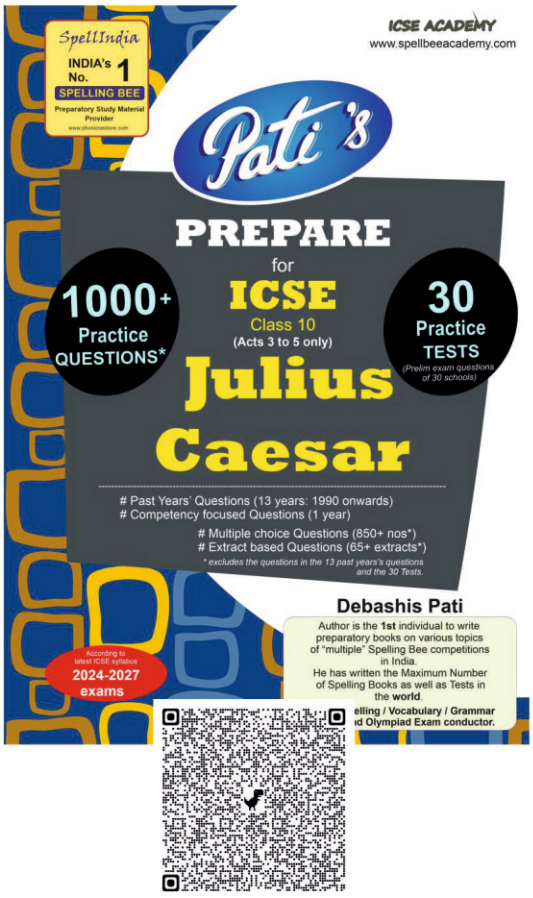

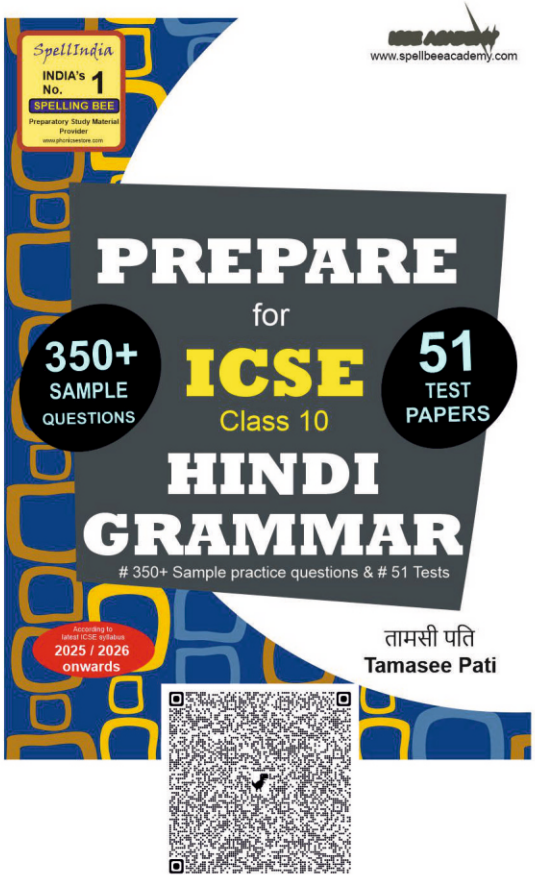

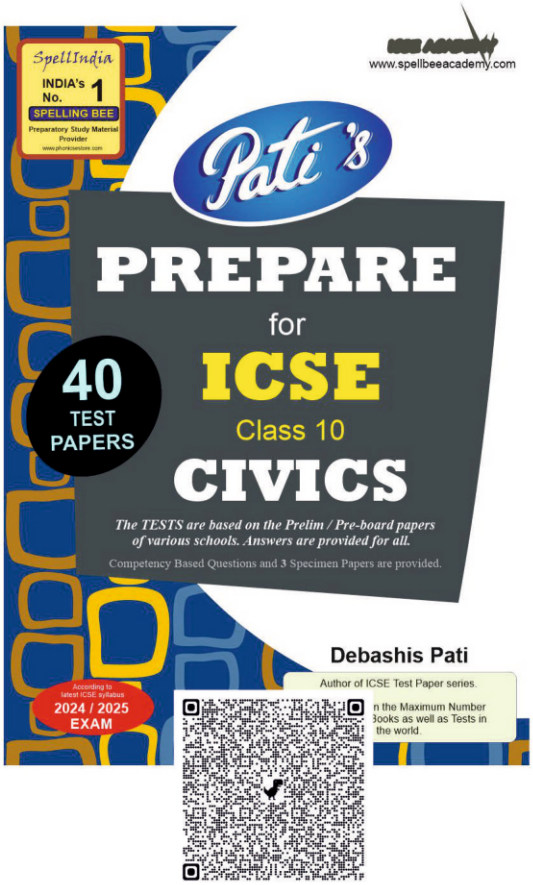

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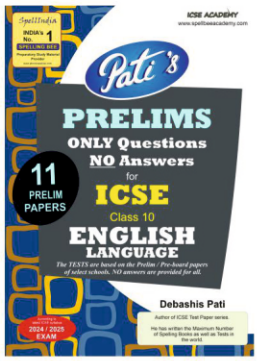

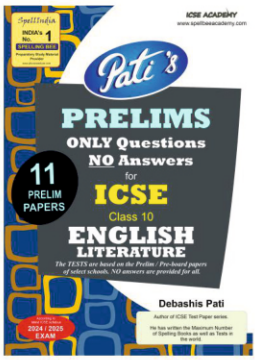

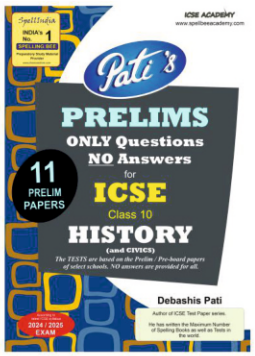

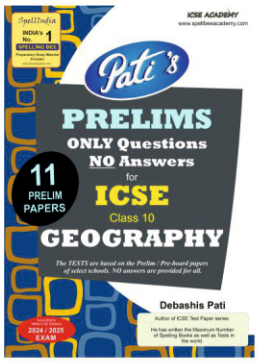

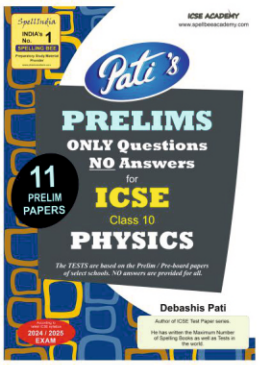

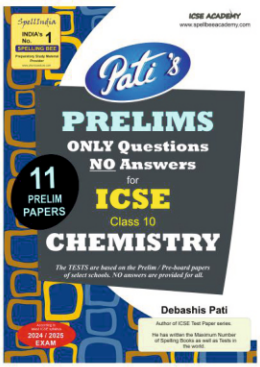

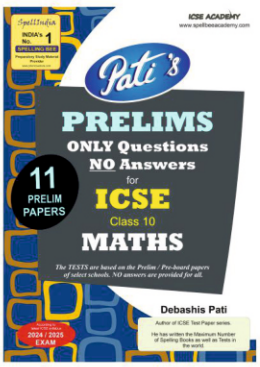

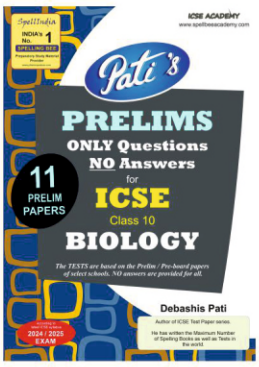



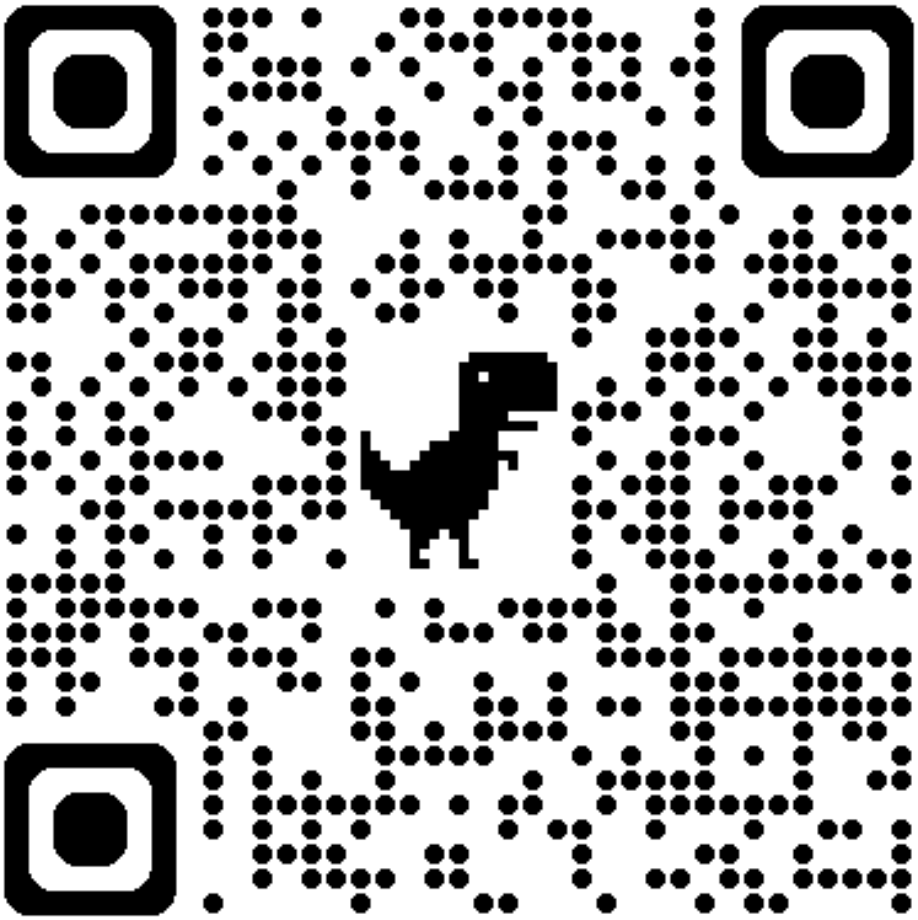

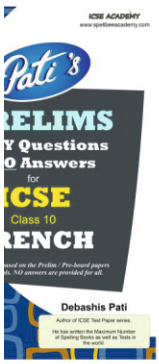

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Set 3a : Question Papers

1. Sulochanadevi Singhania, Thane
2. Vasant Vihar High, Thane
3. Thakur Public, Mumbai
4. Prestige International, Bangalore
5. Swami Vivekananda International, Mumbai
6. Delhi Public School Megacity, Kolkata
7. Vivekananda Mission, Joka
8. Ryan Group of Schools
9. Orion, Mumbai
10. Our Lady of the Queen Mission, Kolkata

2025-2026 - Prelim 2

Pati's ICSE ACADEMY

Question Paper 1

SMT. SULOCHANADEVI SINGHANIA SCHOOL, THANE

Class	Subject	Exam	Date	Marks	Time	Total No. of Printed sides
10	Comp App	PRELIM	03/1/26	100	2 hours	8

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.

Question 1 ***[20 marks]***

1. Which of the following statements is correct regarding escape sequences in Java?
   a. An escape sequence always takes 1 byte in memory.
   b. An escape sequence is stored as a single character and takes 2 bytes.
   c. The \uXXXX escape sequence for Unicode characters takes 4 bytes.
   d. Escape sequences are not valid in Java string literals

2. What will be the output of the following code?

```
String str = "Hello Hi!";
int len = str.length();
double sqrt = Math.sqrt(len);
System.out.println(sqrt);
```

   a. 3
   b. 9
   c. 9.0
   d. 3.0

3. **Assertion** (A): The \t escape sequence in Java is used to insert a double quote character (") into a string.
   Reason (R): The \t escape sequence represents a tab character, which adds horizontal spacing in the text.
   a. Both A and R are true, and R is the correct explanation of A.
   b. Both A and R are true, but R is not the correct explanation of A.
   c. A is true, but R is false.
   d. A is false, but R is true.

4.
```
int[][] array = new int[3][2];
System.out.print ("Number of rows: " + array.length);
System.out.print("Number of columns is: " + array[0].length);
```

   a. Number of rows: 3 and Number of columns is: 3
   b. Number of rows: 3 and Number of columns is: 2
   c. Number of rows: 2 and Number of columns is: 3
   d. Number of rows: 2 and Number of columns is: 2

5. Which of the following principles is not a fundamental principle of Java?
   a. Inheritance
   b. Encapsulation
   c. Polymorphism
   d. Functional Programming

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6. A double dimensional array is of size 5 x 3. Choose the statement to assign value 21 to the last element of the array.

a. a[5][3]=21;
b. a[4][2]=21;
c. a[1][4]=21;
d. a[0][3]=21;

7. Method prototype for a function is :

int compute(char c, double d) Choose the correct alternative to invoke the above function.

a. int x = compute(A, 5.3);
b. int x = compute(A, 0.0);
c. int x = compute('A', 5.3);
d. int x = compute(\U0000, 0.0);

8. A method to convert an integer to String :

a. Integer.parseInt()
b Integer.parseString()
c. Integer.toString()
d. String.valueOf()

9. What is the type of error, if any, when two methods have the same method signature?

a. Runtime error
b. Logical error
c. Syntax error
d. No error

10. Keyword to indicate that the defined function is not giving back the value to its calling function but just returning the control of execution.

a. return
b. void
c. Void
d. Return

11. System.out.println("Winter".compareTo("Winner")); will result to

a. 7
b. 6
c. 38
d. 39

12. char a[][]={{'s','a','o', 'p'},{'t','a','p', 'e'},{'p','a','s', 'o'}};
System.out.println(a[0][0]+""+a[0][2]+""+a[2][2]);

a. 337
b. sos
c. soo
d. Syntax error

13. Siri wants to play track between 1 to 25 which random function would be ideal for coding

a. (int)Math.random()*25
b. (int)Math.random()*24
c. (int)(Math.random()*25+1)
d. (int)Math.random()

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14. **Assertion(A)**: A String literal can be called an array of characters.

Reason(R): An array is a collection of multiple data values of the same data type under one name.

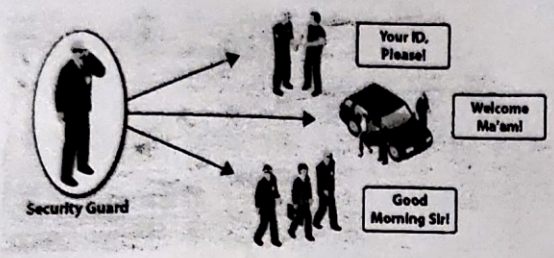
a. Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)

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

15. Security guard shows which feature of Java in the following picture:



a. Polymorphism

b. encapsulation

c. inheritance

d. abstraction

16. Pick out the wrong declaration.

a. int []a=new a[size];

b. float []t[]=new float[10][0];

c. char c[][]=new char[4][];

d. byte d[]=new byte[15];

17. Precedence of the operator from higher to lower is

a. Logical, relational, mathematical, unary

b. Unary, mathematical, relational, logical

c. Unary, relational, mathematical, logical

d. Logical, relational, unary, mathematical

18.  clock is a representation of

a. Nested loop

b. Delay Loop

c. Finite loop

d. All of the above

19. Keyword used when method does not return any value to the calling method.

a. null

b. empty

c. return

d. void

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20. int arr[]=new int[4];
System.out.print(arr[3]);

a. Syntax error
b. Garbage value
c. 0
d. Run time error

Question 2

1. Give the output of the following program segment [2]

```
public class penpencil
{ int pencil;
  static int pen;
   void status()
   {
    System.out.println(++pencil);
    System.out.println(++pen);
   }
   void main()
   {   penpencil ob=new penpencil();
         ob.status();
      penpencil ob1=new penpencil();
         ob1.status();
         ob.status();
   }
}
```

2. What is the output for the following code [2]

```
String s1="1234";
String s2="100";
int n1=Integer.parseInt(s1);
int n2=Integer.parseInt(s2);
System.out.println(n1+n2);
System.out.println(s2+n2);
```

3. Write JAVA code for the following statements. [2]
   a. Create an object name **mp4** belonging to the class **Music.**
   b. Declare an array to store first 5 prime numbers.

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4. State the data type and value of res after the following statements are executed. [2]

```
String ch = "test@data";
res = ch.substring(1,5).charAt(3);
System.out.println(res);
```

5. Give the output of the following program segment [2]

```
int arr[][] = {{1, 3}, {5, 7}, {9, 11}};
    for (int i=0; i< 3; i++)
    {
for (int j=0; j<2; j++)
    {
System.out.print(arr[i][j] + " ");
    }
    System.out.println();
}
```

6. Give the output of the following program segment and 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);
```

7. [2]

```
Class ABC
{     int a , b ;
   ABC(int x,int y)
    {     a = x ;
          b = y ;
    }
   void display ( )
   {  System.out.println(a + " , " +b);
   }
   }
```

a. State the type of constructor.

b. Name the local variable.

8. Write the function prototype to declare the function reverse which accepts two strings and returns the length of the longest string [2]

Smt. Shobhana Deshpande

9. Give the output of the following program segment [2]

```
String arr[]={"DELHI","CHENNAI","MUMMBAI","LUCKNOW","JAIPUR"};
System.out.print(arr[4].charAt(0));
System.out.print(arr[1].charAt(5));
System.out.print(arr[2].charAt(0));
System.out.print(arr[0].charAt(1));
System.out.print('S');
```



10. Suman is trying to type the code to get the sum of right diagonal of a 4 x 4 matrix however, the program does not work as expected. Help her getting the code fixed to get the desire output. [2]

```
void main()
{   int[][] arr = {{1,  2,  3,  4}, {5,  6,  7,  8},{9, 10, 11, 12}, {13,14, 15,16}};
    int sum = 0;
    for (int i = 0; i < 4; i++)
        {       sum += arr[i][4 - i];
        System.out.println("Sum of right diagonal = " + sum);
        }       }
```

Section B(60 marks)

Attempt any four questions from this section

The answer in this section should consist of the programs in either BlueJ environment or any other program environment with Java as the base. Each program should be written using Variable description / Mnemonic codes such that the logic of the program is clearly depicted. Flowcharts and Algorithms are not required.

Question 3

Define a class GasBill with the following specifications:

class ; GasBill

Instance variables/data members:

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.

Member Methods:

GasBill() : To initialise data members

void accept() : to accept the name of the customer and number of units consumed.

void calculate() : 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.

void print() : To print the details as follows:

Name of the customer	Units consumed	Billing amount
_____	_____	_____

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Question 4

The Indian Women's Cricket Team details are stored in two single-dimensional arrays as listed below: one array contains the **names** of the cricketers, and the other contains their corresponding **jersey** numbers. Write a program to sort and display the team members in **ascending** order based on their **jersey** numbers, ensuring that each player's name remains correctly associated with her jersey number.

name[ ]= { Harmanpreet Kaur , Smriti Mandhana , Shafali Verma, Jemimah Rodrigues, Deepti Sharma, Renuka Singh Thakur, Richa Ghosh, Shreyanka Patil, Radha Yadav, Arundhati Reddy, Harleen Deol}

jersey[ ]= {23, 18, 17, 5, 6, 10, 13, 31, 21,20,33}

Question 5

Write a program that accepts a word as input, converts it to uppercase, and then checks whether the word is a **palindrome**, a **special word**, or **just a normal word**. A palindrome word is one that remains the same when reversed, while a special word is one whose first and last characters are the same else a normal word.

Sample Input: MADAM **Output:** Palindrome word

ANKITA **Output:** Special word

DHANUSH **Output:** Normal word

Question 6

Write a program to input two numbers. Check and print whether they are amicable pair or not. Two numbers are amicable if the first number is equal to the sum of the proper divisors of the second number, and if the second number is equal to the sum of the proper divisors of the first number.

Example: 220, 284

Proper divisors of **220** = 1,2,4,5,10,11,20,22,44,55,110 ***(1+2+4+5+10+11+20+22+44+55+110 = 284)***

Proper divisors of **284** = 1,2,4,71,142 ***(1+2+4+71+142 = 220)***

Question 7

Write a program to overload following functions

void pattern() : to display the following pattern(without string function)

```
1 2 3 4 5
2 3 4 5 1
3 4 5 1 2
4 5 1 2 3
5 1 2 3 4
```

void pattern(String x) : to display following pattern using string function

```
P
PR
PRE
PREL
PRELI
PRELIM
```

Write **main ( )** method to call the above functions.

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Question 8

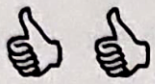
Write a program to input and store values in a 4 × 4 two-dimensional integer array. The program should display only the boundary elements of the array, while the inner elements should be shown as blank spaces, as illustrated in the given example.

Sample Input :

1	2	3	4
5	6	7	8
6	7	8	9
3	4	5	6

Output:

1	2	3	4
5			8
6			9
3	4	5	6

 **ALL THE BEST** 

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GAET

VASANT VIHAR HIGH SCHOOL & JR. COLLEGE

PREBOARD ASSESSMENT 2025-26

SUB: COMPUTER APPLICATIONS

GRADE : 10

TIMING : 2 Hrs.

No of sides: 9

DATE: 12.01.2026

MARKS: 100

Maximum Marks: 100

Time allowed: Two hours

Answers to this Paper must be written on the paper provided separately.

*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 bracket [ ].

SECTION A

(Attempt all questions from this Section.)

QUESTION 1

[20]

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

(i) Which of the following is an example of a wrapper class in Java?

(a) String
(b) Integer
(c) Array
(d) Vector

(ii) The output of int x = 10; System.out.println(x++); is:

(a) 10
(b) 11
(c) 12
(d) Error

(iii) String s = "JAVA"; int len = s.length(); The value of len is:

(a) 3
(b) 4
(c) 5
(d) 0

(iv) Which access specifier has the widest scope?

(a) private
(b) public
(c) protected
(d) default

(v) Consider the 2D array int arr[2][3] = {{1,2,3}, {4,5,6}}; What is arr[1][2]?

(a) 2
(b) 3
(c) 5
(d) 6

(vi) Which method is used to convert a String to an integer?

(a) Integer.toInt("25")
(b) Integer.parseInt("25")
(c) Int.parse("25")
(d) String.toInteger("25")

(vii) An infinite loop can be created using:

(a) for(int i=0; i<5; i++)
(b) while(true)
(c) do-while with false condition
(d) None of the above

(viii) The output of Math.sqrt(16) is:

(a) 4.0
(b) 4
(c) 16.0
(d) Error

(ix) Which OOP principle is depicted in the adjoining picture?

(a) Data abstraction
(b) Polymorphism
(c) Inheritance
(d) Encapsulation



(x) Which of the following pairs demonstrates INCORRECT method overloading?

(a) void test(int a) { } and void test(int a, int b) { }
(b) void test(int a) { } and int test(int a) { return 0; }
(c) void test(int a, double b) { } and void test(double a, int b) { }
(d) void test(Integer a) { } and void test(int a) { }

(xi) **Assertion (A):** Constructor overloading is possible in Java.

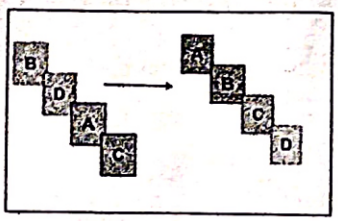
Reason (R): Constructors can have the same name but different parameter lists.

(a) Both (A) and (R) are true and (R) is a correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not a correct explanation of (A).
(c) (A) is true and (R) is false.
(d) (A) is false and (R) is true.

(xii) The method used to concatenate two strings is:

(a) append()
(b) concat()
(c) combine()
(d) merge()

(xiii) What is the process done in the adjoining picture?



(a) Sorting the list in descending order
(b) Searching the character in the list
(c) Sorting the list in ascending order.
(d) None of the above:

(xiv) Assertion (A): Call by value is known as pure method.

Reason (R): The original value of variable does not change as operation is performed on copied values.

(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

(xv) Which of the following will cause a compilation error?

(a) void test(int a) { } and int test(int a) { return 0; }
(b) void test(int a) { } and void test(double a) { }
(c) void test(int a, int b) { } and void test(int b, int a) { }
(d) None of the above

(xvi) To replace the letter E with # in a string S, which is the correct statement?

(a) S.replace('#','E')
(b) S.replace('E')
(c) S.replace('E', '#')
(d) S.replace('#')

(xvii) What is the output of the following?

```
int a = 5, b = 10;
System.out.println(a > b ? a : b);
```

(a) 5
(b) 10
(c) true
(d) false

(xviii) String x = "Code"; System.out.println(x.substring(1,3)); will output:

(a) C
(b) Co
(c) od
(d) ode

(xix) The statement that brings the control back to the calling method is:

(a) break
(b) System.exit(0)
(c) continue
(d) return

(xx) Which of the following is the correct way to declare and initialize a String array with 5 elements?

(a) String s[] = new String[5];
(b) String s = new String[5];
(c) String[] s[5];
(d) new String s[5];

QUESTION 2

(i) Write the Java expression to find the maximum of three numbers using the Math class. [2]

(ii) Write the output of the following String method: [2]

```
String a = "Programming";
String b = "Language";
System.out.println(a.substring(0,3) + b.substring(3,7));
```

(iii) Write the Java statement to create an object named 'student' of the class 'Scholar' which takes one integer parameter and one string parameter. [2]

(iv) Convert the following while loop into a for loop: [2]

```
int i = 1, sum = 0;
while(i <= 10)
{
sum += i;
i++;
}
System.out.println(sum);
```

(v) Consider the following program and give the output: [2]

```
class Number
{
int num;
Number()
{       num = 5;
}
Number(int x)
{       num = x * 2;
}
void display()
{       System.out.println(num);
}
public static void main()
{
Number n1 = new Number();
n1.display();
Number n2 = new Number(6);
n2.display();
}
}
```

(vi) (a) Name one String method which returns a character [2]

(b) Name one String method which performs comparison.

(vii) Krithi was asked to write a program to calculate the circumference of a circle, but made errors in the code. Specify the type of error, correct and write the error-free code. [2]

```
class Circle
{
double circumference(double r)
{
int c;
c = 2 * 3.14 * r;
r = 5;
return c;
}
}
```

Specify the type of error, correct and write the error-free code.

(viii) Consider the array: int marks[] = {45, 78, 56, 92, 34, 88, 67} [2]

(a) What is the output of System.out.println(marks[2] + marks[4])?
(b) What is the index of the minimum element?

(ix) (a) Write a Java statement to initialize a 2×3 array with the first 6 prime numbers. [2]

(b) What will be the result of arr[1][0] + arr[0][2] from the above array?

(x) Give the output and count how many times the loop executes: [2]

```
String word = "OBJECT";
for(int i = 0; i < word.length(); i += 2)
System.out.println(word.substring(i, i+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]**

Define a class BankAccount with the following specifications:

Member Variables:

- int accNumber – stores the account number
- String accName – stores the account holder's name
- double balance – stores the current balance
- double interest – stores the interest earned

Member Methods:

- void accept() – prompts the user to input account number, account holder's name, and current balance using Scanner class methods only.
- void calculateInterest() – calculates the annual simple interest at 5% per annum.
- void display() – displays the account number, account holder's name, current balance, and interest earned.

Write a main method to create an object of the class and invoke the methods of the class with respect to the object.

Question 4 **[15]**

Define a class Anagram to accept two words from the user and check whether they are anagrams of each other or not. An anagram of a word is another word that contains the same characters only the order of the characters is different.

For example : NOTE and TONE are anagrams of each other.

Question 5 **[15]**

Define a class to accept values into a 3×3 integer matrix and perform the following operations:
Calculate and display the following each in a separate method:

1. Sum of all elements in the matrix
2. Sum of each row
3. Sum of the main diagonal elements
4. Transpose of the matrix

Call all the methods using a main method

Example:

Matrix:
1 2 3
4 5 6
7 8 9

Sum of all elements = 45
Sum of rows: Row 1 = 6, Row 2 = 15, Row 3 = 24
Diagonal sum = 15 (1+5+9)
Transpose:
1 4 7
2 5 8
3 6 9

Question 6 **[15]**

Define a class to initialize a list of student names (given below) in an array and search for a name input by the user, using the Linear Search technique.

Print "Student Found at index [index number]" if the name is found, otherwise print "Student not found".

Student Names:

"Aisha", "Beena", "Chirag", "Divya", "Esha", "Farhan", "Ganga", "Henry"

Question 7

[15]

Define a class to overload the method compute() as follows:

Method 1: void compute(int n) – To calculate and display the sum of digits of n.
Example: If n = 345, output is: 3+4+5 = 12

Method 2: double compute(double side1, double side2, double side3) – To calculate and display the area of a scalene triangle using the formula:
area=$\sqrt{s(s-a)(s-b)(s-c)}$ where s is the semi-perimeter.

Method 3: String compute (String str) – To display the string in reverse order.
Example: If str = "HAPPY", output is: YPPAH

Question 8

[15]

Define a class to accept an array of 10 integers. Check if the sum of elements at even indices is greater than, less than, or equal to the sum of elements at odd indices. Print appropriate messages.

Sample Input:

Array: [10, 20, 30, 40, 50]

Sample Output:

Sum of even indices: 90 (10+30+50)
Sum of odd indices: 60 (20+40)
Even indices sum is greater than odd indices sum

****

Pati's ICSE ACADEMY

Question Paper 3

THAKUR PUBLIC SCHOOL
(Established 2003)
(Affiliated to the Council for the Indian School Certificate Examinations, New Delhi)
ISO 9001 : 2015 CERTIFIED

Computer Applications

Maximum Marks: 100

Time allowed: Two Hours

Answers to this paper must be written on the paper separately.
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.

Attempt **all** questions from **Section A** and **any four** questions from **Section B**.
The intended marks for questions or parts of a question are given in the brackets [ ].

SECTION – A [40 Marks]

(Attempt **all** questions from this section.)

Question 1.

Choose the correct answer and write the correct option. [20]

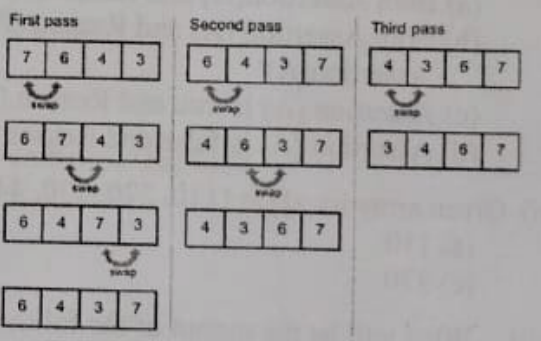
i) Which among the following operator is used to access individual members of an object?
(a). (dot) (b) + (plus)
(c) – (minus) (d) / (divide)

ii) I know how to drive a car but don't know how combustion engine works...Which java principle can be applied here?
1. Abstraction 2. Polymorphism 3. Inheritance 4. Encapsulation
(a) Abstraction and Polymorphism
(b) Abstraction and Encapsulation
(c) Polymorphism and Inheritance
(d) Inheritance and Encapsulation

iii) Which of the following String methods results into boolean data type?
(a) trim() (b) equals() (c) replace() (d) concat()

iv) What is the largest possible value that can be stored in short data type?
(a) $2^{63} - 1$ (b) $2^{31} - 1$
(c) $2^{7} - 1$ (d) $2^{15} - 1$

v) What type of data structure technique depicted in the below picture?



(a) Bubble sort (b) Linear search
(c) Selection sort (d) Binary search

vi) Ram wanted to count the number of digits in a given number 'n' without using a loop. Which of the following statements is correct to perform the above?
(a) String.valueOf(n).length() (b) Integer.parseInt(n).length()
(c) n.length( ) (d) Integer.valueOf(n).length()

vii)If a method named show( ) is to be invoked using an object 'obj' , which among the following is correct?

(a)obj.show (b) show( ).obj
(c)obj.show( ) (d) show.obj()

viii) Which among the following function is equivalent to Math.sqrt(a)?

(a) Math.cbrt(a); (b) Math. pow(a,1/2.0);
(c) Math. (d) Math. pow(a,1/2)

ix) Java, like all other programming languages uses some statements that allow us to check a condition and execute certain parts of a code depending on whether the condition is true or false. Such statements are called conditional statements. We can also use a conditional statement within another conditional statement. The inner conditional statement is executed only when the outer condition is true. The conditional statement can also be a multiple branching statement.

Based on the above discussion, answer the following questions:

(a) Which of the following is not a decision-making statement?

1. if - else 2. if 3. break 4. if-else-if

(b) A conditional statement used within another conditional statement is known as .....

1. nested conditional statement 2. embedded conditional statement
3. accumulated conditional statement 4. None of the above

(c) Which of the following is called as multiple branching statement?

1. if and only if 2. switch 3. Control 4. shift

(d) Which of the following is not a component of multiple branching statement?

1. break 2. default 3. case 4. pause

xiii) What is the output of the following statement:

"MONOPOLY".lastIndexOf('O');

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

xiv) Assertion: Unboxing is opposite of autoboxing.

Reasoning: It's a system of converting an object of wrapper class into primitive data type

(a) Both assertion and reason are correct, and reason is correct explanations of the assertion
(b) Both assertion and reason are correct, but reason is not correct explanations of the assertion
(c) Assertion is correct, but reason is false
(d)Assertion is wrong and reason is true

xv) Assertion: Functions in programming help in modularizing code for better organization.

Reason: Functions does not allow code reusability by encapsulating a set of instructions that can be used multiple times.

(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) b 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 array int x[] = {110, 220, 330, 440}; the value of x[1] is ..... .

(a) 110 (b) 220
(c) 330 (d) Invalid value

xvii) What will be the output of the following statement?

String s= "JavaProgramming";
System.out.println(s.substring(4, 11).toUpperCase());

(a) Programm (b) PROGRAMM (c) PROGRAM (d) program

(viii) What will this code print ?
```
int arr [ ] = new int [5];
System.out.println(arr);
```
(a) 0
(b) value stored in arr [0]
(c) 0000
(d) garbage value

xix) Assertion: A constructor is a special method in a class that is manually called when an object is instantiated.
Reason: Constructors are used to initialize the object's state and perform setup tasks.
(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

xx) An array a[ ] = {1,2,3,4,5,6} is given. What will be the result of a[3]+2+a[2-1]+1?
(a) 6 (b) 7 (c) 8 (d) 9

Question 2. [20]

(i) The following program segment must print the square root of a number(n) if the user input the choice as 's', otherwise it must print the cube root of a number(n). However, the code has some errors. Fix the code to get appropriate result as per user's choice.
```
int n=sc.nextInt();
char choice = sc.nextChar();
if(choice='s')
System.out.printin (Math.cbrt(n));
else
System.out.println (Math.sqrt(n));
```

(ii) What is function prototype (or function declaration)?

(iii) Predict the output (a) along with working:
```
int a=6, b=5;
a += a++ % b++ *a + b++* -- b;
```

(iv) Write a difference between the functions isUpperCase() and toUpperCase().

(v) Consider the following array and answer the questions given below:
int x[ ]={2,4,6,8,10,12,14,16,18,20};
(a) What is the size of the array?
(b) What is the position of 14?

(vi) Give the output of the following:
(a) "ROSE".compareTo("ROJA")
(b) "DEDICATE".replace('D', 'L')

(vii) What is the final value of ctr when the iteration process given below, explain?
```
int ctr=0;
for(int i=1;i<=5;i++)
for(int j=1;j<=5;j+=2)
++ctr;
```

(viii) Protected access method largest which accepts a float type, int type and double type data as parameters and have a byte type as return type.

(ix) Give the output of the following code-snippet:

```
double z[]={0,3,4,5,23.0,4.5};
System.out.println(Math.pow((z[1]+z[3]),2));
System.out.println(z.length);
```

(x) Differentiate between constructor and methods(functions).

SECTION B [60 Marks]

(Attempt **any four** questions from this Section.)

The answers in this Section should consist of the ***Programs in either Blue J environment or any program environment with Java as the base.***

Each program should be written using ***Variable descriptions / Mnemonic Codes*** *so that the logic of the program is clearly depicted.*

Flow-Charts and Algorithms ***are not required.***

Question 3. [15]

A bank announces new rates for Term Deposit Schemes for their customers and Senior Citizens as given below:

Term	Rate of Interest (General)	Rate of Interest (Senior Citizen)
Up to 1 year	7.5%	8.0%
Up to 2 years	8.5%	9.0%
Up to 3 years	9.5%	10.0%
More than ₹3 years	10.0%	11.0%

The 'senior citizen' rates are applicable to the customers whose age is 60 years or more. Write a program to accept the sum (p) in term deposit scheme, age of the customer and the term. The program displays the information in the following format:

Amount Deposited	Term	Age	Interest earned	Amount Paid
xxx	xxx	xxx	xxx	xxx

Question 4. [15]

Write a program to accept the year of graduation from school as an integer value from the user. Using the Binary Search technique on the sorted array of integers given below, output the message "Record exists" if the value input is located in the array. If not, output the message "Record does not exist". {1982, 1987, 1993, 1996, 1999, 2003, 2006, 2007, 2009, 2010}

Question 5. [15]

Define a class to accept a string. Check if it is a Special String or not.
A String is Special if the number of vowels equals to the number of consonants.
Example: MINE
Number of vowels = 2
Number of Consonants = 2

Question 6.

Write a Java program to determine whether two matrices are equal or not and display the message accordingly. [15]

Question 7.

Write a program to input twenty names in an array. Arrange these names in descending order of alphabets, using the bubble sort technique. [15]

Question 8. [15]

Define a class to overload the method transform as follows:

int transform(int n) - to return the sum of the digits of the given number

Example: n = 458 output : 17

void transform(String s) - to convert the given String to upper case and print

Example: if S = "Blue" Output : BLUE

void transform (char ch) - to print the character ch in 3 rows and 3 columns using nested loops.

Example: if ch= '@'

Output :

@@@
@@@
@@@

Question Paper 4

Prestige International School

Affiliated to CISCE KA 359, New Delhi
Sy. No 65. Virgo Nagar Post, Rampura, Bangalore-49

Grade: X | **Second Preparatory Exam, January - 2026** | **Marks**: 100 Marks
Date: | Subject: COMPUTER APPLICATIONS | **Duration:** 2 Hours

Answer to this paper must be written on the paper provided separately.
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 from this **section**)

Question 1: **[20 M]**

Choose the correct answer from the given options.

i. To create an instance method the keyword used is _____.
a) Instance b) Non-Static c) Static d) No keyword required

ii. A teacher instructs: "Keep watering the plants until the water bucket is empty." Which construct is suitable?



a) if b) while c) for d) if – else – if

iii. What will the following code print?
char arr[] = { 'A', 'B', 'C'};
System.out.println((int)arr[0]);
a) A b) 65 c) 66 d) Compilation error

iv. The method to check if a character is an alphabet or not is:
a) isLetter(char) b) isUppercase(char) c) isAlpha(char) d) isLowercase(char)

v. What will be the output of the following statement?
System.out.println('A'+'B');
a) AB b) 131 c) 131.0 d) A+B

vi. Give the value of the following expression 6 – 2 + 10%4+7.
a) 13 b) 10 c) 12 d) 14

vii. A method which does not modify the value of variables is termed as:
a) Impure method b) Pure method c) Primitive method d) User defined method

viii. Assertion: An argument is a value that is passed to a method when it is called.
Reasoning: Variables which are declared in a method prototype to receive values are called actual parameters.
a) Both Assertion and Reasoning are true, Reasoning is a correct explanation of Assertion.
b) Both Assertion and Reasoning are true, but Reasoning is not correct explanation of Assertion.
c) Assertion is true, but Reasoning is false.
d) Assertion is false, but Reasoning is true.

ix. Write corrections in the statements given:
x= Integer.parseint('345');, where x is an integer variable.
a) x= Integer.Parseint('345');
b) x= Integer.getint('345');
c) x= Integer.parseInt('345');
d) x= Integer.inputint('345');

x. If the function showStudent() is called with 4 different objects, how many different outputs will it produce?
a) 1 b) 2 c) 3 d) 4

xi. What are the values in a after multAll(3) executes?

```
private int[] a=[1, 3, -5, -2];
public void multAll(int amt)
{
int i=0;
while (i < a.length)
{
a[i] = a[i] * amt;
i++;
}
}
```

a) [1, 3, -5, -2] b) [3, 9, -15, -6] c) [2, 6, -10, 4] d) infinite loop execution

xii. A program segment is as follows:

```
char a;
a="tdmalhotra".charAt(4);
```

What will be the result of the segment?
a) m b) 1 c) a d) None of these

xiii. Given a string str = "Diwalivacation". The return value of System.out.println(str.charAt(str.lenght() – 5)==(str.charAt(3))); will be:
a) truefalse b) true c) false d) falsetrue

xiv. A _____ class is accessible both inside and outside a package.
a) public b) protected c) open d) All

xv. In a class Car, the constructor is used to initialise the brand and model attributes. A new Car object is created by passing the arguments "Toyota" and "Camry". Which constructor type is being used when initialising the Car object?
a) Default constructor b) Parameterised c) Constructor overload d) Static constructor

xvi. Which access specifier provides the widest scope in Java?
a) private b) protected c) public d) default

xvii. If the element 0 of an array carries a float, the rest of the pockets will be of type:
a) int b) float only c) Object d) Any data type

xviii. Given a single- dimensional array int x[] = {11, 22, 33, 44}; Which of the following will be the value of x[1+2]?

a) 11 b) 22 c) 33 d) 44

xix. The property of an array that gives the number of elements in it is: _____.

a) len b) arraysize c) size d) length

xx. In Java. method signature is the combination of:

a) Method name b) Access specifier c) Return type d) All of the above

Question 2: **[20 M]**

i. Name the keyword which:

a) Indicates that a method has no return type.

b) Makes the variable as a class variable.

ii. Differentiate between Call by Value or Pass by Value and Call by Reference or Pass by Reference.

iii. What will be the output of the following code?

```
int i=4, j=8;
i + = i++ - ++j +i;
System.out.println("i = "+i);
System.out.println("j = "+j);
```

iv. Rewrite the following using a ternary operator:

```
if(num%2 ! = 0)
System.out.println("Odd");
else
System.out.println("Even");
```

v. Give the output of the following code:

```
int a[] ={2, 4, 6, 8, 10};
a[0] =23;
a[3] =a[1];
int c =a[0] + a[1];
System.out.println("Sum= "+c);
```

vi. Name the following:

a) What is the main condition to perform binary search on an array?

b) A sort method in which consecutive elements are NOT compared.

vii. a) Write the Java statement to initialise the first 6 multiples of 4 in a 3 × 2 array.

b) What is the result of x[1][1] + x[2][2] of the above array?

viii. Give the output of the following string functions:

a) "MISSISIPPI".indexOf('S') + "MISSISIPPI".lastIndexOf('I')

b) "CABLE".compareTo("CADET")

ix. If int y=10 then find int z=(++y *(y++ +5));

x. Write two characteristics of a constructor.

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.

Question 3:

DTDC a courier company, charges for the courier based on the weight of the parcel. Define a class with the following specifications:

Class name: Courier

- Member variable: name – name of the customer
  weight – weight of the parcel in kilograms
  address – address of the recipient
  bill – amount to be paid
  type – 'D' – domestic, 'I' – inter-national.
- Member methods:
  void accept() – to accept the details using the methods of the Scanner class only.
  void calculate() – to calculate the bill as per the following criteria:

Weight in Kgs	Rate per Kg
First 5 Kgs	₹ 800
Next 5 Kgs	₹ 700
Above 10 Kgs	₹ 500

An additional amount of ₹ 1500 is charged if the type of the courier is I(International)

void print() – to print the details.

Write a main method to create an object of the class and invoke the methods of the class with respect to the object.

Question 4:

Define a class to accept into a 3 × 3 integer array. Calculate and print the matrix and SUM of each row.

Example:

Matrix:

1 2 3
4 5 6
7 8 9

Row Sums:
Row 1: 6
Row 2: 15
Row 3: 24

Question 5:

Define a class **SelectionSort** to initialise the following data in an array:
Initialise: {22, 11, 55, 44, 66, 88, 99, 01}
Sort in ascending order using selection sort and print original array and sorted array.

Question 6:

Define a class to overload the method compute() as follows:

- void compute(): To print the given format using nested loops.

1
1 2
1 2 3
1 2 3 4

- double compute (double r): To return area of circle. $A = \pi r^2$.
- int compute (int a, int b): To return GCD of two integers.

Question 7:

Define a class to accept a string and convert the same to uppercase, create and display the new string by **replacing each vowel by the immediate next character** and **every consonant by the previous character**. The other characters remain the same.

Example:

Input: #IMAGINATION@2026

Output: #JLBFJMBSJPM@2026

Question 8:

Define a class to accept a number. Check whether the given number is an **automorphic number** or **not**. An automorphic number is a number whose square ends with the same number itself.

Example: 25 is an automorphic number because its square is 625, and 25 appears as the last two digits.

****

Swami Vivekanand International School

Grade : X | PRELIMINARY EXAMINATION (2025-26) | Marks : 100
Date : 07/01/2026 | COMPUTER APPLICATION | Time : 2 hrs.

Answer to this Paper must be written on the paper provided separately.
*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** questions from this **Section**)*

Question 1

Choose the correct answers to the questions from the given options. **[20]**

(Do not copy questions, write only answers)

1. The string class method to join two string is _____.
   (a) concat (string)
   (b) <String>.joint(string)
   (c) concat(char)
   (d) concat()

2. State the datatype of res—
   char ch='9';
   res = Character.isDigit(ch);
   (a) char
   (b) boolean
   (c) int
   (d) String

3. Method which reverses a given number is known as _____.
   (a) Impure method
   (b) Pure method
   (c) Constructor
   (d) Destructor

4. What will Math.sqrt (Math.ceil (15.3)) return?
   (a) 16.0
   (b) 16
   (c) 4.0
   (d) 5.0

5. Identify the type of casting—
int x=12;
long y=x;
(a) Explicit
(b) Implicit
(c) Hybrid
(d) Object

6. The blueprint that defines the variables and the method common to all of a certain kind is termed as _____.
(a) class
(b) object
(c) package
(d) method

7. The access specifier that gives the most accessibility is _____.
(a) public
(b) package
(c) private
(d) protected

8. The keyword that stores the address of the currently calling object is _____.
(a) static
(b) new
(c) object
(d) this

9. Identify the type of error – "Multiplication operator is used when the operation should be division".
(a) runtime
(b) syntax
(c) logical
(d) command

10. If int x[][] = {{2,4,6,},{3,5,7}}; what will be the value of x[1][0]?
(a) 3
(b) 2
(c) 6
(d) 5

11. What will be the output?
"COMMENCEMENT". lastIndexOf('M')
(a) 2
(b) 3
(c) 9
(d) 8

12. The keyword used to distinguish between instance variable and class variable _____.

(a) static
(b) this
(c) compare
(d) new

13. What will be the value for following—

If int a[] = {1,3,5,7,9};
a[1] + " " + a[2]

(a) 8
(b) 4
(c) 35
(d) 3 5

14. The keyword which indicates that the method returns no value is _____.

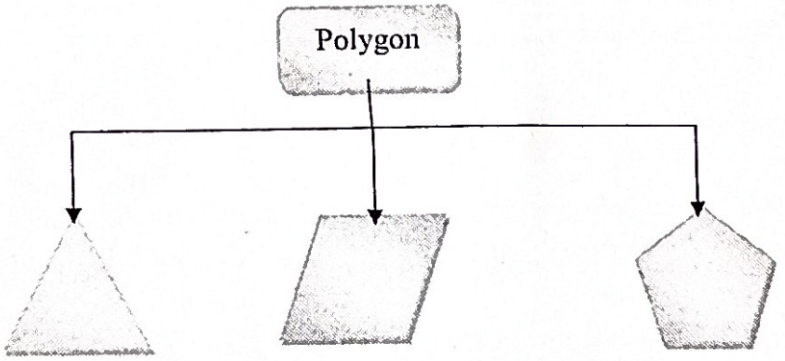
(a) public
(b) static
(c) void
(d) abstract

15. State the type of loop—

for (int i=5; i!=0 ; i -=2)
System.out.println(i);

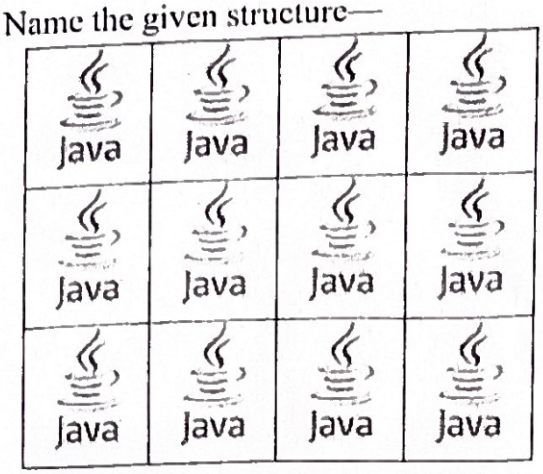
(a) finite
(b) null
(c) fixed
(d) infinite

16. Consider the given picture and choose correct option—



(a) Polygon is the object and pictures are classes
(b) Both polygon and pictures are classes
(c) Polygon is a class and pictures are objects
(d) Both polygon and pictures are objects

17. Name the given structure—



(a) 3 * 4 two dimensional array
(b) 4 * 3 two dimensional array
(c) 3 * 4 one dimensional array
(d) 4 * 3 one dimensional array

18. The concept of having more than one constructor with different types of parameters is known as _____.
(a) Copy constructor
(b) Method overloading
(c) Constructor Overloading
(d) Overloaded method

19. **Assertion (A):** Autoboxing is the automatic conversion of the primitive types into their corresponding object wrapper class.
Reason (R): Autoboxing is automatic casting of a float datatype into the int datatype.
(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 correct explanation of Assertion (A).
(c) Assertion (A) is true and Reason (R) is false.
(d) Assertion (A) is false and Reason (R) is false.

20. **Assertion (A):** String.trim() method removes leading and trailing whitespace from a string.
Reason (R): String.trim() method removes all whitespace characters from a string.
(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 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.

Question 2:

1. What will be the output of following-- [2]
   (a) double res = Math.pow("345".indexOf('5') , 3);
   (b) String s = "Examination";
   System.out.println (s.charAt(2) == s.charAt(6));

2. What is the purpose of 'new' operator? [2]

3. What will be the output of the following character class methods-- [2]
   (a) Character.toUpperCase('a');
   (b) Character.isLetterOrDigit('#');

4. Consider the given array and answer the following—
   int x[] = {4,7,9,66,72,0,16};
   (a) What is the length of an array?
   (b) What is the value of x[4]?

5. Evaluate the following for a=2, b=3 and c=4 [2]
   x = a%2 + ++b * c++

6. What will be the output of the following program segment-- [2]

```
String a = "Smart Phone";
String b = "Graphic Art";
String h = a.substring(2,5);
String k = b.substring(8).toUpperCase();
System.out.println(h);
System.out.println(k.equalsIgnoreCase(h));
```

7. Differentiate between static and non-static data members. [2]

8. Consider the given program and answer the questions given below-- [2]

```
class temp
{
    int a;
    temp()
    {
        a=10;
    }
    temp(int z)
    {
        a=z;
    }
    void print()
    {
        System.out.println(a);
    }
    void main()
```

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```
{
        temp t= new temp();
        temp x = new temp (30);
        t.print();
        x.print();
    }
}
```

(a) What concept of OOPs is depicted in the above programs with two constructor?

(b) What is the output of main() method> [2]

9. Answer the following—

(a) Declare a double two-dimensional array of 3 rows and 4 columns.

(b) State the total number of bytes occupied by the above array

10. Write a prototype of a function sum that takes an integer variable as its argument and returns a float value. [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]

Write a program to store the following integers in a 2D array of order 4 * 4. Print the maximum and minimum number present in it.

5	3	5	-7
2	-9	8	4
-3	1	7	0
1	2	9	6

Question 4 [15]

Define a class with a method overload () as per the specifications given below—

double overload (int n) → To calculate and return the sum of the given series.

$1 - 2 + 3 - 4 + 5 - 6$ ..... n terms, where n is a positive integer.

void overload (int x, char ch) → if ch=s or S, print square of the number x else print the cube of x.

void overload () → To print the pattern

```
E
E   X
E   X   A
E   X   A   M
```

Question 5 [15]

BSNL charges for using telephone from their consumers according to the calls made-

No. of Calls	Charges in Rs.
up to 50 calls	Free
for next 100 calls	Rs. 1.0 per call
for next 200 calls	Rs. 0.90 per call
for more than 350 calls	Rs. 0.80 per call

fixed monthly rental charge is Rs. 180 per month for all consumers.

Design a class *'Telephone'* to calculate and print the monthly telephone bill indicating no. of calls and total amount to be paid by the consumers as per the given specifications—

- Member variable
  - int calls
  - double bill
- Member methods
  - Telephone() – default constructor to initialise calls to 0 and bill to 0.0
  - void accept() – to input the number of calls.
  - void compute() – to calculate the total bill as per given criteria (also include 5% GST)
  - void display() – To print the details of the consumer in the given format

    No. of Calls: _____

    Total Bill Amount: _____

Also define main () method to create the object of the above class and call the above methods.

Question 6 [15]

Write a program to input a string and print out the text with the uppercase and lowercase letters reversed, but all other characters should remain the same as before.

Input → NatuReBeauTy@2026

Output →nATUrEbEAUtY@2026

Question 7 [15]

Write a program to input a number & check whether the number is a Peterson number or not. A number is said to be Peterson number if the sum of factorial of each digit is equal to the number itself.

e.g. 145 → sum of factorial of each digit →1! + 4! + 5! = 1 + 24 + 120 = 145

Question 8 [15]

Write a program to read 10 numbers in a single dimensional array and sort them using selection sort method.

Delhi Public School Megacity, Kolkata

Pre Board-I Examination
Session : 2025-2026
Subject : Computer Applications
Class-X

Maximum Marks : 50 **Time : 1 Hour**

Answers to this Paper must be written on the paper provided separately.
You will **not** be allowed to write during the first **10** minutes.
This question paper consists of 3 pages
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 two** questions from **Section B.***
The intended marks for questions or parts of questions are given in brackets[ ].

SECTION A

Question 1

Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answers only.) [10 x 1 = 10]

(i) Given array int x[] = {11, 22, 33, 44}; the value of x[1+2] is ..... .
(a) 11
(b) 22
(c) 33
(d) 44

(ii) A linear search .....
(a) can be used with sorted arrays only
(b) can be used with unsorted arrays only
(c) can be used with both sorted and unsorted arrays
(d) cannot be used with arrays

(iii) A constructor has ..... return type.
(a) a void
(b) more than one
(c) String[] args
(d) no

(iv) In constructor overloading, ...
(a) All constructors must have the same name as that of the class name with different number of arguments.
(b) All constructors must have the same number of arguments.
(c) All constructors must have arguments of type String[] args.
(d) All constructors must have no arguments.

(v) What is the return type of the indexOf() method in the String class?
(a) char
(b) String
(c) int
(d) boolean

(vi) What will be the output of the following statement?
System.out.println("Hello".concat("World"));

(a) Hello
(b) World Hello
(c) Hello World
(d) HelloWorld

(vii) Implicit type conversion is possible in which of the possible cases?
(a) byte to int.
(b) double to float.
(c) float to int.
(d) int to char.

(viii) In which technique the values of actual parameters copied to the formal parameters?
(a) Call by reference
(b) Call by value
(c) Call by argument
(d) Call by method

(ix) _____ variable can be accessed by calling with the class name.
(a) Instance
(b) Local
(c) Class
(d) None of these

(x) What is the corresponding wrapper class for the int data type?
(a) Integer
(b) int
(c) Int
(d) integer

Question 2

Answer the following questions. [5 x 2 = 10]

(i) Write a java statement to declare and initialize a single dimensional array of size five with even elements that comes immediately after 11.

(ii) A student wrote the following code segment, intending to print 11 22 33 44:

```
int arr[] = {11, 22, 33, 44};
for (int i = 1; i <= 4; i++)
        System.out.println(arr[i]);
```

However, the program crashed with an error. Find out and rectify the error. Also specify the type of error.

(iii) What will be the output of the following Java program?

```
class string_class
{
    public static void main(String args[])
    {
        String obj = "hello";
        String obj1 = "world";
        String obj2 = "hello";
        System.out.println(obj.equals(obj1) + " " + obj.equals(obj2));
    }
}
```

(iv) a) Name the String method which is used to extract a single character from a String?

b) Under which package String class is present?

(v) Find the output of the following method definition and also write the mathematical operation it is carrying out when n=10.

```
void test1(int n)
{
for(int x=1; x<=n; x++)
if(n%x == 0)
System. out.println(x);
}
```

SECTION B

*(Answer **any two** 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]

Write a program to accept the average marks of 10 students in a double type of array. Rearrange the array in descending order of their average marks using selection sort technique. Display the average marks along with their associated ranks (1 to 10) in the given format.

Rank **Average_Marks**

....

Question 4: [15]

Write a program to accept a two dimensional 4 x 5 array. Display the array in matrix format. Count and display the number of single digit, double digit and multidigit number (more than two digits) present in the array.

Question 5: [15]

Define a class with the following specifications:

Class name : Calculate

Instance variables : int num, f, rev

Member Methods:

Calculate (int n) : to initialize num with n, f and rev with 0 (zero)

int prime() : returns 1, if number is prime otherwise returns 0

int reverse() : returns the reverse of the number

Define a main() method to accept a number, create object of the class and invoke the member methods to check and display whether the number is a Prime Palindrome number or not.

[A prime palindrome number is an integer that is both a prime number and a palindrome. A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself. A palindrome number reads the same forwards and backwards.]

(A Unit of Vivekananda Education Society)
PRE-BOARD EXAMINATION, ICSE - 2026
CLASS - X

MAXIMUM MARKS : 100 SUBJECT : COMPUTER APPLICATIONS WRITING TIMINING : 2HOURS

Answers to this Paper must be written on the paper provided separately. 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*** questions)

Question 1: [1 x 20 = 20]

(i) When an array is passed to a method, what does the method receive?
(A) The reference of the array (B)A copy of the array
(C)Length of the array (D) Copy of first element

(ii) When the operators have the same priority in java, they are evaluated from _____ in the order they appear in the expression.
(A) left to right (B) right to left (C)any of the order (D) depends on the compiler

(iii) Which String method results only in a whole number?
(A) indexOf() (B) length() (C)compareTo() (D) Both (A) and (B)

(iv) Identify what can directly access and change the value of the variable res ?

```
public class Solution
 { private int res = 100; }
```

(A) Any class (B) only Solution class (C) Any class that extends Solution
(D) Classes in the same package

(v)What will be the output/Error of the following code snippet?

```
int x = 5;
x *= 3 + 23/3;
System.out.println(x);
```

(A) 50 (B) 22 (C) Compilation Error (D) 40

(vi) Which of the following is a valid statement to print the following sentence:
Raj said "Good morning"
(A) System. out. println("Raj said "Good morning"");
(B) System. out. println("Raj said "\Good morning"\");

(C) System. out. println("Raj said \"Good morning\" ");
(D) System. out. println("Raj said Good morning");

(vii)

156	20	154	20
130	20	130	20
62	17.67	161	20
158	17.5	154	20

How many bytes are occupied by the above two-dimensional array?
(A) 96 bytes (B) 128 bytes (C) 72 bytes (D) 64 bytes

(viii) Which data type would be the best for storing Population of a country ?
(A)int (B) double (C) short (D)long

(ix) Find the output/Error of the following code snippet.

```
for (int i = 0; i<5; i=2 )
System.out.print("Hello");
```

(A) "Hello" will be printed 3 times (B) "Hello" will be printed 1 time
(C) Compilation Error (D) Infinite printing of "Hello"

(x) The advantage/s of user-defined methods are/is:
(i) Reusability
(ii) Complexity
(iii) Modularity
(A) Only (i) (B) (ii) and (iii) (C) Only (iii) (D) (i) and (iii)

(xi) Find the output/Error of the following code.

```
int i=20+ +9- -12+ +4- -13+ +19;
System.out.println(i);
```

(A) Compilation Error (B) 33 (C) 36 (D) 77

(xii)Assertion (A): A derived class can be a base class for another class.
Reason (R): In multilevel inheritance, a derived class can serve as a base class.
(A) Both Assertion and Reason are true and Reason is a correct explanation of Assertion.
(B) Both Assertion and Reason are true and Reason is not a correct explanation of Assertion.
(C)Assertion is true and Reason is false (D) Assertion is false and Reason is true

(xiii) Assertion (A): An Array is a data type which can store multiple homogeneous data elements.
Reason(R): Elements of an array are stored in an indexed manner.
(A) Both Assertion and Reason are true and Reason is a correct explanation of Assertion.
(B) Both Assertion and Reason are true and Reason is not a correct explanation of Assertion.
(C)Assertion is true and Reason is false (D) Assertion is false and Reason is true

(xiv) Find the output/Error of the following code snippet:

```
public void main()
  {
    System.out.print(10 * 20 + "Hello");
    System.out.print("Hello" + 10 * 20); }
```

(A)200HelloHello1020 (B) 200HelloHello200 (C) Compilation Error
(D) 10*20HelloHello10*20

(xv) Find the output/Error of the following code snippet:

```
public void main() {
String s = "abc";
 s.toUpperCase();
 System.out.print(s);
 }
```

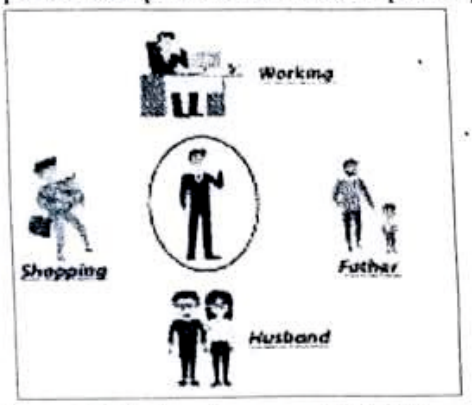
(A)abc (B) ABC (C) Compilation Error (D) Runtime Error

(xvi) Find the output of the following code snippet:

```
public void main() {
 Integer num1 = 500;
 Integer num2 = 500;
System.out.println(num1==num2 ?"num1 == num2":"num1 != num2");
 }
```

(A) num1 != num2 (B) num1==num2 (C) 500!=500 (D) 500=500

(xvii) The following picture depicts which OOPs principle.

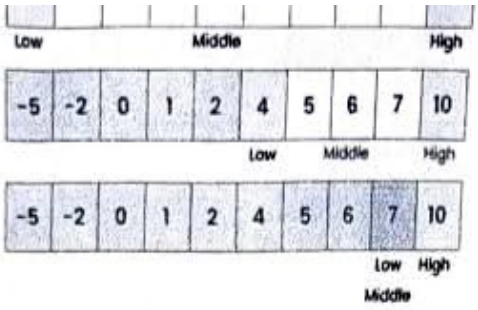


(A) Encapsulation (B) Inheritance (C) Polymorphism (D) Abstraction

(xviii) Which statement about the char data type in Java is **true**?
(A) char occupies 8 bits and stores ASCII characters.
(B) char is signed and stores only alphabets.
(C) char is an unsigned data type. (D) char can store negative values.

(xix) The output of the statement Math.floor(-0.1) + Math.round(-6.5) is
(A) -7.0 (B)-5.0 (C) -6.0 (D) -8.0

(xx) Name the method depicted in the following picture:



(A)Selection Sort (B) Bubble Sort (C) Linear Search (D) Binary Search

Question 2: [10x2=20]

(i) Write two differences between call by value and call by reference.

(ii) Write the following expression in java:

$$\frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

(iii) What will be the output of the following code snippet?

```
String s1="SQp-25" ,s2="";
  int i=-1,Num;
  while (++i< s1.length() )
   {  if ( Character.isDigit(s1.charAt(i)) )
       { Num=s1.charAt(i);
         s2=s2+Num;
       }
    else if ( Character.isLetter(s1.charAt(i)))
       s2=s2+s1.charAt(i+1);
    else
      s2=s2+'*';
   }
   System.out.println(s2);
```

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(iv) Find the output of the following code snippet:

```
int i ,j ,s=0;
for ( i =1 ; i<=7; i++)
    for( j=1 ; j<=5 ; j++)
      s +=i++ + ++j;
System.out.println(s);
```

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(v) Convert the following if-else into switch-case.

```
if ( n > 59 )
   System.out.println("Big");
   else if  ( n > 29)
      System.out.println("Average");
```

```
else
    System.out.println("Small");
```
[where n is a positive integer]

(vi)

(a) Write a Java statement to print the index of the second occurrence of the letter 'S' in the word "MISSISSIPPI".

(b)Find the output:

```
System.out.println("Universe".substring(1,5).charAt("Universe".substring(2, 6).compareTo("fever")));
```

(vii) Bikash has written the following code to replace all the diagonal elements of a square matrix with 1. However, the code is not giving the desired result when the array a[][] is passed to the method diagonalFill(). Read the code given below and answer the followings.

```
void diagonalFill(int a[][])
{
  for (int i = 0; i < a.length; i++) {
        for (int j = 0; j < a.length; j++) {
          if ( i != j )
            a[i][j] = 1; } }
}
```

(a)What type of error Bikash is facing?

(b) Find the error and rewrite the correct code.

(viii) Find the output of the following code snippet.

```
int[] a = {3, 6, 1, 5, 2};
for (int i = 0; i < a.length; i++)
      for (int j = i + 1; j < a.length; j++)
        if (a[i] > a[j])
        a[i] = a[i] - a[j];
for (int i=0;i<a.length;i++)
        System.out.print(a[i]);
```

(ix) Define Abstraction .

(x) What are the values of x and y when the following statements are executed?

```
int a = 63, b = 36;
boolean x = (a < b ) ? true : false;
int y= (a > b ) ? a : b;
```

Group - 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.

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Question 3

Define a class Student with the following:

Class name: Student

Data Members:

String name : to store the name of a student

int roll : to store the Roll number of a student

int marks[ ] : to store the marks of a student in three subjects (out of 100)

double avg : to store the average marks of a student

char grade : to store the grade of the student

Member functions:

Default constructor.

void input() : to input the necessary data members .

void cal() : to calculate the average of the three marks and assign the grade according to the table given below.

void display() : to display all the data members .

Student compare(Student) : to compare the average marks of the current object with the parameterized object and return the object with the higher average .

Write a main() function to create three objects and display the details of the student who has the highest average marks. (You may assume there is only one student with the highest average.)

Average	Grade
>=85	A
>=60 and < 85	B
>=40 and <60	C
<40	D

Question 4

[15]

Create a class with the following details:-

class : Arrangment

Data Member :

sent : to store a sentence in uppercase

Member functions :

Constructors.

boolean isUnique(String w): return true if w is an unique word otherwise false.

[A word is said to be 'Unique' if none of the letters present in the word are repeated. e.g. COMPUTER]

String shift(String w) : Create a new word by shifting all the consonants of the word to the beginning, followed by the vowels, and return it . e.g. SPOON will be SPNOO

void check() :Extract the words from the sentence sent and store them in an array . First, display the unique words from the array. Then, display all the words after rearranging each word so that all consonants come first, followed by vowels, using the shift() function.

Write main() to create object and call the method/methods to accomplish the task.

Question 5 [15]

Design a class to overload a function print( ) as follows:

void print(int m , int n) : print all the Bouncy numbers between m and n (both inclusive).
[A bouncy number is a positive integer whose digits are neither in increasing order nor in decreasing order, e.g. 155349 - It is a Bouncy number because the digits are unsorted.
whereas 135 , 532 are not Bouncy numbers because the digits are sorted.]

void print(double x): Find the sum of the first ten terms of the following series and display it.
$S = x - (2x^2+1) + (3x^3+2)/2! - (4x^4+3)/3! + (5x^5+4)/5! - (6x^6+5)/8!$ .....

Write main() to call the functions.

Question 6 [15]

(i) A sentence can be printed in a special fashion by taking a positive integer. This integer indicates the word number in the sentence. Shift each alphabet of that word one step forward in a circular fashion(i.e Z will be A , z will be a).
Write a program to input a sentence and a positive integer. Then, display the sentence in a special fashion.

Example 1:
Input sentence: Time and Tide wait for none
Input integer : 3
Output sentence: Time and Ujef wait for none

Example 2:
Input sentence: Time and Tide wait for none
Input integer : 7
Output sentence: Not enough word in the sentence

(ii) Write a function that accepts a word in uppercase as a parameter and prints the following pattern. For the word "BLUEJ" the pattern will be :

J
EJ
UEJ
LUEJ
BLUEJ

Question 7 [15]

Write a program that initializes a character array of size 7 with alphabets. Sort the array in ascending order using the Bubble Sort algorithm, ignoring the case of the alphabets. Then, input an alphabet and check whether it is present in the array or not using linear search technique. If it is present, remove it and rearrange the array.

Array:	B	c	b	x	C	X	A

Sorted Array :	A	B	b	c	C	x	X

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Input alphabet to be searched: C

Rearrange array:

A	B	b	c	x	X	

Question 8 [15]

A class teacher wants to keep the records of 40 students of her class, along with their names in a one-dimensional array and the marks obtained (out of 100) of five different subjects in a two-dimensional array. Write a program to do the following:

(i) Input the name and marks of each student in the respective arrays.

(ii) Display the name of the student whose total is highest. (Assume there is only one highest total.)

(iii) Input a name and display the total of that student.

RYAN GROUP OF SCHOOLS

ACADEMIC YEAR 2025-26

ICSE, PRE BOARD II EXAMINATION

STD: X MARKS: 100

SUB: COMPUTER APPLICATION DURATION:

General Instructions

Answer to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in the question paper.

This paper is divided in 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

Q 1. Choose the correct answers to the questions from the given options. [20]

1. What will this code produce as output?

```
int a [] = {2, 4, 6, 8, 10};
a [0] = 23;
a [3] = a [1];
int c = a [0] + a [1];
System.out.println("Sum = " + c);
```

a. 26
c. 23
b. 25
d. 27

2. The automatic conversion of a primitive data type into an object of its corresponding wrapper class is called:

a. auto-boxing
c. explicit conversion
b. shifting
d. None of the above

3. _____ members are accessible inside their own class, classes within the package and subclasses.

a. Private
c. Protected
b. Public
d. None of these

4. Which of the following are invoked directly when an object is created?

a. Methods
b. Constructors
c. Arrays
d. Strings

5. Assertion (A) : The factory of object means a factory that produces the objects.
Reason (R) : Class is known as object factory because single class generates a lot of objects.

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.

6. int code [ ] = [25, 37, 38, 42];
The given statement

a. assigns 37 to code [1]
b. assigns 38 to code [3]
c. assigns 25 to code [1]
d. assigns 42 to code [0]

7. A benefit of encapsulation is _____.

a. The interface of the class will be smaller.
b. The implementation can be changed without altering programs that use the class.
c. The implementation of the class will be smaller.
d. The interface can be changed without modifying programs that use the cla

8. Determine the output of the following code segment.

```
String myStr1 = "Hello";
String myStr2 = "Hello";
System.out.println(myStr1.compareTo(myStr2));
```

a. 11
b. 3
c. 2
d. 0

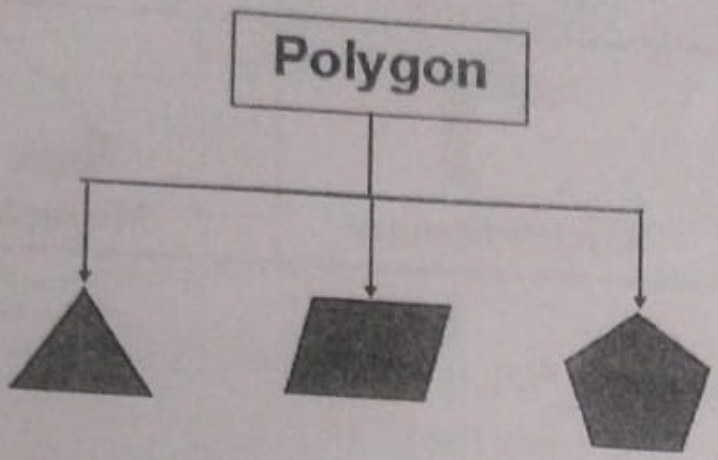
9. In Java, a library of classes is called_____.

a. An application
b. A directory
c. A package
d. A folder

10. The order of the three top level elements of Java source file is _____.

a. Import, package, class
b. Package, import, class
c. class, import, package
d. Any order

11.



Consider the above picture and choose the correct statement from the following:

a. Polygon is the object and the pictures are classes
b. Both polygon and the pictures are classes
c. Polygon is the class and the pictures are objects
d. Both polygon and the pictures are objects

12. The output of the statement "talent".compareTo("genius") is:

a. 11
b. 0
c. –11
d. 13

13. What is the output of Math.ceil(5.4)+Math.ceil(4.5)?

a. 10.0
b. 12.0
c. 11.0
d. 9.0

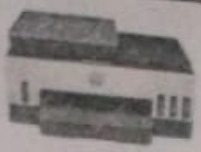
14. The keyword used to call package in the program:

a. extends
b. import
c. export
d. package

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

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

16.

 Mouse	 Keyboard	 Printer
 Scanner	 Barcode Scanner	 Microphone

Consider the Two dimensional array P[2][3], of peripherals (input / output devices given above, state the index of the device Keyboard.

a. P [1][1]
b. P[1][2]
c. P[0][1]
P[0][0]

17. Assertion (A): In switch case break statement avoids fall through.
Reason (R): break statement helps to execute only one case at a time.

a. Both (A) and (R) are true and (R) is a correct explanation of (A).
b. Both (A) and (R) are true and (R) is not a correct explanation of (A).
c. (A) is true and (R) is false.
d. (A) is false and (R) is true.

18. A physical education teacher asks the students to do the side stretch as shown below,10 times. Which programming construct the teacher uses?



a. if
b. for
c. switch
d. if else if

Q 5. [15]

Design a class name ShowRoom with the following description:

Instance variables / Data members:

String name - To store the name of the customer

long mobno - To store the mobile number of the customer

double cost - To store the cost of the items purchased

double dis - To store the discount amount

double amount - To store the amount to be paid after discount

Member methods:

ShowRoom() - default constructor to initialize data members

void input() - To input customer name, mobile number, cost

void calculate( ) - To calculate discount on the cost of purchased items, based on following criteria

Cost	Discount (in percentage)
Less than or equal to ₹ 10000	5%
More than ₹ 10000 and less than or equal to ₹ 20000	10%
More than ₹ 20000 and less than or equal to ₹ 35000	15%
More than ₹ 35000	20%

void display () - To display customer name, mobile number, amount to be paid after discount.

Write a main method to create an object of the class and call the above member Methods.

Q 6. Design a class to overload a method Number () as follows: [15]

1. void Number (int num , int d) - To count and display the frequency of a digit in a number.

Example:

19. System.out.println("I said,\"It\'s wise to obey elders.\""); The output of the above statement is:

a. I said,'It is wise to obey elders.'

b. I said, "It's wise to obey elders."

c. I said,It's wise to elders.

d. "'It's wise to obey elders.'"

20. Consider the following code snippet.

```
if (c > d)
    x = d;
else
    x = c;
```

Choose the correct option if the code mentioned above is rewritten using the ternary operator.

a. x= (c> d)?c : d;

b. x= (c> d)?c : c;

c. x= (c> d)?d : c;

d. x= (c> d)? d: d;

Q 2. Answer the following questions. [20]

1. What will be the values of i and z after the following code executed?

```
int i = 5, z = 15;
do {
   i = i + 3;
   z--;
    } while (i < 20);
```

1st loop i = 8, z = 14
2nd loop i = 11, z = 13
3rd loop i = 14, z = 12
4th loop i = 17, z = 11
i = 20, z = 10

2. Write the statement in Java for the following mathematical expression.

3. Determine the number of bytes and bits used by an integer array with 5 elements. 160 bits, 20 bytes

4. What will be the output after executing the following code?

```
for(int i=4 ;i<20;i+=4){
System.out.print(" " +Integer.toString(2*i));}
```

OP 8 16 24 32

5. The following code has some error(s). Rewrite the correct code and underlining all the corrections made.

```
int counter=0;
integer i=15; num;
for(num=i; num>=1; num--)
{
If i%num=0
{
counter=counter+1;
} }
```

6. Write the output for the following:

```
String s1 = "Life is Beautiful";
System.out.println ("Earth" + s1.substring(4));
System.out.println(s1.endsWith("L"));
```

Earthis Beautiful

false

7. What is the data type returned by the following library methods?
   a. isWhitespace() Boolean
   b. compareToIgnoreCase() int/float

8. Write the Java expression for (a + b)x.

   Rewrite the following code using the if-else statement:

```
int m= 400;
double ch = (m>300) ? (m / 10.0) * 2: (m / 20.0) - 2;
```

9. Consider the given array and answer the questions given below:

```
int x[]={4,7,9,66,72,0,16};
```

   a. What is the length of the array?
   b. What is the value in x[4]?

10. What will the following function returns ?

a. Math.round(Math.pow(2.5,3));

b. Math.abs(Math.max(-25,25));

SECTION B

*Attempt **any four** questions from this section*

The answers in this Section should consist of the Programs in either Blue J environment on 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

Flow-Charts and Algorithms are not required.

Q 3. [15]

Define a class to accept values into a 4 × 4 integer array. Calculate and print the NORM of the array. NORM is the square root of sum of squares of all elements.

1	2	1	3
5	2	1	6
3	6	1	2
3	4	6	3

3 Sum of squares of elements =

1+4+1+9+25+4+1+36+9+36+1+4+9+16+36+9 = 201 NORM=

Square root of 201 = 14.177446878757825

Q 4. [15]

Define a class to accept a String and Print if it is a Super string or not. A String is Super if the number of uppercase letters are equal to the number of lower case letters. [Use Character & String methods only] (String Handling)

Example: "COmmITmeNt"

Number of Uppercase letters – 5

Number of Lowercase letters – 5

String is a Super String

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num = 2565685

d = 5

Frequency of digit 5 = 3

2. void Number (int n1) - To find and display the sum of even digits of a number.
Example:

n1 = 29865

Sum of even digits = 16

Write a main method to create an object and invoke the above methods.

Q 7. Write a program to input and store integer elements in a double dimensional array of size 3 x 3 and find the sum of elements in the left diagonal. [15]

Example:

1	3	5
4	6	8
9	2	4

Output: Sum of the left diagonal elements = (1 + 6 +4) = 11

Q 8. [15]

A disarium number is a number where the sum of its digits, each raised to the power of their respective positions, equals the number itself.

e.g. 135 $1^1 + 3^2 + 5^3 = 1 + 9 + 125 = 135$

Hence, 135 is a disarium number.

Design a class Disarium to check, if a given number is disarium number or not.

1 : 200

Vile Parle Mahila Sangh's
ORION SCHOOL (CISCE)

Grade: X | Preliminary Examination - II (2025-2026) | Date: 08-01-2026

Time Duration: 2 Hrs. | Sub : Computer Applications | Max. Marks: 100

Answers to this Paper must be written on the paper provided separately.
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** questions)*

Question 1. [20]

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

1) The members with protected access are accessible by the methods of
   a. Only the same class
   b. Only the subclasses
   c. All the classes in the same package
   d. All the classes in the same package and subclasses outside the package

2) Identify an instance method from Java API among the ones given below :
   a. sqrt()
   b. nextLine()
   c. isUpperCase()
   d. parseInt()

3) Assertion (A): The if-else-if ladder executes faster than switch-case for the same number of conditions.
   Reason (R): As soon as one of the conditions in the if-else-if ladder is true, the rest of the ladder is bypassed.
   a. Both Assertion (A) and Reason (R) are true and R is the correct explanation of A
   b. Both Assertion (A) and Reason (R) are true and R is not the correct explanation of A
   c. Assertion (A) is false and Reason (R) is true
   d. Assertion (A) is true and Reason (R) is false

4) Abhijit has a habit of making notes while studying any subject. Sometimes, he writes the notes in a notebook, sometimes he types them in a Word document on his laptop, and at times he uses the Notes app on his smartphone. Which feature of Object-Oriented Programming is represented in this situation?
   a. Encapsulation
   b. Abstraction
   c. Inheritance
   d. Polymorphism

5) Predict the output of the following code :

```
System.out.println(Math.pow (Math.max (Math.floor (-12.99),10),2));
```

a. 100
b. 100.0
c. 144.0
d. 169.0

6) Paras has written the following code to find the sum of numbers from 1 to n. However, he is not getting the correct answer. Identify the type of the error.

```
class Demo
{
    public static void main(int n)
    {
        int sum = 0;
        for (int i = 1; i <= n; i++);
          sum += i;
        System.out.println(sum);
    }
}
```

a. Syntax
b. Logical
c. Runtime
d. No Error

7) Which of the following are mandatory in a for loop statement?

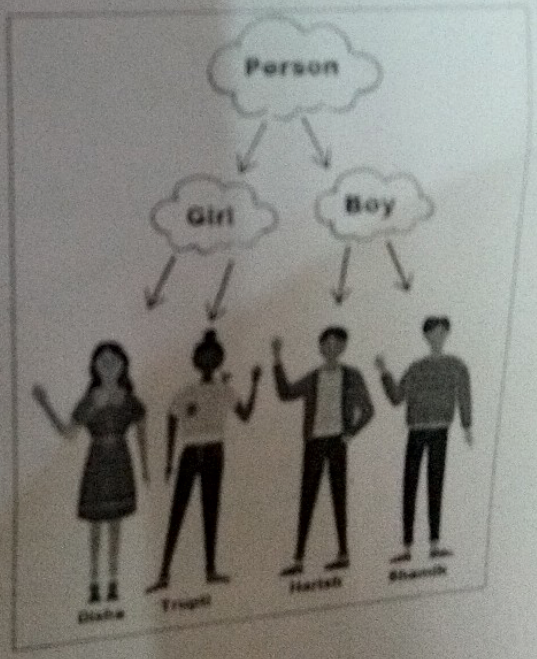
1. Initialization
2. Condition
3. Update Statement
4. Two semicolons

a. 1, 2 and 3
b. Only 2
c. Only 4
d. All 4

8) What will be the output of

```
String str = "long lasting";
System.out.println(str.lastIndexOf("L"));
```

a. -1
b. 0
c. 1
d. 5



9) Which of the following statements is true regarding the picture given above.

a. Person is a class and Girl and Boy are objects of the class.
b. Person, Girl, Boy, Disha, Trupti, Harish and Shamik are all classes.
c. Person, Girl and Boy are classes and others are objects.
d. Person, Girl, Boy, Disha, Trupti, Harish and Shamik are all objects.

10) Assertion (A): A do-while loop executes its loop body at least once, even if the condition is false initially.

Reason (R): In a do-while loop, the condition is checked after the loop body is executed.

a. Both Assertion (A) and Reason (R) are true and R is the correct explanation of A
b. Both Assertion (A) and Reason (R) are true and R is not the correct explanation of A
c. Assertion (A) is true and Reason (R) is false
d. Assertion (A) is false and Reason (R) is true

11) What will be the output of the following code?

```
String a[] = {"Sun", "Moon", "Earth", "Star", "Comet", "Galaxy"};
System.out.println(a.length+ " " + a[2].length());
```

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

12) During an oral exam, a teacher asks a set of questions individually to every student in the class. The same set of questions is repeated for each student, and marks are awarded based on their responses. Which programming construct is illustrated in this situation?

a. if-else-if ladder
b. switch-case
c. do-while loop
d. nested loop

13) Which of the following statements is incorrect for the given prototype :

Create (int n, String s)

a. Create( ) is an instance method.
b. Create( ) does not return any value.
c. Create( ) gets values from two parameters.
d. Create( ) is a constructor.

14) Which of the following String methods return an integer?

1. length( )
2. indexOf()
3. compareTo()
4. charAt()

a. Only 1
b. 1 and 2
c. 1, 2 and 3
d. All 4

15) Identify the process depicted in the code below:

```
long a = Integer.parseInt("9823");
```

a. Implicit Conversion
b. Explicit Conversion
c. Unboxing
d. Autoboxing

16) What will be the output of :

```
String name[] = {"Minal", "Prashant", "Harshita", "Lasya", "Basanti"};
System.out.println(name[4].substring(2,5).concat(name[2].substring(4)));
```

a. asyashita
b. syant
c. sanhita
d. sansh

17) What happens if two case labels are identical in a switch block?

a. Only the first case will execute
b. Both cases will execute
c. default case will execute
d. Compile-time error

18) Which of the following correctly lists the sizes of primitive data types in Java?

a. char = 2 bytes, short = 2 bytes, int = 4 bytes, double = 8 bytes
b. byte = 2 bytes, short = 4 bytes, int = 8 bytes, long = 16 bytes
c. char = 1 byte, short = 2 bytes, int = 4 bytes, long = 8 bytes
d. byte = 1 byte, short = 2 bytes, long = 4 bytes, double = 8 bytes

19) Arrange the following statements to display the first n terms of the Fibonacci series –

0, 1, 1, 2, 3, 5, ...

In the Fibonacci series, each term from third one is the sum of the previous two terms.

(i) System.out.print(a + " ");

(ii) a = b; b = c;}

(iii) int a = 0, b = 1, c;

(iv) for (int i = 1; i <= n; i++) {

(v) c = a + b;

a. (iii), (i), (iv), (v), (ii)
b. (iii), (iv), (i), (v), (ii)
c. (iv), (iii), (i), (v), (ii)
d. (iii), (iv), (v), (i), (ii)

20) Predict the output the following code.

```
int x = 20;
System.out.println(x++ + ++x);
```

a. 42
b. 43
c. 2022
d. 2122

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Question 2.

1) Write Java expression for : $\sqrt[3]{\frac{(a+b)^3}{2a-3b}}$ [20]

2) What will be the value of x after executing the following code?

```
int x=5, y=3;
x *= ++y - x-- %--y + x++;
```

3) Identify the type of literals:

a. 1.275E4

b. '='

c. 0x254

d. "A"

4) Convert the following switch statement into an equivalent if-else-if ladder:

```
switch(type)
{
    case 'M':
    case 'm': System.out.println("Member"); break;
    case 'N':
    case 'n': System.out.println("Non-member"); break;
    default: System.out.println("Unknown Category");
}
```

5) Praket has written a Java class that contains a constructor and several instance methods. However, he is unable to create an object of this class for calling its methods from other classes. What could be the most likely reason? Also, suggest a solution.

6) Predict the return value of the following code :

a. "MAGNET".compareTo("MAGIC")

b. "Advertisement".substring("Words".indexOf('r'), 8)

c. (int)("School".charAt(2)+4)

d. "Pre".concat("Description".substring(3))

7) Rewrite the code by converting for loop into an exit controlled loop.

```
int x, y;
for (x = 18, y = 2; x >= 2; x -= 2)
y = y + x;
System.out.println(y);
```

8) Answer the following questions based on the given array **arr** :

{{86, 7, 82, 50}, {23, 56, 34, 8}, {78, 12, 41, 65}, {34, 2, 16, 49}}

a. What is the value stored at position arr[1][3]?

b. Write Java statement to print the element 16 from the array.

9) Write java statements for the following:

a. To create an instance "Tom" of the class "Cat".

b. To invoke a static void method "create" of a class "Employee" from another class.

10) How many times is the following loop executed and what is the output?

```
int p=1, q=0;
String str="9A8B7C6D";
int i=0;
while (i<str.length())
{
    if (Character.isDigit(str.charAt(i)))
        System.out.println ((str.charAt(i)-48)*2);
    i++;
}
```

VEDANSORION

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]**

PhysioBuild Training Center offers fitness training sessions for two categories of customers: **Beginner** and **Advanced**. The training charges **per session** depend on the **number of sessions subscribed** . Write a Java program to calculate the total amount to be paid by the customer, as described below:

Class Name: **PhysioBuild**

Data Members:

String name – Name of the customer
long phone – Contact number of the customer
category – Beginner or Advanced
int sessions – Number of sessions subscribed
double charges – Final amount payable

Member Methods:

1. **input()**: To read the name of the customer, phone, category and number of sessions subscribed.
2. **process()**: To calculate the total amount to be paid, as given below:

Number of Sessions	Charges per Session	
	Beginner	**Advanced**
First 10 sessions	₹ 400	₹ 600
Next 15 sessions	₹ 350	₹ 500
Above 25 sessions	₹ 300	₹ 450

Add ₹1500 as one-time Subscription Fee and GST at 5% to the computed amount to get the final amount payable.

3. **output()**: To display all the details for the customer.
4. **main()**: To create an object of the class and call the methods to accept the required details, calculate the amount payable, and display the bill.

Question 4. **[15]**

Write a program to read the **titles** of 10 books and their corresponding **prices**. Arrange the titles in **alphabetical** order using **Bubble Sort** technique and print them along with their price.

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Question 5. **[15]**

Write a program to read a number and print if it is a **Key number** or not. (*A number is called a Key Number if the sum of its first digit and last digit is a prime number. A prime number is a number greater than 1 that has exactly two factors: 1 and itself.*)

For Example

Input	First Digit	Last Digit	Sum	Expected Output
4729	4	9	13	Key Number
68034	6	4	10	Not a Key Number
174350	1	0	1	Not a Key Number

Question 6. **[15]**

Design a class to overload a function **analyze()** as given below. Call the overloaded methods from the **main**() method.

boolean analyze (char ch)	Return true if the character is a vowel, else return false.
int analyze (int n)	To return the sum of digits of the number.
void analyze (String str)	To check and print if the String is a palindrome. (A palindrome string **is** a string that reads the same forward and backward.)

Question 7. **[15]**

Write a program to read a 2-dimensional array of integers of size *r* rows and *c* columns. Display the array in matrix form. Also, find and display if the array is a **Perfect matrix**.

A matrix is said to be Perfect if the sum of numbers in each column is a perfect square.

For Example –

12	8	7
4	2	21
9	6	8

Sum = 25 16 36

The matrix is a Perfect matrix as sum of columns 25, 16 and 36 are all perfect squares.

Question 8. **[15]**

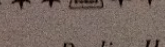
Write a program to read a String and check if it is a **Harmonic string** or not.

A string is said to be Harmonic if the number of uppercase letters is equal to the number of lowercase letters and the number of digits is equal to the number of special characters in the string. Ignore the spaces in the String.

Example :

Hello@123 is not a Harmonic String

JAVA java9# is a Harmonic String



OUR LADY QUEEN OF THE MISSIONS SCHOOL
Park Circus, Kolkata

Pre Board Examination 2025-26

Class: X
Computer Applications

Total Marks: 100
Duration: 2hrs

Answers to this paper must be written on the paper provided separately.
*You will **not** be able 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.

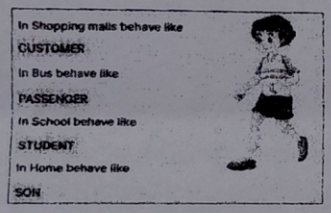
This Paper is divided into two Sections
*Attempt **all** questions from **Section A** and **any four** questions from **Section B***
the intended marks for questions or parts of questions are given in brackets [ ]

SECTION A(40 MARKS)
ATTEMPT ALL QUESTION

Question 1: **[20]**

Choose the correct answer and write the correct option:

(i) Name the feature of Java depicted in the below picture.



(a) Encapsulation
(b) Inheritance
(c) Polymorphism
(d) Data abstraction

(ii) Identify which of the following leads to an infinite loop.

(a) for(i = 10; i != 0; i--)
(b) for(i = 3; i <= 30; i += 3)
(c) for(i = 1; i >= 1; i++)
(d) for(i = 1; i >= 0; i--)

(iii) Which of the following is a valid method prototype?

(a) public int perform (int a; int b)
(b) public perform (int a, int b)
(c) public int perform (int a, int b)
(d) public perform int (int a, int b)

(iv) Which of the following is the CORRECT statement to invoke the method with the prototype int display(int a, char ch)?

(a) int m = display('A', 45);
(b) int m = display( );
(c) int m = display(A,45);
(d) int m = display(45,'A');

(v) Sham was asked to encode a string S, by replacing the letter E with #. Select the appropriate statement:

(a) S.replace('#','E')
(b) S.replace('E')
(c) S.replace('E', '#')
(d) S.replace('#')

(vi) The output of the statement Math.ceil(89.9) + Math.floor(90.5) is:

(a) 0.0
(b) 180.0
(c) 180
(d) 180.4

(vii) System.out.println(Math.ceil(-0.95));

(a) - 0.0
(b) 1
(c) 1.0
(d) 0.0

(viii) String s= "7";
int t =Integer.parseInt(s);
t=t+1000;
System.out.println(t);

(a) 1000
(b) 7
(c) 1007
(d) 10007

(ix) int a=6,b=5;
a += a++ % b++ *a - b+-* --b;

(a) 49
(b) 24
(c) 48
(d) 84

(x) **Assertion (A) :** Inheritance allows a class to inherit the properties and behaviours of another class.

Reason (R) : Inheritance is a fundamental OOP concept that promotes reusability.

(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

(xi) int m, n, p, q=0;
for(m=2;m<=3;++m)
{
for(n=1;n<=m;++n)
{
p=m+n-1;
if(p%3 == 0)
q += p;
else
q += p+4;
}
}
System.out.println(q);
(a) 28
(b) 20
(c) 9
(d) 29

(xii) What value is stored in variable c?
int c="ENGINEERING".charAt("PROGRAMMING" .lastIndexOf('R'));
(a) R
(b) N
(c) 114
(d) 78

(xiii) int a=3;
switch(a--)
{
case 1: ++a;
break;
case 2: a+=2;
case 3: --a;
case 5: a*=3;
break;
default: a++;
}
System.out.println("A = " + a);
(a) A=4

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(b) A=3
(c) A=2
(d) A=1

(xiv) Math.pow(625, 1/2) + Math.sqrt(144)
(a) 17.0
(b) 37.0
(c) 13.0
(d) 37

(xv) What will be the output of the following code;

System.out.println("Technology".compareTo("Techno"));
(a) 6
(b) False
(c) 4
(d) 10

(xvi) How many times the inner loop is executed and the value printed:

```
for(k=1;k<=2;k++)
{
for(m=1;m<=4;m++)
{
}
}
System.out.println(m*2);
```

(a) 8 times and 8
(b) 4 times and 8
(c) 4 times and 4
(d) 8 times and 10

(xvii)

```
int x=1,i=3;
do
{
        x*=i++;
}
while(i<=7);
System.out.println(x);
```

(a) 2510
(b) 2520
(c) 3600
(d) 2500

(xviii) int x[ ][ ] = {{4,3,2}, {7,8,2}, {8, 3,10}, {1, 2, 9}};
What is the value of x[0][0]+x[2][2]?

(a) 13
(b) 14
(c) 12
(d) 4

(xix) What kind of error is the following?

```
char c[]=new char[4];
System.out.println(c[4]);
```

(a) Syntax error
(b) Logical error
(c) Runtime error
(d) No error

(xx) Which feature implements "Java compiled code can run on all operating system".

(a) Platform Independent
(b) Object Oriented
(c) Robust and Secure
(d) Multithreaded

Question 2

a) Give the output for the following expression: [2]

```
int i, j;
for(i=0;i<4;i++)
{
for(j=i; j>=0;j - -)
System.out.print(j);
System.out.println()
}
```

b) [2]

```
int a=10,b=12;
if(a>=10)
a++;
else
++b;
System.out.println(a + "and" + b);
```

c) Predict the output and the number of times the loop runs: [2]

```
class Test
{
 Public static void main(String args[])
 {
   int i;
   for(i=0;i<5;i++)
```

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```
        System.out.println(i-i*i);
    }
}
```

d) Give the output of the following: [2]

```
int a[]={2,4,6,8};
int i,s=0;
for(i=0;i<=1;i++)
{
  s=a[i]+a[3-i];
System.out.println(s);
}
```

e) [2]

```
void strop(String s)
{
char a = s.charAt(3);
int b = s.indexOf('M');
String t = s.substring(3,6);
boolean p = s.equals(t);
System.out.println(a + " " + b + " " + t + " " + p);
}
```

What will be the output for strop("COMPUTER")?

f) What is the value of y after the execution? [2]

y+= ++y + y-- + --y; when int y=8

g) [2]

```
int i;
for( i=5; i>=1; i--)
{
  if(i%2 == 1)
  continue;
System.out.print(i+" ");
}
```

h) Write the java expression for: [2]

$$\sqrt{|a-b|+b^{12}}$$

i) "REDUCE".compareTo("REVOLT") + "ANTARTICA".lastIndexOf('A') [2]

j) What is the data type returned by the following library methods? [2]

i) isWhitespace()

ii) compareToIgnoreCase()

SECTION B
(ATTEMPT ANY FOUR) [15*4=60]

Question 3:

Design a class to overload a method called **PattSeries()** as follows:

(a) void PattSeries() - to generate and display the pattern given below: [15]

```
5  4  3  2  1
4  3  2  1
3  2  1
2  1
1
```

(b) void PattSeries(int n) - To display the following series.

1 12 123 1234 12345 ..... 1234567..n

Question 4.

Write a program to input a number and check and print whether it is a **EvenPal** number or not. **[15]**
The number is said to be an EvenPal number when the number is a palindrome number and the sum of its digits is an even number.

Example: Input :121
121 is palindrome as well as sum of its digits is even 1+2+1=4
Hence 121 is EvenPal

Question 5.

DTDC a courier company charges for the courier based on the weight of the parcel. Define a class with the following description: **[15]**

class name : courier

Member variables:

name	-	name of the customer
weight	-	weight of the parcel in kilograms.
address	-	address of the recipient
bill	-	amount to be paid
type	-	'D' - domestic, 'I'- international

Member methods :

(i) courier(.....) — parameterised constructor to initialise the data members.

(ii)void accept() — To accept and store the details of the customer.

(iii) void calculate() — To calculate the bill as per the following criteria:

Weight in Kgs	Rate per Kg
First five Kgs	Rs. 800
Next five Kgs	Rs. 700
Above 10 kgs	Rs. 500

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An additional amount of Rs. 1500 is charged if the type of the courier is 'I'.

(iv) void print() — To print the details

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

Question 6.

Write a program to create a single dimensional array of 10 integers, print the sum of elements present at even indexes and product of elements present at odd indexes in array. If the sum and the product is same then print "It is a special array" else print "it is not a special array". **[15]**

Sample Input: **11 3 2 2 4 3 11 2 8 1**

Sum of elements at even indexes : 36 (11+2+4+11+8)

Product of elements at odd indexes : 36 (3 x 2 x 3 x 2 x 1)

It is a special array.

Question 7.

Design a class to accept a string and convert the same to uppercase, create and display the new string by replacing each vowel by immediate next character and every consonant by the previous character. The other character remains the same. **[15]**

Example: Input: IMAGINATION@2024

Output: JLBFJMBSJPM@2024

Question 8.

Write a program in Java to accept a word. Check the string for consecutive letters. If more than one pair of letters are consecutive then print It is a magic string else print It is not a magic string. Also print the pairs of consecutive pairs of letters.

Example :

INPUT : DELHI

OUTPUT:

DE

HI

DELHI is a magic string.

****