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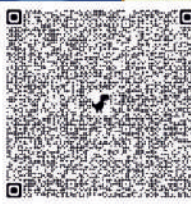
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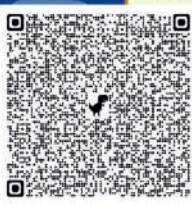
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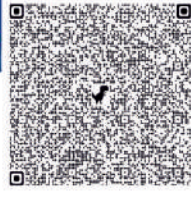
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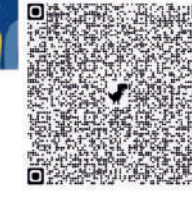
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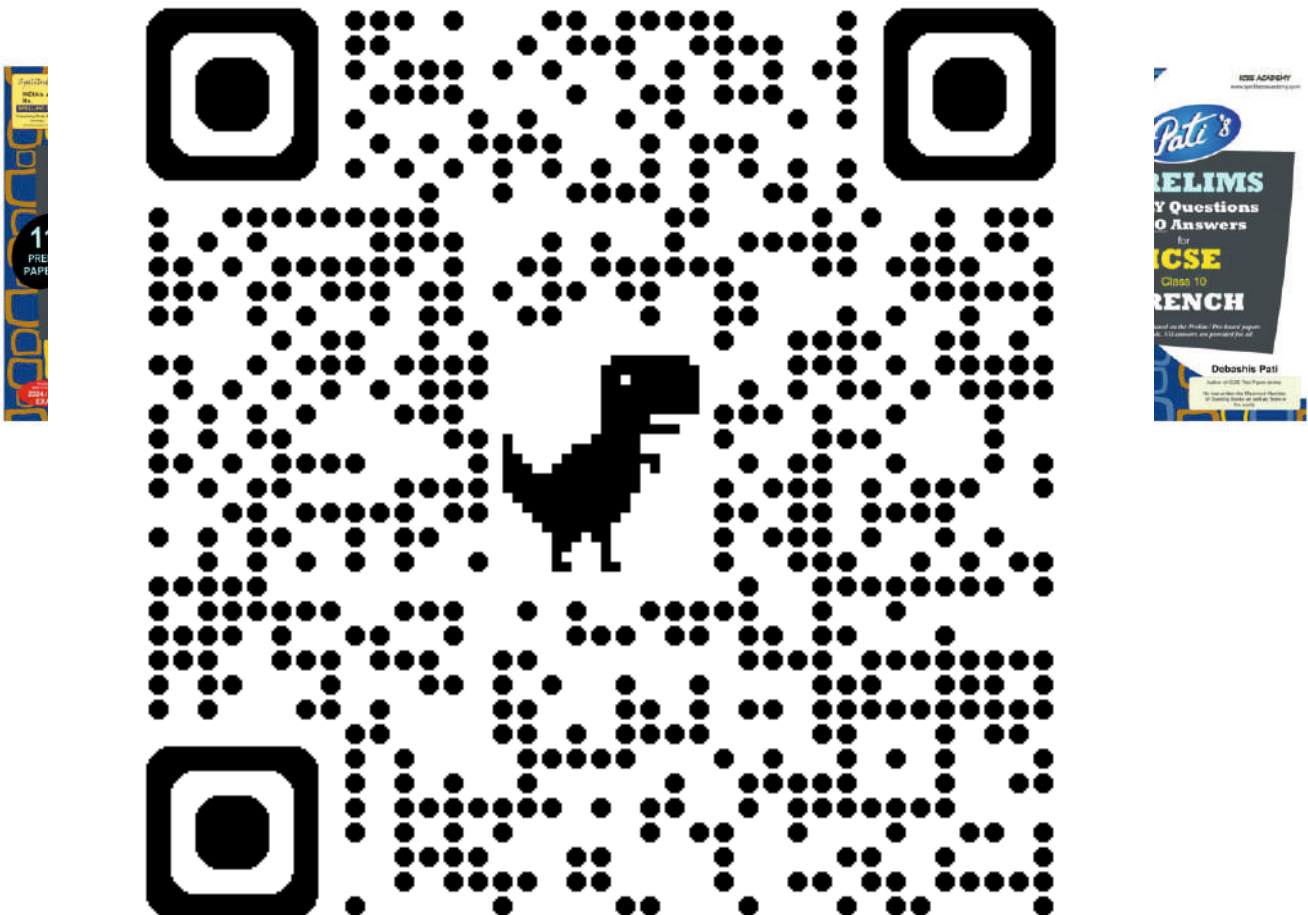
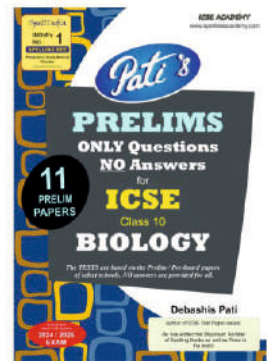
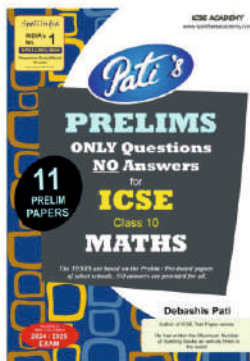
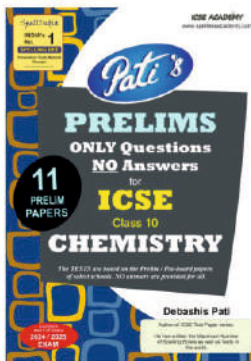
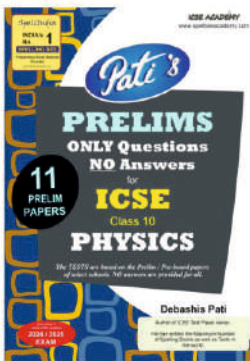
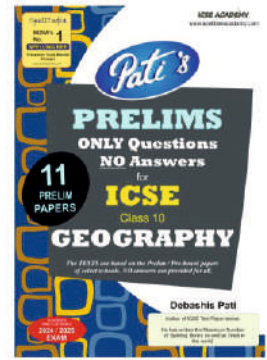
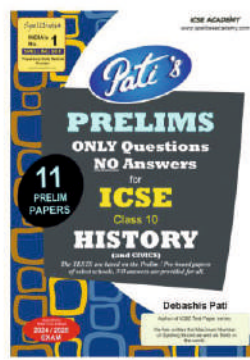
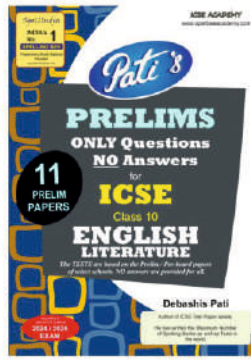
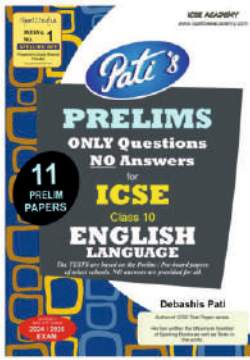
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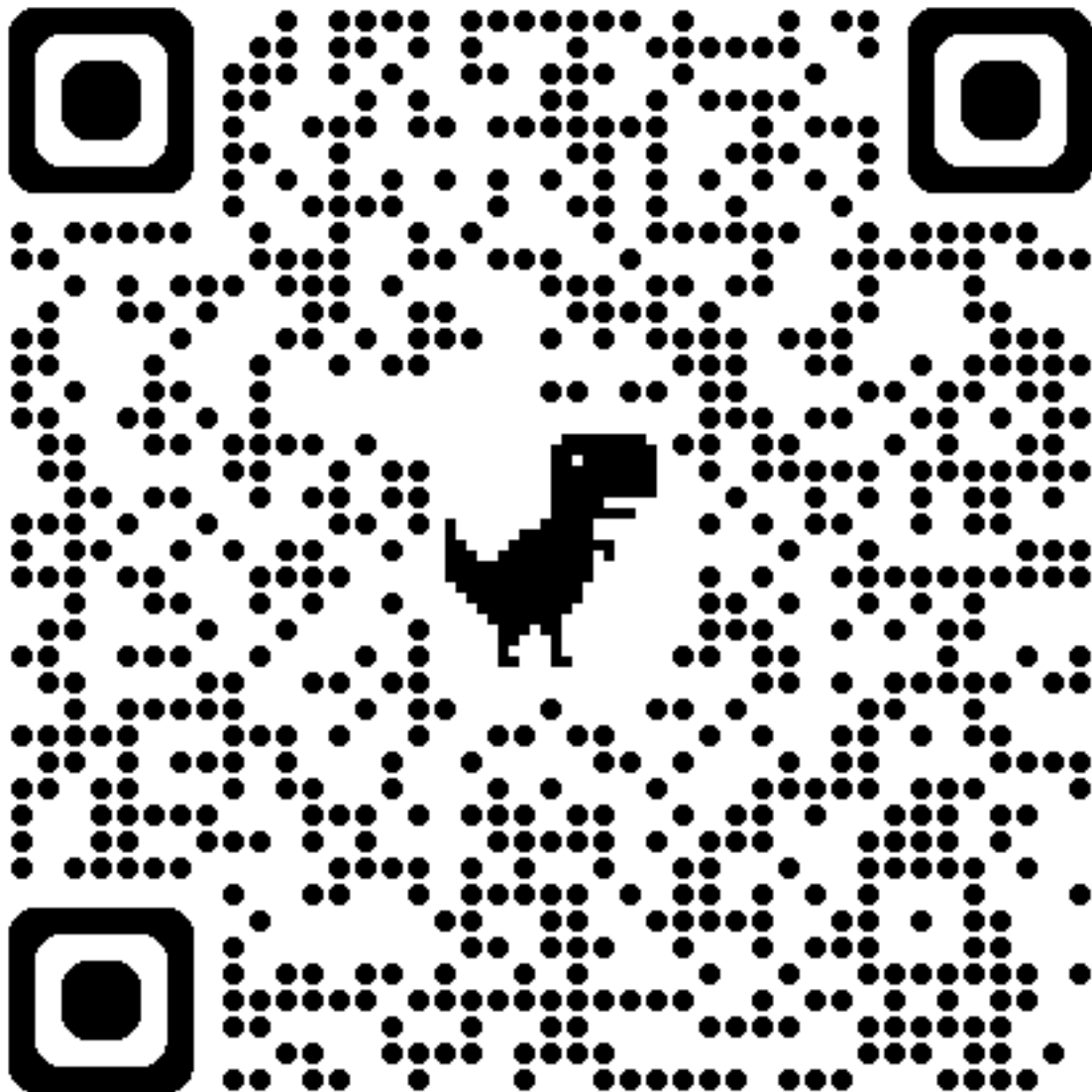
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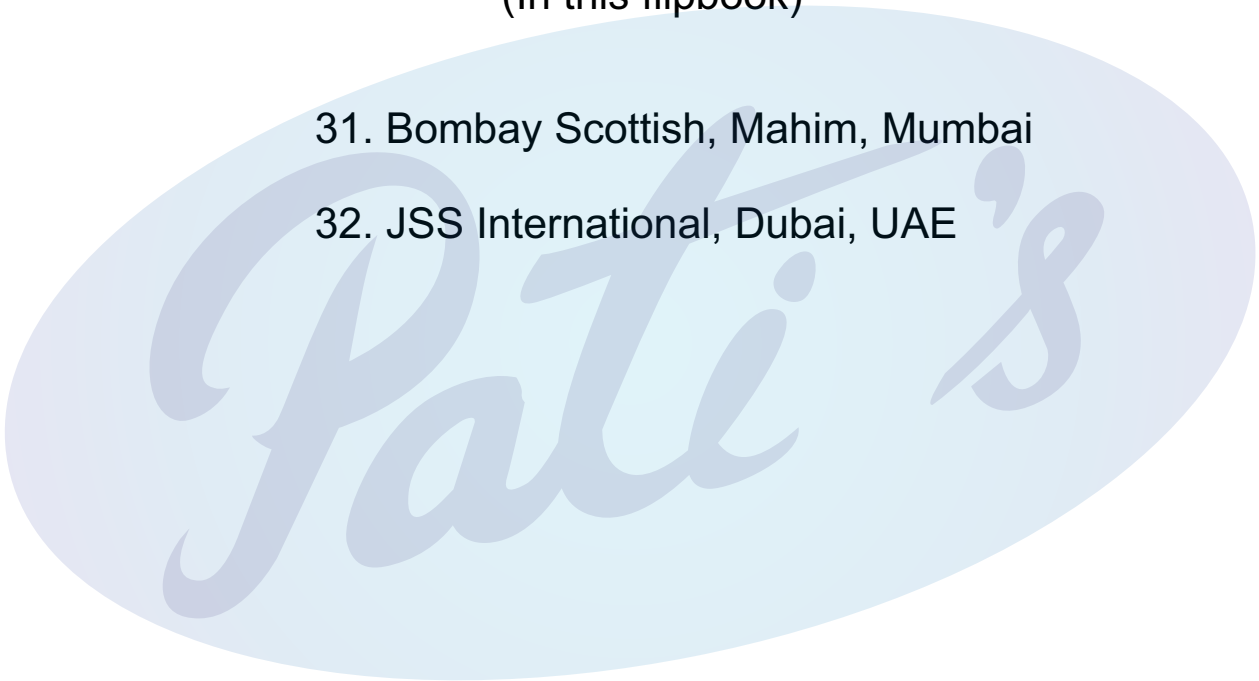
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**Bombay Scottish School, Mahim**  
**PRELIMINARY ASSESSMENT**  
**COMPUTER APPLICATIONS**

Grade : 10  
Date : 16.01.2026  
Duration : 2 hours

Max. Marks : 100  
No. of questions : 08  
No. of printed sides: 10

[Answers to this paper must be written on the answer booklet provided.]

The first **15** minutes is allotted for reading the question paper.

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.)

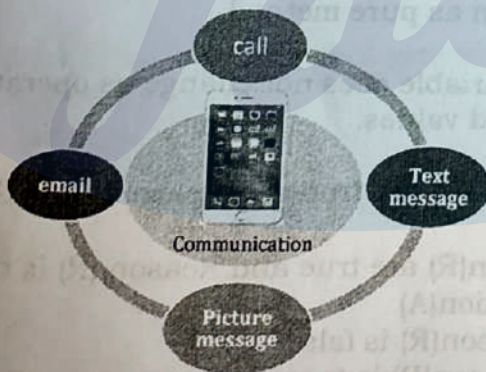
**Question 1**

[20]

Choose the correct answers to the questions from the given options.

(Do not copy the questions, write the correct answers only.)

- (i) Which OOP principle is depicted in the picture?



- (a) Polymorphism
- (b) Abstraction
- (c) Inheritance
- (d) Encapsulation

(ii) `String ct[] = {"Brazil","India","Australia","Japan","Italy"};`  
`System.out.println(ct[2].toUpperCase().lastIndexOf('a'));`

- (a) 1
- (b) -1
- (c) 4
- (d) 8

(iii) Valid statement to check whether the string `s="Ice cream"` contains a space between the two words or not:

- (a) `Character.isWhitespace(s.charAt(3));`
- (b) `s.charAt(3).Character.isWhitespace();`
- (c) `s.charAt(4).isWhitespace();`
- (d) `Character.isWhiteSpcae(s.charAt(3));`

(iv) A package is a collection of \_\_\_\_

- (a) objects
- (b) classes
- (c) methods
- (d) variables

(v) 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 the copied values.

- (a) Both Assertion(A) and Reason(R) are true and Reason (R) is the 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

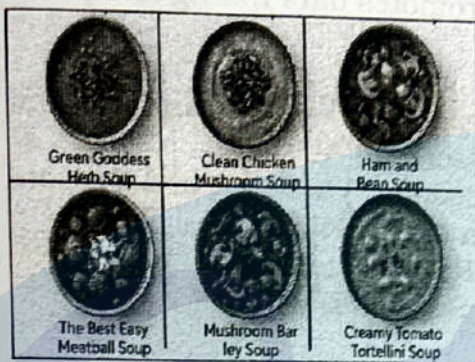
(vi) Given the array `a[]={83,24,92,153,18}` What will be the arrangement of elements after 2<sup>nd</sup> pass of Bubble sort in ascending order?

- (a) 24,83,92,153,18
- (b) 24,83,92,18,153
- (c) 83,24,92,18,153
- (d) 24,83,18,92,153

(vii) Given that, `int x=289`, which of the following will print the output as 289100?

- (a) `System.out.println(String.valueOf(x)+100);`
- (b) `System.out.println(x+100);`
- (c) `System.out.println("x".concat(100));`
- (d) `System.out.println(Integer.parseInt(x)+100);`

(viii) Consider the two dimensional array `S[2][3]` of healthy soups. State the index of the Mushroom Barley Soup.



- (a) `S[2][1]`
- (b) `S[2][2]`
- (c) `S[1][1]`
- (d) `S[1][2]`

(ix) Identify the operator that gets lowest precedence while evaluating the following expression:

$$a*b/c \geq b-a$$

- (a) /
- (b) -
- (c)  $\geq$
- (d) \*

(x) If `r="534"`, which of the following will convert it to an integer value?

- (a) `int m= int (r);`
- (b) `int m= Integer(r);`
- (c) `int m=Integer.parseInt(r);`
- (d) `int m=Integer.toInt(r);`

- (xi) The method that does not return String:
- (a) endsWith()
  - (b) toUpperCase()
  - (c) trim()
  - (d) concat()
- (xii) Assertion (A): Encapsulation is binding data and functions into a single unit and is an important principle of object oriented programming language.  
Reason (R) : Encapsulation promotes data hiding and protects data from unauthorized access.
- (a) Both Assertion(A) and Reason (R) are true and Reason( R) is the 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
- (xiii) An array of order 3X5 containing all int values will occupy:
- (a) 15 bytes
  - (b) 60 bytes
  - (c) 30 bytes
  - (d) 120 bytes
- (xiv) The statement that is incorrect:
- (a) Member declared as private is accessible only in the class it is defined in.
  - (b) Java code is interpreted into byte code.
  - (c) Instance variable is associated with an object.
  - (d) class is a blue print using which multiple objects can be created.
- (xv) Assertion(A): To call the sqrt() method, no object or class name is required  
Reason(R): All methods of Math class are class methods
- (a) Both Assertion(A) and Reason(R) are true and Reason(R) is the 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

- (xvi) The keyword which declares a variable as class variable:
- (a) class
  - (b) static
  - (c) void
  - (d) double
- (xvii) Invoking a method by passing the objects of a class can be termed as
- (a) Call by reference
  - (b) Call by value
  - (c) Call by method
  - (d) Call by object
- (xviii) An invalid point of similarity between if and switch-case
- (a) equality operator can be used in both
  - (b) break statement is valid for both
  - (c) default can be used in both
  - (d) int data type can be used in both
- (xix) State the number of iterations for the following loop:
- ```
int c=3;
while(++c<10)
  ++c;
```
- (a) 3
  - (b) 4
  - (c) 0
  - (d) 1
- (xx) The output of the following:
- ```
System.out.println("Resource".concat(" Locator").length());
```
- (a) 15
  - (b) 9
  - (c) 8
  - (d) 16

## Question 2

[20]

- (i) Read the following code snippet and answer the questions below:

```
int b[]={1,0,0,1,1};
int i=b.length-1,j=0,sum=0;
while(i>=0)
{
    sum=sum+(int)Math.pow(2,j++)*b[i--];
}
```

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

- (a) Write the initial value of variable i. [1]  
(b) Name the type of error that would be generated if the index of b is changed from i - - to i. [1]  
(c) Write the output of the code. [2]

- (ii) Write the equivalent if-else for the following and further the resultant value of variable val:

```
int x=9,y=3;
int val=Math.max(x,y)>Math.abs(y-x)?y:x;
System.out.print(val);
```

[2]

- (iii) Predict the output of the following code snippet:

```
String s="cloud computing";
for(int i=0,k=10;i<=s.indexOf('d');i++)
{
    String s1=s.substring(0,s.length()-k++);
    System.out.println(s1);
}
```

[2]

- (iv) Evaluate the given expression when x=4
- $$x * = x++ + x \% 2 - ++x;$$

[2]

- (v) Identify and correct the error along with the type in the following code: [2]

```
int a=5,b=0,k=0;
int x[]=new x[a];
while(k<a)
{
    x[k]=b++;
    k++;
}
```

(vi) Read the following and answer the questions below:

```
class calc
{
    int n;
    void show1(char x)
    {
        for(int i=1;i<=n;i++)
            System.out.print(x);
    }
    void show2()
    {
        double ans=Math.ceil(7.8)+Math.pow(n,2);
        System.out.println(ans);
    }
}
```

- (a) Write the prototype of method show2() if it has to return the value of variable ans. [1]
- (b) Write the output generated by show1() and show2() methods(consider n as 4 and x as '@'). [2]
- (c) Write the output generated by show2() method if Math.ceil() is replaced with Math.floor() considering n as 4. [1]

(vii) Give the output of the following: [2]

- (a) "CRAFT".compareTo("CROWN")  
 (b) "GENIUS".toLowerCase()

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

$$\frac{\sqrt{a^2+b^2}}{|a-b|} + c^5$$

**SECTION B (60 Marks)**  
(Attempt any **four**)

**Question 3**

[15]

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

Class name : CityCr

Member variables:

name – name of a customer

weight – weight of the parcel in kgs

type – 'D' -Domestic, 'I' – International

bill – amount to be paid

Member methods:

void accept() – To accept the values for name, weight and type

void calc() – To calculate the bill amount as per the following criteria:

Weight in kg	Rate per kg
First 5 kgs	₹ 500
Next 5 kg	₹ 400
Next 5 kg	₹ 350
Above 15 kgs	₹ 250

The additional amount ₹1500 to be paid if the courier type is 'I'

void disp() – to print all the details

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

**Question 4**

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

[15]

void pattern(int r,int c) – to print the following if r =4 and c=3

1#2#3#

1#2#3#

1#2#3#

1#2#3#

void pattern(int a, char c) – to print the following if a =4 and c = '%'

%%%%

%%%

%%

%

void pattern() – to print the number pattern

54321

5432

543

54

5

All patterns to be printed using nested loop.

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

### Question 5

[15]

Define a class to consider the array {12,35,78,95,100}. Print the elements of the array. Accept a number from user and search for it in the array using Binary Search method. Display the appropriate message based on whether the number is existing or not existing in the array.

### Question 6

[15]

Define a class to accept a string. Encode the string to make a new string as follows: Each alphabet in the string will be moved ahead by two alphabets. If the alphabet is Y or y the new string will have alphabet A or a respectively. If the alphabet is Z or z the new string will have the alphabet B or b respectively. Any characters other than the alphabets will remain same. Print the original string and the encoded string using appropriate messages.

Sample Input: Accept and Return

Sample Output: Ceeegr v cpf Tgvwtp

**Question 7**

[15]

Define a class to accept the numbers in the two dimensional arrays P[3][3] and Q[3][3]. Create the third array R[3][3] which contains the sum of the respective row and column elements from both the arrays. Print all the three array elements with the appropriate messages.

Example:

P[ ][ ] =

1	0	3
5	9	8
3	-1	4

Q[ ][ ] =

3	5	9
0	8	2
4	1	-3

Resultant array:

R[ ][ ] =

4	5	12
5	17	10
7	0	1

**Question 8**

[15]

Define a class with the following specifications:

Class name – PrNum

Member variable:

int a

Member methods:

PrNum(int x) – constructor method

chkpr() – method to check whether a is a Pronic number or not.

Pronic number is the product of two consecutive numbers.

Print the number with an appropriate message.

Example: 12 is a Pronic number. [12 = 3X4]

Write main() method to create an object of the class to call chkpr().



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JSS INTERNATIONAL SCHOOL, DUBAI

2025-2026

GRADE: X  
Duration: 2 hrs

Max Marks: 100  
Date : 29/01/2026

## COMPUTER APPLICATION

### Pre-Final (Theory)

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.

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

Attempt all questions from this Section

### Question 1.

[20]

- i. What will be the output of the following Java expression?

```
System.out.println(Character.isWhitespace('\t'));
```

a. True

b. false

c. 1

d. 0

- ii. The output of the statement

```
System.out.println(Math.pow(Math.max(Math.floor(5.7),4),2));
```

a. 16.0

b. 36.0

c. 16

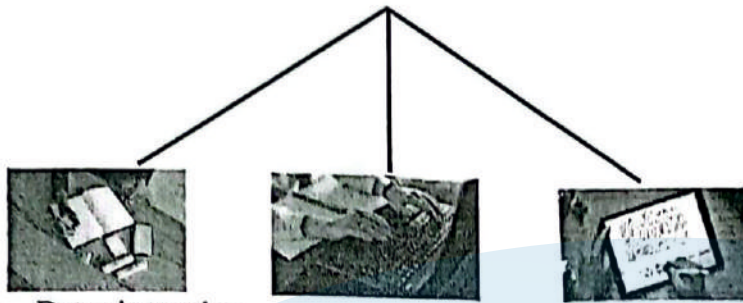
$(5.0)^2$

25.0

d. 25.0

iii. Name the feature of Java that is depicted in the given picture.

**Taking Notes**



- a. Data abstraction
- b. Inheritance
- c. Encapsulation
- d. Polymorphism

iv. The student enters marks as "85" (String). The teacher wants to add 5 grace marks. Which method should be used?

String m = "85";

- a. Integer.toString(m) + 5
- b. Integer.parseInt(m) + 5
- c. Character.getNumericValue(m)
- d. Double.valueOf(m) + 5

v. Consider the statement given below:

String b[] = {"Apple", "Banana", "Kiwi", "Watermelon", "Orange"};

int c = b.length + b[1].length();

What will be the value stored in c?

- a. 12
- b. 10
- c. 11
- d. 9

vi. What happens if two case values are identical in a switch statement??

- a. Both cases will execute
- b. Only the first case will execute
- c. Compilation error occurs
- d. Default case will execute

- vii. Which of the following happens automatically in Java during autoboxing?
- A primitive type is automatically converted to a corresponding wrapper class object.
  - A wrapper class object is automatically converted to a primitive type.
  - Both autoboxing and unboxing occur at the same time.
  - Primitive types are converted to arrays of objects.
- viii. Given below are two statements marked Assertion and Reason. Read the two statements carefully and choose the correct option.  
**Assertion (A):** In Java, int and Integer are the same  
**Reason (R):** int is a primitive data type, while Integer is a wrapper class that encapsulates the int type as an object. ✓
- Both A and R are true, and R is the correct explanation of A.
  - Both A and R are true, but R is not the correct explanation of A.
  - A is true, but R is false.
  - A is false, but R is true.
- ix. Methodology that finds the smallest value and interchanges with first value and second smallest value with second element and so on is
- Linear search
  - Binary search
  - Bubble sort
  - Selection sort
- x. Given below are two statements marked Assertion and Reason. Read the two statements carefully and choose the correct option.  
**Assertion (A) :** To call abs() method, no object or class name is required.  
**Reason (R):** All methods of Math class are class methods. ✓
- Both A and R are true, and R is the correct explanation of A.
  - Both A and R are true, but R is not the correct explanation of A.
  - A is true, but R is false.
  - A is false, but R is true.
- xi. The last element of a Double Dimensional array A of order p x q can be accessed by
- $A[p-1][q]$
  - $A[p][q-1]$
  - $A[p-1][q-1]$
  - $A[q-1][p-1]$

- xii. "Population".compareTo("Populated"); results to:
- 2
  - 4
  - 4
  - 2
- xiii. What will be the value of r after the given statements are executed?
- ```
double r, p = 5, q = 10;
int s = 50;
r = p * q + s / 2.5;
```
- 55.0
  - 70.0
  - 70.4
  - 50.4
- xiv. Consider the following program segment where the statements are jumbled choose the correct order of statements to find the sum of the odd factors of a number.
- ```
void sum(int n)
{
sum+=i;  $\longrightarrow$  1
for(int i=1;i<=n;i++)  $\longrightarrow$  2
{
int sum=0;  $\longrightarrow$  3

}
if(n%i==0 && i%2!=0)  $\longrightarrow$  4
}
System.out.println("The sum of the odd factors="+sum);  $\longrightarrow$  5
```
- 4,1,3,2,5
  - 4,2,3,1,5
  - 3,2,1,3,5
  - 3,2,4,1,5
- xv. How many bytes the array will occupy in memory
- ```
char y[] = {'a', 'A', 'b', 'B', 'c', 'C'};
```
- error
  - 5
  - 6
  - 12

- xvi. Read the below code statement of class named 'Test' and answer the question:

```
static void abc() {  
    int x = 3;  
    int y = x + 10;  
}  
public static void main(String arg[]) {  
    Test ob = new Test();  
}
```

Which is the right way to call method abc in main method?

- a. ob.abc()   
b. abc()   
c. Test ob()   
d. static.abc()
- xvii. Which of the following are Wrapper classes?  
(i) Boolean (ii) Char (iii) Double (iv) Int
- a. (i) and (ii)   
b. (ii) and (iv)   
 c. (i) and (iii)   
d. (ii) and (iii)

- xviii. What is the output for the following:

```
int a[][] = {{5, 10, 15, 20}, {8, 4, 2, 6}, {7, 5, 9, 3}};  
System.out.println(a[2][0] + a[1][3]* a[2][1]);
```

- a. 45   
b. 65   
 c. 37   
d. 63
- xix. What will be the value of a after the given statements are executed?

```
char ch="Cabin".charAt(2);  
int a=Character.toUpperCase(ch)+20;  
System.out.println(a);
```

- a. 85   
 b. 86   
c. 117   
d. 118

- xx. What is the output for the following:  
`System.out.print("primenumber".indexOf('m', 5));`
- a. 7
  - b. 8
  - c. 3
  - d. 2

**Question 2.**

- i. What will be the output of the following statements?

[20]  
[3]

- ```
String a = "Education", b = "Innovation";
```
- a. `System.out.println (a.length()+b.substring(3, 7).length());`
  - b. `System.out.println (a.charAt(3) + b.charAt(5));`
  - c. `System.out.println (a.charAt(0)+" "+b.charAt(0));`
  - d. `System.out.println (a.indexOf('i')+b.lastIndexOf("ion"));`
  - e. `System.out.println (a.substring(a.length()-4).equals(b.substring(b.length()-4)));`
  - f. `System.out.println (a.endsWith("ton."));`

- ii. What will be output of the following code?

```
int a=0,b=1;
for(a=0;a<=20;a+=5,b++)
    System.out.println(a+b);
System.out.println(b);
```

[2]

- iii. Consider the following program and answer the questions given below:

[5]

```
public class Point {
    int x, y;
    static double z;
    Point(int a, int b)
    {
        x=a; y=b;
    }
    void calculate()
    {
        z=Math.sqrt(Math.pow(x-0, 2)+Math.pow(y-0, 2));
    }
    void display()
    {
        System.out.println("Distance = "+z);
    }
    public static void main( String arg[])
    {
        Point P =new Point(4, 3);
```

```
P.calculate();  
P.display();  
}  
}
```

- a. Which line in the above code represents instantiation?
  - b. Name the instance and class variable/s.
  - c. Name the instance and class methods.
  - d. What type of constructor is used in the above code?
  - e. Write output of the above code.
- iv. Write down the java statements to call the following method in main method of class "Calculate". [2]
- ```
int cube(int n)  
{  
    return(n*n*n);  
}
```
- v. Convert the following loop into an exit controlled loop [2]
- ```
int x, y;  
for (x = 8, y = 2; x >= 2; x -= 2)  
{  
    y = y + x;  
    y--;  
}  
System.out.println(y);
```
- vi. Write Java statements for the following: - [2]
- a. Method prototype for a method "convert" which accepts a character argument and returns a float.
  - b. To create an instance **player** of class **Game**
- vii. Evaluate the following expression when a = 4: (show working) [2]
- $$a* = --a + a / a++ - ++a;$$
- viii. Define following. [2]
- a. Inheritance
  - b. constructor

## SECTION B (60 Marks)

Attempt any four questions from this Section

The answer in this section should consist of the Program in the BlueJ environment or any 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.* Flow Charts and Algorithms are not required.

Write *variable description* table with the program not at the end of the question paper.

### Question 3. ✓

[15]

Write a program to input twenty names in an array. Arrange these names in ascending order of letters, using the **bubble** sort technique.

Sample Input:

Rohit, Devesh, Indrani, Shivangi, Himanshu, Rishi, Piyush, Deepak, Abhishek, Kunal, .....

Sample Output:

Abhishek, Deepak, Devesh, Himanshu, Indrani, Kunal, Piyush, Rishi, Rohit, Shivangi, .....

### Question 4.

[15]

Define a class to input a four-digit number and check whether it is a CORE number. A number is said to be a CORE number if:

The sum of all four digits is exactly three times the sum of the middle two digits. If the number entered is not four digits, display an appropriate error message.

Eg: 3417

Middle digits sum:  $4 + 1 = 5$ ,

All digits sum :  $3 + 4 + 1 + 7 = 15$

Middle digit sum  $*3 =$  All digit sum ( $5*3 = 15$ ) so ( $15=15$ )

3147 is a CORE number.

Eg. 1234

Middle digits sum:  $2+3 = 5$ ,

All digits sum :  $1 + 2 + 3 + 4 = 10$

Middle digit sum  $*3 =$  All digit sum ( $5*3 = 15$ ) so ( $15 \neq 10$ )

1234 is not a CORE number.

### Question 5.

[15]

Define a class to accept a string and check and display whether it is a Namic string or not. A string is called Namic, when it contains equal number of upper and lower case alphabets. It may contain other characters and that does not make any difference.

Example Input: abc#123DEF

Output: Namic string.

Example Input: PqRss12

Output: Not a Numeric string.

**Question 6.**

[15]

Define a class to accept values from the user and store them 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

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

**Question 7.**

[15]

Create a class “**Overload**” to overload the function result() as given below:

void result() :Search for a given character input by the user in character array, using the **Binary Search** technique. Print "Search Successful, Element present in array" if the character is found otherwise print "Search unsuccessful, Element is not present in array".

Character array : -'A', 'H', 'P', 'S', 'U', 'W', 'Y', 'Z', 'b', 'd', 'n'

Character to be search='W'

Output : Search Successful, Element present in array

Character to be search='B'

Output : Search unsuccessful, Element is not present in array

void result(int n, double x) with integer argument and double argument to find and display the sum of the series given below:

$$S = \frac{x}{1} + \frac{x}{2} + \frac{x}{3} + \frac{x}{4} \dots \dots n$$

Define a main method to create an object of the class and call the member methods

**Question 8.**

[15]

Fashion Courier Service charges for the parcels of its customers as per the following specifications.

Class name: FashionCourier

Member variables:

String name: to store the name of the customer

int wt: to store the weight of the parcel in kg

double charge: to store the charge of the parcel

Member methods:

FashionCourier() : default constructor to initialise the member variables with their respective default initial values.

void accept(): to accept the name of the customer and weight of the parcel.

void compute(): to calculate the charge as per the following criteria.

Weight	Charge
Less than 5 kgs	Rs. 50 per kg
Above 5 kgs and less than 10 kgs	Rs. 150 per kg
Above 10 kgs and less than 20 kgs	Rs. 200 per kg
Above 20 kgs	Rs. 350 per kg

A surcharge of 5% is charged on the bill as well.

void display(): to display the name of the customer, weight of the parcel and total bill inclusive of surcharge in a tabular format in the following format :

Name	Weight	Bill amount
*****	*****	*****

Define a main method to create an object of the class and call the member methods

\*\*\*\*\*

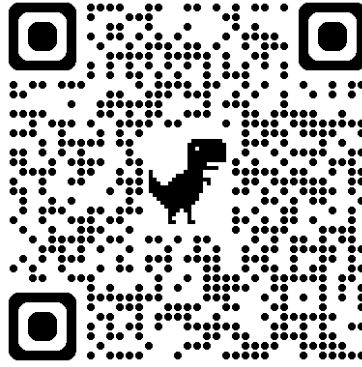


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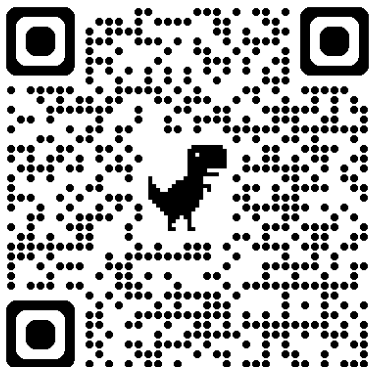
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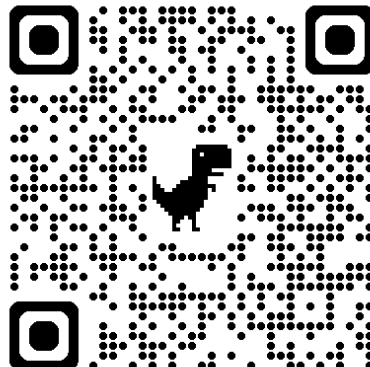
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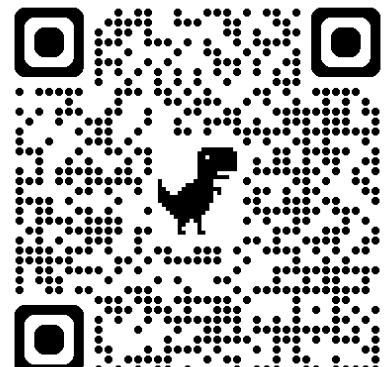
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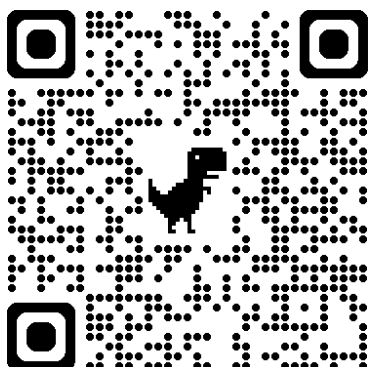
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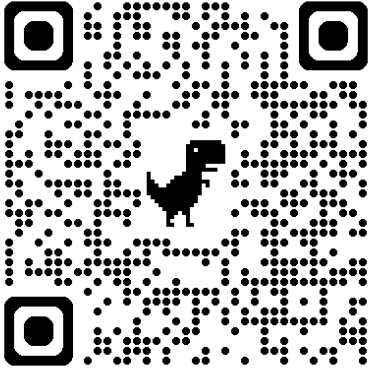
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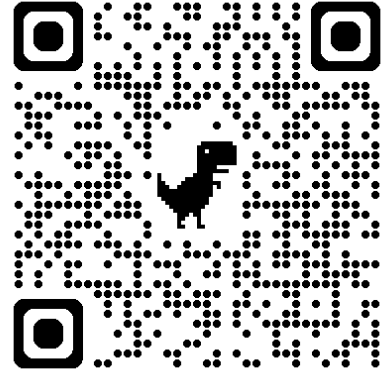
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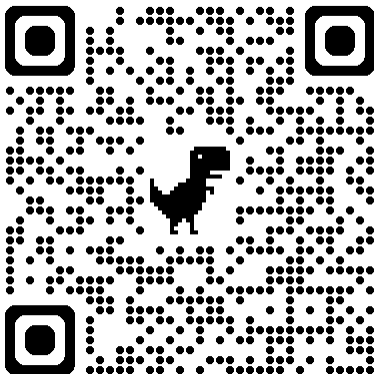
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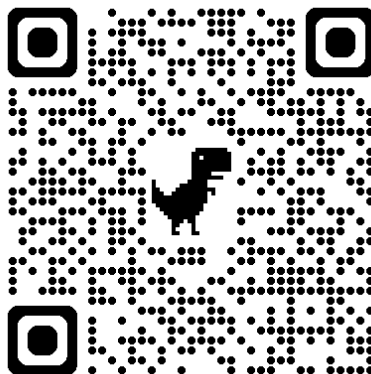
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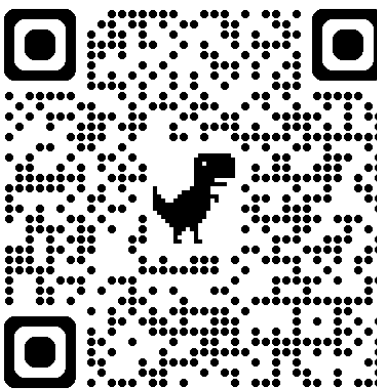
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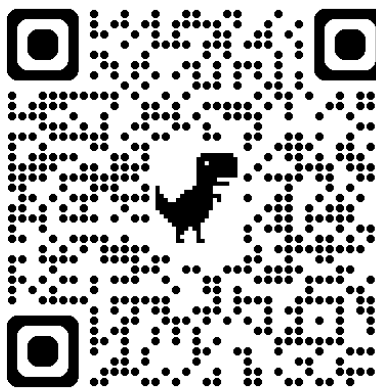
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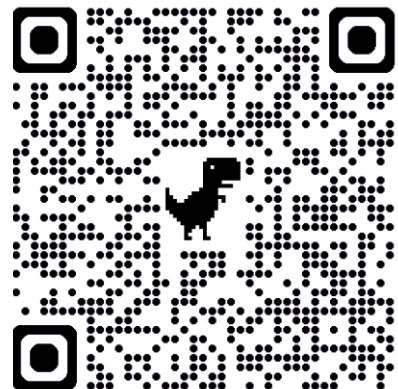
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