ICSE Computer Applications

Question Bank from Past & Specimen Papers

MCQs • Predict the Output • Coding Questions

How to use this document

- Every question carries a label in square brackets showing the paper it came from, e.g. [2025] or [Specimen 2024], followed by its original question number and marks.
- Questions that repeat across papers are kept in full each time, as requested.
- Purely theory questions (define / differentiate / name the following / state the purpose) are left out.
- Part A holds all Section A MCQs. Part B holds output-prediction, expression-evaluation and tracing questions. Part C holds coding questions: C1 is short coding (write an expression, rewrite a loop, fix an error) and C2 is the full Section B programs.
- Pictures in MCQs are described in italics inside square brackets. Questions are reproduced as printed, with only obvious typing/OCR slips tidied. Two items marked "reconstructed" had symbols that did not extract cleanly — please check them against the original PDF.

Papers included and question counts

Paper (label)	MCQ	Predict output	Short coding	Programs
ICSE 2026 Examination [2026]	20	4	5	6
ICSE 2025 Examination [2025]	20	4	5	6
ICSE 2025 Specimen Paper [Specimen 2025]	20	5	4	6
ICSE 2024 Examination [2024]	20	5	4	6
ICSE 2024 Specimen Paper [Specimen 2024]	20	5	3	6
ICSE 2023 Examination [2023]	20	6	3	6
ICSE 2023 Specimen Paper [Specimen 2023]	20	5	3	6
ICSE Specimen Paper 2020 onwards [Specimen 2020+]	0	6	5	6
ICSE Specimen Paper [Specimen (older)]	0	8	1	6
Total	140	48	33	54

Note: 'Specimen (older)' is the undated specimen paper (Computer-Applications-1.pdf) in the older Section A pattern.

PART A — Multiple Choice Questions (MCQ)

ICSE 2026 Examination (T26 861)

[2026] Q1(i) The full form of JVM is:

(a) Java Visible Machine
(b) Java Virtual Mode
(c) Java Virtual Machine
(d) Java Visible Mode

[2026] Q1(ii) Which of the following occupies 2 bytes of storage?

(a) 25
(b) AM
(c) 35.2
(d) \\

[2026] Q1(iii) In a statement c = c + (x * d + e); which variable is an accumulator?

(a) d
(b) c
(c) e
(d) x

[2026] Q1(iv) Which of the following is NOT an access specifier?

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

[2026] Q1(v) What is the output of the statement Math.pow (36, 6/5); ?

(a) 36.0
(b) 1.0
(c) 73.71
(d) 6.0

[2026] Q1(vi) Read the if program segment given below:

```
if (a > b)
    z = 25;
else
    z = 35;
```

Which one of the following is the correct conversion of the if program segment to ternary?

(a) `z = a > b ? 35 : 25;`
(b) `z = a > b ? 25 : 35;`
(c) `z = a > b : 35 ? 25;`
(d) `z = a > b : 25 ? 35;`

[2026] Q1(vii) The output of the statement:

```
System.out.println(Character.toUpperCase('b') + 2);
```

is:

(a) 66
(b) 100
(c) 68
(d) 98

[2026] Q1(viii) Consider the following statements:

```
Computer desktop = new Computer( );
Computer Mainframe = new Computer( );
```

Name the objects of the class given above:

(a) Desktop, Mainframe
(b) desktop, Mainframe
(c) Computer, Mainframe
(d) Computer, desktop

[2026] Q1(ix) The earth spins on its axis completing one rotation in a day. The earth revolves around the sun in 365 days to complete one revolution. What is the Java concept depicted in the given picture?

[Picture: 'ROTATION vs REVOLUTION' — Earth spinning on its axis = 24 hours / 1 day; Earth going around the Sun = 365 days / 1 year]

(a) Array
(b) Condition
(c) Nested loop
(d) While loop

[2026] Q1(x) In the following method prototype to accept a character, an integer and return YES or NO, fill in the blank to complete the method prototype.

```
public __________ someMethod (char ch, int n)
```

(a) boolean
(b) String
(c) int
(d) double

[2026] Q1(xi) In a calculator which Java feature allows multiple methods named calculate() for the different operations?

(a) abstraction
(b) inheritance
(c) encapsulation
(d) polymorphism

[2026] Q1(xii) Assertion (A): The result of the Java expression 3 + 7/2 is 6.

Reason (R): According to the hierarchy of operators in Java, addition is done first followed by division.

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

[2026] Q1(xiii) What is the type of parameter to be given for the method parseInt( )?

(a) double
(b) String
(c) char
(d) int

[2026] Q1(xiv) To extract the word NOW from the word "ACKNOWLEDGEMENT", the Java statement "ACKNOWLEDGEMENT".substring(3, _____) is used. Choose the correct number to fill in the blank.

(a) 6
(b) 7
(c) 5
(d) 8

[2026] Q1(xv) The output of the following statement is:

```
String a[ ] = {"Atasi", "Aditi", "Anant", "Amit", "Ahana"};
System.out.println(a[1].charAt(1) + "*" + a[2].charAt(2));
```

(a) da
(b) d * a
(c) ti
(d) t * i

[2026] Q1(xvi) Which of the following String methods returns a negative value?

(a) `length()`
(b) `equals()`
(c) `compareTo()`
(d) `charAt()`

[2026] Q1(xvii) An array with 3 elements is arranged in ascending order as follows: [4 1 3 | 1 4 3 | 1 3 4, as shown in the paper]. Name the technique used:

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

[2026] Q1(xviii) The sales made by 5 salesmen selling 5 products is stored in a two-dimensional array of integer data type. How many bytes does the array occupy?

(a) 25
(b) 200
(c) 50
(d) 100

[2026] Q1(xix) Assertion (A): The substring() method modifies the original String.
Reason (R): The substring() method can extract part of a String starting from a specific index.

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

[2026] Q1(xx) In constructor overloading all constructors should have the same name as of the class but with a different set of _____.

(a) Access specifiers
(b) Classes
(c) Return type
(d) Parameters

ICSE 2025 Examination (T25 861)

[2025] Q1(i) Character class methods are found in the package called:

(a) java.util
(b) java.lang
(c) java.awt
(d) java.io

[2025] Q1(ii) System.out.println('Z'+32); will display:

(a) z
(b) Z
(c) 122
(d) 154

[2025] Q1(iii) double x [ ]={2.5,4.5,5.5,6.4}; occupies _____ bytes.

(a) 16
(b) 4
(c) 8
(d) 32

[2025] Q1(iv) The output of 42/6%2 is:

(a) 1
(b) 10
(c) 2
(d) 0

[2025] Q1(v) Consider the Two dimensional array P[2][3], of peripherals (input / output devices) given below, state the index of the device Barcode Scanner.

[Picture: 2 × 3 table of devices — Row 0: Mouse, Keyboard, Printer | Row 1: Scanner, Barcode Scanner, Microphone]

(a) P[1][1]
(b) P[0][1]
(c) P[1][2]
(d) P[0][0]

[2025] Q1(vi) Which of the following is user defined data type? 1. array 2. double 3. class 4. boolean

(a) only 1
(b) 1 and 3
(c) only 2
(d) only 4

[2025] Q1(vii) Select the infinite loop:

(a) `for(int i=1;i<=10;i++)`
(b) `for(int i=2; i!=0 ;i-=3)`
(c) `for(int i=5 ;i<=5;i++)`
(d) `for(int i =1;i>=1; i--)`

[2025] Q1(viii) The output of Math.max(-7, Math.min(-5 ,-4)) is:

(a) –5
(b) –4
(c) –7
(d) error

[2025] Q1(ix) Which of the following is true for the given object creation statement? Game cricket = new Game( );

(a) Game is an object of cricket class
(b) New keyword creates object Game
(c) Game is a class and cricket is an object
(d) Game and cricket are objects

[2025] Q1(x) Post office is an example for _____ access specifier.

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

[2025] Q1(xi) 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.

[2025] Q1(xii) A physical education teacher asks the students to do the side stretch as shown below, 10 times. Which programming construct the teacher uses?

[Picture: a figure doing a side stretch, labelled 'Side Stretch ×10']

(a) if
(b) switch
(c) for
(d) if else if

[2025] Q1(xiii) The index (subscript) of the last element of an array ar[ ] is:

(a) `ar.length( )`
(b) `ar[ ].length`
(c) `ar.length()-1`
(d) `ar.length-1`

[2025] Q1(xiv) Assertion (A): A clock is a real-life example of nested loops.

Reason (R): The hour hand moves through 12 positions, while the minute hand moves through 60 positions within each hour.

(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.

[2025] Q1(xv) Which of the following pairs of methods will cause a compile-time error due to incorrect method overloading?

(a) `void test(int a, int b) and void test(double a, double b)`
(b) `void test(int a, double b) and void test(double a, int b)`
(c) `void test(int a, double b) and void test(int a)`
(d) `void test(int a) and int test(int a)`

[2025] Q1(xvi) Which of the following converts "25" to 25.0?

(a) `Double.Parsedouble("25")`

(b) `Double.parse("25")`

(c) `Double.parseDouble("25")`

(d) `Double.parseDouble(25)`

[2025] Q1(xvii) Consider the program segment:

```
int p=0;
for(p=4 ; p>0 ; p-=2);
System.out.print(p);
System.out.println(p);
```

The above statements will display:

(a) 42

(b) 4200

(c) 0 [new line] 0

(d) 00

[2025] Q1(xviii) The output of the following statement is:

```
System.out.println("I said,\"It\'s wise to obey elders.\"");
```

(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.'”

[2025] Q1(xix) What is the output of the statement given below?

```
"ANGER".compareTo("ANGEL")
```

(a) 3

(b) –6

(c) 6

(d) 0

[2025] Q1(xx) Consider the following program segment in which the statements are jumbled. Choose the correct order of statements to calculate and return the factorial of 4.

```
1   for (k=1; k<=4; k++)
2   return fa;
3   long fa = 1, k;
4   fa*=k;
```

(a) 1, 2, 3, 4

(b) 3, 1, 4, 2

(c) 3, 1, 2, 4

(d) 1, 3, 2, 4

ICSE 2025 Specimen Paper

[Specimen 2025] Q1(i) Name the above structure:

[Picture: a grid of 20 identical flower images arranged in 4 rows and 5 columns]

(a) One dimensional array
(b) Two Dimensional array with 4 rows and 5 columns
(c) Three dimensional array
(d) Two Dimensional array with 5 rows and 4 columns

[Specimen 2025] Q1(ii) "Java compiled code (byte code) can run on all operating systems" – Name the feature.

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

[Specimen 2025] Q1(iii) The size of '\n' is:

(a) 2 bytes
(b) 4 bytes
(c) 8 bytes
(d) 16 bytes

[Specimen 2025] Q1(iv) Identify the operator that gets the highest precedence while evaluating the given expression: a + b % c * d – e

(a) +
(b) %
(c) –
(d) *

[Specimen 2025] Q1(v) Which of the following is a valid java keyword?

(a) If
(b) BOOLEAN
(c) static
(d) Switch

[Specimen 2025] Q1(vi) The output of the following code is:

```
System.out.println(Math.ceil(6.4)+Math.floor(-1-2));
```

(a) 3.0
(b) 4
(c) 3
(d) 4.0

[Specimen 2025] Q1(vii) Which of the following returns a String?

(a) `length()`
(b) `charAt(int)`
(c) `replace(char, char)`
(d) `indexOf(String)`

[Specimen 2025] Q1(viii) Which of the following is not true with regards to a switch statement?

(a) checks for an equality between the input and the case labels
(b) supports floating point constants
(c) break is used to exit from the switch block
(d) case labels are unique

[Specimen 2025] Q1(ix) Consider the array given below:

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

Write the output of the following statement:

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

(a) 65
(b) 130
(c) 'A'
(d) 0

[Specimen 2025] Q1(x) To execute a loop 10 times, which of the following is correct?

(a) `for (int i=11;i<=30;i+=2)`
(b) `for (int i=11;i<=30;i+=3)`
(c) `for (int i=11;i<20;i++)`
(d) `for (int i=11;i<=21;i++)`

[Specimen 2025] Q1(xi) A single dimensional array has 50 elements, which of the following is the correct statement to initialize the last element to 100.

(a) `x[51]=100`
(b) `x[48]=100`
(c) `x[49]=100`
(d) `x[50]=100`

[Specimen 2025] Q1(xii) Method prototype for the method compute which accepts two integer arguments and returns true/false.

(a) `void compute (int a, int b)`
(b) `boolean compute (int a, int b)`
(c) `Boolean compute (int a,b)`
(d) `int compute (int a, int b)`

[Specimen 2025] Q1(xiii) The statement that brings the control back to the calling method is:

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

[Specimen 2025] Q1(xiv) The default value of a boolean variable is:

(a) False
(b) 0
(c) false
(d) True

[Specimen 2025] Q1(xv) The method to convert a lowercase character to uppercase is:

(a) `String.toUpperCase( )`
(b) `Character.isUppercase ( char )`
(c) `Character.toUpperCase( char )`
(d) `toUpperCase ( )`

[Specimen 2025] Q1(xvi) Assertion (A): Integer class can be used in the program without calling a package.

Reason (R): It belongs to the default package java.lang.

(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

[Specimen 2025] Q1(xvii) A student executes the following code to increase the value of a variable 'x' by 2. He has written the following statement, which is incorrect: x = +2; What will be the correct statement? A. x += 2; B. x = 2; C. x = x + 2;

(a) Only A
(b) Only C
(c) All the three
(d) Both A and C

[Specimen 2025] Q1(xviii) The statement used to find the total number of Strings present in the string array String s[] is:

(a) `s.length`
(b) `s.length()`
(c) `length(s)`
(d) `len(s)`

[Specimen 2025] Q1(xix) Consider the following program segment in which the statements are jumbled, choose the correct order of statements to swap two variables using the third variable.

```
void swap(int a, int b)
{   a = b;      → (1)
    b = t;      → (2)
    int t = 0;  → (3)
    t = a;      → (4)
}
```

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

[Specimen 2025] Q1(xx) Assertion (A): An argument is a value that is passed to a method when it is called.

Reason (R): Variables which are declared in a method prototype to receive values are called actual parameters.

(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

ICSE 2024 Examination (T24 861)

[2024] Q1(i) Consider the above picture and choose the correct statement from the following:

[Picture: a box labelled 'Polygon' with arrows pointing to three shapes — a triangle, a parallelogram and a pentagon]

(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

[2024] Q1(ii) int x = 98; char ch = (char)x; what is the value in ch?

(a) b
(b) A
(c) B
(d) 97

[2024] Q1(iii) The output of the statement "CONCENTRATION".indexOf('T') is:

(a) 9
(b) 7
(c) 6
(d) (-1)

[2024] Q1(iv) The access specifier that gives least accessibility is:

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

[2024] Q1(v) The output of the statement "talent".compareTo("genius") is:

(a) 11
(b) –11
(c) 0
(d) 13

[2024] Q1(vi) Which of the following is an escape sequence character in Java?

(a) `/n`
(b) `\t`
(c) `/t`
(d) `//n`

[2024] Q1(vii) if (a>b&&b>c) then largest number is:

(a) b
(b) c
(c) a
(d) wrong expression

[2024] Q1(viii) What is the output of Math.ceil(5.4)+Math.ceil(4.5)?

(a) 10.0
(b) 11.0
(c) 12.0
(d) 9.0

[2024] Q1(ix) What is the method to check whether a character is a letter or digit?

(a) `isDigit(char)`
(b) `isLetterOrDigit()`
(c) `isLetterOrDigit(char)`
(d) `isLETTERorDIGIT(char)`

[2024] Q1(x) The extension of a Java source code file is:

(a) exe
(b) obj
(c) jvm
(d) java

[2024] Q1(xi) The number of bytes occupied by a character array of four rows and three columns are:

(a) 12
(b) 24
(c) 96
(d) 48

[2024] Q1(xii) Which of the following data type cannot be used with switch case construct?

(a) int
(b) char
(c) String
(d) double

[2024] Q1(xiii) Which of the following are entry controlled loops? 1. for 2. while 3. do..while 4. switch

(a) only 1
(b) 1 and 2
(c) 1 and 3
(d) 3 and 4

[2024] Q1(xiv) Method which reverses a given number is:

(a) Impure method
(b) Pure method
(c) Constructor
(d) Destructor

[2024] Q1(xv) If the name of the class is "Yellow", what can be the possible name for its constructors?

(a) yellow
(b) YELLOW
(c) Yell
(d) Yellow

[2024] Q1(xvi) Invoking a method by passing the objects of a class is termed as:

(a) Call by reference
(b) Call by value
(c) Call by method
(d) Call by constructor

[2024] Q1(xvii) The correct statement to create an object named mango of class fruit:

(a) `Fruit Mango= new fruit();`
(b) `fruit mango = new fruit();`
(c) `Mango fruit=new Mango();`
(d) `fruit mango= new mango();`

[2024] Q1(xviii) Assertion (A): Static method can access static and instance variables.

Reason (R): Static variable can be accessed only by static method.

(a) Assertion and Reason both are correct.

(b) Assertion is true and Reason is false.

(c) Assertion is false and Reason is true.

(d) Assertion and Reason both are false.

[2024] Q1(xix) What is the output of the Java code given below?

```
String color [ ] = {"Blue", "Red", "Violet"};
System.out.println(color[2].length());
```

(a) 6

(b) 5

(c) 3

(d) 2

[2024] Q1(xx) Which of the following mathematical methods returns only an integer?

(a) `Math.ceil(n)`

(b) `Math.sqrt(n)`

(c) `Math.floor(n)`

(d) `Math.round(n)`

ICSE 2024 Specimen Paper

[Specimen 2024] Q1(i) Name the feature of java depicted in the above picture.

[Picture: a father lion and a lion cub, labelled 'Father' and 'Child']

(a) Encapsulation

(b) Inheritance

(c) Abstraction

(d) Polymorphism

[Specimen 2024] Q1(ii) The expression which uses >= operator is known as:

(a) relational

(b) logical

(c) arithmetic

(d) assignment

[Specimen 2024] Q1(iii) Ternary operator is a:

(a) logical operator

(b) arithmetic operator

(c) relational operator

(d) conditional operator

[Specimen 2024] **Q1(iv)** When primitive data type is converted to a corresponding object of its class, it is called:

(a) Boxing
(b) Unboxing
(c) explicit type conversion
(d) implicit type conversion

[Specimen 2024] **Q1(v)** The number of bytes occupied by a character array of 10 elements.

(a) 20 bytes
(b) 60 bytes
(c) 40 bytes
(d) 120 bytes

[Specimen 2024] **Q1(vi)** The method of Scanner class used to accept a double value is:

(a) `nextInt()`
(b) `nextDouble()`
(c) `next()`
(d) `nextInteger()`

[Specimen 2024] **Q1(vii)** Among the following which is a keyword:

(a) every
(b) all
(c) case
(d) each

[Specimen 2024] **Q1(viii)** The output of Math.round(6.6) + Math.ceil(3.4) is:

(a) 9.0
(b) 11.0
(c) 10.0
(d) 11

[Specimen 2024] **Q1(ix)** Name the type of error, if any in the following statement:
System.out.print("HELLO")

(a) logical
(b) no error
(c) runtime
(d) syntax

[Specimen 2024] **Q1(x)** Java statement to access the 5th element of an array is:

(a) `X[4]`
(b) `X[5]`
(c) `X[3]`
(d) `X[0]`

[Specimen 2024] **Q1(xi)** The output of "Remarkable".substring(6) is:

(a) mark
(b) emark
(c) marka
(d) able

[Specimen 2024] **Q1(xii)** Which of the following is the wrapper class for the data type char?

(a) String
(b) Char
(c) Character
(d) Float

[Specimen 2024] **Q1(xiii)** Name the package that contains wrapper classes:

(a) java.lang
(b) java.util
(c) java.io
(d) java.awt

[Specimen 2024] **Q1(xiv)** Constructor overloading follows which principle of Object Oriented programming?

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

[Specimen 2024] **Q1(xv)** Which of the following is a valid Integer constant: 1. 4 2. 4.0 3. 4.3f 4. "four"

(a) Only 1.
(b) 1. and 3.
(c) 2. and 4.
(d) 1. and 2.

[Specimen 2024] **Q1(xvi)** The method compareTo() returns _____ when two strings are equal and in lowercase:

(a) true
(b) 0
(c) 1
(d) false

[Specimen 2024] **Q1(xvii)** Assertion (A): In java statements written in lower case letter or upper case letter are treated as the same.

Reason (R): Java is a case sensitive language.

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

(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)

(c) Assertion (A) is true and Reason (R) is false

(d) Assertion (A) is false and Reason (R) is true

[Specimen 2024] Q1(xviii) Read the following text, and choose the correct answer: "A class encapsulate Data Members that contains the information necessary to represent the class and Member methods that perform operations on the data member." What does a class encapsulate?

(a) Information and operation

(b) Data members and Member methods

(c) Data members and information

(d) Member methods and operation

[Specimen 2024] Q1(xix) 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 false and Reason (R) is true

(d) Assertion (A) is false and Reason (R) is true

[Specimen 2024] Q1(xx) What will be the output for:

```
System.out.print(Character.toLowerCase('1'));
```

(a) 0

(b) 1

(c) A

(d) true

ICSE 2023 Examination (T23 861)

[2023] Q1(i) A mechanism where one class acquires the properties of another class:

(a) Polymorphism

(b) Inheritance

(c) Encapsulation

(d) Abstraction

[2023] Q1(ii) Identify the type of operator &&:

(a) ternary

(b) unary

(c) logical

(d) relational

[2023] Q1(iii) The Scanner class method used to accept words with space:

(a) `next()`
(b) `nextLine()`
(c) `Next()`
(d) `nextString()`

[2023] Q1(iv) The keyword used to call package in the program:

(a) extends
(b) export
(c) import
(d) package

[2023] Q1(v) What value will Math.sqrt (Math.ceil (15.3)) return?

(a) 16.0
(b) 16
(c) 4.0
(d) 5.0

[2023] Q1(vi) The absence of which statement leads to fall through situation in switch case statement?

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

[2023] Q1(vii) State the type of loop in the given program segment:

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

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

[2023] Q1(viii) Write a method prototype name check() which takes an integer argument and returns a char:

(a) `char check()`
(b) `void check (int x)`
(c) `check (int x)`
(d) `char check (int x)`

[2023] Q1(ix) The number of values that a method can return is:

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

[2023] Q1(x) Predict the output of the following code snippet:

```
String P = "20", Q = "22";
int a = Integer.parseInt(P);
int b = Integer.valueOf(Q);
System.out.println(a+""+b);
```

(a) 20
(b) 20 22
(c) 2220
(d) 22

[2023] Q1(xi) The String class method to join two strings is:

(a) `concat(String)`
(b) `<string>.joint(string)`
(c) `concat(char)`
(d) `Concat()`

[2023] Q1(xii) The output of the function "COMPOSITION".substring(3, 6):

(a) POSI
(b) POS
(c) MPO
(d) MPOS

[2023] Q1(xiii) int x = (int) 32.8; is an example of _____ typecasting.

(a) implicit
(b) automatic
(c) explicit
(d) coercion

[2023] Q1(xiv) The code obtained after compilation is known as:

(a) source code
(b) object code
(c) machine code
(d) java byte code

[2023] Q1(xv) Missing a semicolon in a statement is what type of error?

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

[2023] Q1(xvi) Consider the following program segment and select the output of the same when n = 10:

```
switch(n)
{ case 10 : System.out.println(n*2);
  case 4  : System.out.println(n*4); break;
  default : System.out.println(n);
}
```

(a) 20 [new line] 40
(b) 10 [new line] 4
(c) 20, 40
(d) 10 [new line] 10

[2023] Q1(xvii) 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

[2023] Q1(xviii) When an object of a Wrapper class is converted to its corresponding primitive data type, it is called as _____.

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

[2023] Q1(xix) The number of bits occupied by the value 'a' are:

(a) 1 bit
(b) 2 bits
(c) 4 bits
(d) 16 bits

[2023] Q1(xx) Method which is a part of a class rather than an instance of the class is termed as:

(a) Static method
(b) Non static method
(c) Wrapper class
(d) String method

ICSE 2023 Specimen Paper

[Specimen 2023] Q1(i) Wrapping up of data and methods together as one unit is termed as:

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

[Specimen 2023] Q1(ii) The datatype which is specified that the method does not return a value is:

(a) Void
(b) void
(c) VOID
(d) boolean

[Specimen 2023] Q1(iii) The logical operator which is an unary operator:

(a) &&
(b) ||
(c) !
(d) >>

[Specimen 2023] Q1(iv) The Scanner class is a _____ class.

(a) Primitive
(b) Derived
(c) Wrapper
(d) super class

[Specimen 2023] Q1(v) Math.pow(625, ½) + Math.sqrt(144)

(a) 17.0
(b) 13.0
(c) 37.0
(d) 13

[Specimen 2023] Q1(vi) The correct if statement for the following ternary operation statement is:

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

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

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

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

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

[Specimen 2023] **Q1(vii)** Multiple branching statement of java is:

(a) For
(b) while
(c) do… while
(d) switch

[Specimen 2023] **Q1(viii)** The number of bytes occupied by the constant 45 are:

(a) Four bytes
(b) two bytes
(c) Eight bytes
(d) one byte

[Specimen 2023] **Q1(ix)** do…..while loop is an

(a) entry controlled loop
(b) infinite loop
(c) exit controlled loop
(d) Finite loop

[Specimen 2023] **Q1(x)** How many times the inner loop is executed?

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

(a) 4 times
(b) 8 times
(c) 2 times
(d) 16 times

[Specimen 2023] **Q1(xi)** A method with the same name as of the class and with arguments and no return data type is termed as:

(a) parameterized constructor
(b) default constructor
(c) Non – parameterized constructor
(d) wrapper class method

[Specimen 2023] **Q1(xii)** int res='A'; What is the value of res?

(a) A
(b) 66
(c) 65
(d) 97

[Specimen 2023] Q1(xiii) The style of expressing single line comment is:

(a) `/* comment*/`
(b) `* comment`
(c) `// comment`
(d) `/* comment`

[Specimen 2023] Q1(xiv) The method to check if a character is an alphabet or not is:

(a) `isLetter(char)`
(b) `isAlpha(char)`
(c) `isUppercase(char)`
(d) `isLowercase(char)`

[Specimen 2023] Q1(xv) The output of Double.parseDouble("71.25") +0.75 is:

(a) 72
(b) 72.0
(c) 71.0
(d) 71.75

[Specimen 2023] Q1(xvi) The method to convert a string to upper case is:

(a) `toUpperCase(char)`
(b) `toUPPERCASE(String)`
(c) `toUpperCase(String)`
(d) `touppercase(String)`

[Specimen 2023] Q1(xvii) The output of the method "DETERMINATION".substring(2, 6) is:

(a) "TERM"
(b) term
(c) "Term"
(d) "TERMI"

[Specimen 2023] Q1(xviii) The array int x[10] occupies:

(a) 10 bytes
(b) 40 bytes
(c) 20 bytes
(d) 80 bytes

[Specimen 2023] Q1(xix) The element in x[4] of the array {3, 5, 7, 12, 16, 18, 20, 35, 42, 89} is:

(a) 16
(b) 12
(c) 7
(d) 18

[Specimen 2023] Q1(xx) Name the type of error that occurs for the following statement:

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

(a) Syntax error
(b) run time error
(c) logical error
(d) no error

PART B — Predict the Output / Evaluate / Trace

ICSE 2026 Examination (T26 861)

[2026] Q2(ii) [2] Evaluate the Java expression:

```
x = a * b % (++c) + (++a) + (--b);
```

if a = 7, b = 8, c = 2

[2026] Q2(v) [2] Give the output of the following program segment:

```
String S = "GRACIOUS".substring(4);
System.out.println(S);
System.out.println("GLAMOROUS".endsWith(S));
```

[2026] Q2(vi) [2] Give the output of the following program segment and mention how many times the loop is executed.

```
int K = 1;
do
{   K += 2;
    System.out.println(K);
} while (K <= 6);
```

[2026] Q2(viii) [2] Consider the array below. Write the index of the maximum element and the index of the minimum element of the array.

```
int X[ ][ ] = {{4, 5}, {7, 2}, {19, 4}, {7, 4}};
```

ICSE 2025 Examination (T25 861)

[2025] Q2(ii) [2] Write the output of the following String method:

```
String x= " talent" ; String y="matrix" ;
System.out.print(x.substring(3).concat(y.substring(3))) ;
```

[2025] Q2(v) [2] Consider and give the output of the following program:

```
class report
{   int a,b;
    report()
    {   a=10;
        b=15;
    }
    report(int x, int y)
    {   a=x;
        b=y;
    }
    void print()
    {   System.out.println(a*b);
    }
    static void main()
    {   report r = new report();
        r.print();
        report p = new report(4, 5);
        p.print();
    }
}
```

[2025] Q2(viii) [2] Consider the following array and answer the questions given below:

```
int a[ ] = {12,10,8,4,6,2,3,5,7}
```

(a) What is the output of System.out.print(a[0]+a[5]);?

(b) What is the index (subscript) of the largest element of the array a[ ]?

[2025] Q2(x) [2] Give the output of the following program segment and specify how many times the loop is executed.

```
String s = "JAVA";
for(i=0;i<s.length();i+=2)
    System.out.println(s.substring(i));
```

ICSE 2025 Specimen Paper

[Specimen 2025] Q2(ii) [2] Evaluate the given expression when the value of a=2 and b=3:

```
b*=a++ - ++b + ++a;
System.out.println("a= "+a);
System.out.println("b= "+b);
```

[Specimen 2025] Q2(v) [2] How many times will the following loop execute? Write the output of the code:

```
int x=10;
while (true) {
    System.out.println (x++ * 2);
    if (x%3==0)
        break;
}
```

[Specimen 2025] Q2(vi) [2] Write the output of the following String methods:

```
String x= "Galaxy ", y= "Games ";
```

(a) System.out.println (x.charAt(0)==y.charAt(0));

(b) System.out.println (x.compareTo(y));

[Specimen 2025] Q2(vii) [2] Predict the output of the following code snippet:

```
char ch='B';
char chr= Character.toLowerCase(ch);
int n=(int) chr-10;
System.out.println((char)n+"\t"+chr);
```

[Specimen 2025] Q2(x) [2] Consider the following program segment and answer the questions given below:

```
int x[ ] [ ] = { {2,4,5,6}, {5,7,8,1}, {34, 1,10, 9}};
```

(a) What is the position of 34?

(b) What is the result of x[2][3] + x[1][2]?

ICSE 2024 Examination (T24 861)

[2024] Q2(ii) [2] Evaluate the expression when x is 4:

```
x += x++ * ++x % 2;
```

[2024] Q2(iv) [2] Give the output of the following program segment. How many times is the loop executed?

```
for(x=10; x>20;x++)
    System.out.println(x);
System.out.println(x*2);
```

[2024] Q2(v) [2] What is value of x?

```
String s1 = "45.50"; String s2 = "54.50";
double d1=Double.parseDouble(s1);
double d2=Double.parseDouble(s2);
int x= (int)(d1+d2);
```

[2024] Q2(vi) [2] Consider the following two-dimensional array and answer the questions given below:

```
int x[ ][ ] = {{4,3,2}, {7,8,2}, {8, 3,10}, {1, 2, 9}};
```

(a) What is the order of the array?

(b) What is the value of x[0][0]+x[2][2]?

[2024] Q2(ix)(b) [1] Consider the given program. What is the output of the method main()?

```
class temp
{   int a;
    temp()
    {   a=10;
    }
    temp(int z)
    {   a=z;
    }
    void print()
    {   System.out.println(a);
    }
    void main()
    {   temp t = new temp();
        temp x = new temp(30);
        t.print();
        x.print();
    }
}
```

ICSE 2024 Specimen Paper

[Specimen 2024] Q2(ii) [2] Evaluate the expression when the value of x = 2:

```
x = x ++ + ++ x + x
```

[Specimen 2024] Q2(v) [2] How many times will the following loop execute? What value will be returned?

```
int x=2;
int y=50;
do{
    ++x;
    y-=x++;
}
while(x<=10);
return y;
```

[Specimen 2024] Q2(vi) [2] Write the output of the following String methods:

(a) "ARTIFICIAL ".indexOf('I')

(b) "DOG and PUPPY".trim().length()

[Specimen 2024] Q2(viii) [2] Predict the output of the following code snippet:

```
String a="20";
String b="23";
int p=Integer.parseInt(a);
int q=Integer.parseInt(b);
System.out.print(a+"*"+b);
```

[Specimen 2024] Q2(x) [2] Place all elements of P array and Q array in the array R one after the other.

```
int P [ ]={ 12,14,16,18}; int Q[ ]={ 20,22,24};
```

(a) What will be the size of array R [ ] ?

(b) Write index position of first and last element?

ICSE 2023 Examination (T23 861)

[2023] Q2(ii) [2] Evaluate the expression when the value of x = 4:

```
x *= --x + x++ + x
```

[2023] Q2(iv) [2] Give the output of the following Character class methods:

(a) Character.toUpperCase ('a')

(b) Character.isLetterOrDigit('#')

[2023] Q2(vi) [2] Give the output of the following program segment:

```
int n = 4279; int d;
while(n>0)
{   d=n%10;
    System.out.println(d);
    n=n/100;
}
```

[2023] Q2(vii) [2] Give the output of the following String class methods:

(a) "COMMENCEMENT" . lastIndexOf('M')

(b) "devote" . compareTo("DEVOTE")

[2023] Q2(viii) [2] 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]?

[2023] Q2(x) [2] Write the value of n after execution:

```
char ch ='d';
int n = ch + 5;
```

ICSE 2023 Specimen Paper

[Specimen 2023] Q2(i) [2] Evaluate the expression:

```
Z += a++ + --b + ++a + --b;
```

where a = 10, b = 5, Z = 10

[Specimen 2023] Q2(v) [2] How many times will the following loop get executed? What is the output of the same?

```
int counter=1;
do
{
    System.out.println(counter);
} while ( counter ++ < 5 );
```

[Specimen 2023] Q2(vi) [2] Give the output:

```
"MISSISSIPPI".replace('S', 't').toLowerCase()
```

[Specimen 2023] Q2(vii) [2] Give the output:

```
"REDUCE".compareTo("REVOLT") + "ANTARTICA".lastIndexOf('A')
```

[Specimen 2023] Q2(x) [2] Consider the following array and answer the questions given below:

```
int x [ ] = {23, 45, 67, 12, 45, 89, 24, 12, 9, 7}
```

(a) What is the size of the array?

(b) What is the position of 89?

ICSE Specimen Paper 2020 onwards

[Specimen 2020+] Q3(a) [2] State the number of bytes and bits occupied by a character array of 10 elements.

[Specimen 2020+] Q3(c) [2] What is the output of the following:

```
String a="Java is programming language \n developed by \t\'James Gosling\'";
System.out.println(a);
```

[Specimen 2020+] Q3(f) [2] What is the value of m after evaluating the following expression:

```
m -= 9%++n + ++n/2;
```

when int m=10, n=6

[Specimen 2020+] Q3(g) [2] Predict output of the following:

(i) Math.pow(25,0.5)+Math.ceil(4.2)

(ii) Math.round (14.7) + Math.floor (7.9)

[Specimen 2020+] Q3(h) [2] Give the output of the following java statements:

(i) "TRANSPARENT".toLowerCase();

(ii) "TRANSPARENT".compareTo("TRANSITION")

[Specimen 2020+] Q3(j) [2] State the type of errors if any in the following statements:

(i) switch (n > 2)

(ii) System.out.println(100/0);

ICSE Specimen Paper (older pattern, undated)

[Specimen (older)] Q1(e) [2] What is the result produced by 2 – 10*3 + 100/11 ? Show the steps.

[Specimen (older)] Q2(b) [2] What is the value of z in the following? Show the steps.

```
int x =20, y = 10, z;
z = ++x * (y--) - y ;
```

[Specimen (older)] Q2(e) [2] What will be the output of the following code?

```
float x = 7.87;
System.out.println(Math.ceil(x));
System.out.println(Math.floor(x));
```

[Specimen (older)] Q3(c)(i) [2] What will be the output of the following program segment?

```
String s = "application";
int p = s.indexOf('a');
System.out.println(p);
System.out.println(p+s);
```

[Specimen (older)] Q3(c)(ii) [2] What will be the output of the following program segment?

```
String st = "PROGRAM";
System.out.println(st.indexOf(st.charAt(4)));
```

[Specimen (older)] Q3(c)(iii) [2] What will be the output of the following program segment?

```
int a = 0;
if(a>0 && a<20)
    a++;
else a--;
System.out.println(a);
```

[Specimen (older)] Q3(c)(iv) [2] What will be the output of the following program segment?

```
int a= 5, b = 2,c;
if (a>b || a != b)
    c = ++a+--b;
System.out.print(c+ " "+a+" "+b);
```

[Specimen (older)] Q3(c)(v) [2] What will be the output of the following program segment?

```
int i = 1;
while(i++<=1)
{
    i++;
    System.out.print(i + " " );
}
System.out.print(i);
```

PART C — Coding Questions

C1. Short coding (Section A): write / rewrite / debug

ICSE 2026 Examination (T26 861)

[2026] Q2(i) [2] Rewrite the following program segment using a for loop.

```
int a = 5, b = 10;
while (b > 0)
{   b -= 2;
}
System.out.println (a * b);
```

[2026] Q2(iii) [2] Write the Java expression to find the sum of cube root of x and the absolute value of y.

[2026] Q2(iv) [2] Users must be above 10 years to open a self-operated bank account. Write this logic using a ternary operator and store the result (the eligibility message) in a String variable named idStatus and print it.

[2026] Q2(vii) [2] The following program segment calculates and displays the factorial of a number. [Example: Factorial of 5 is 1 x 2 x 3 x 4 x 5 = 120]

```
int p, n = 5, f = 0;
for (p = n; p > 0; p--)
    f *= p;
System.out.println(f);
```

Name the type of error if any; correct the statement to get the desired output.

[2026] Q2(ix) [2] The following program segment swaps the first element and the second element of the given array without using the third variable, fill in the blanks with appropriate java statements:

```
void swap()
{   int x[ ] = {4, 8, 19, 24, 15};
    (1) __________;
    (2) __________;
    x[0] = x[0] / x[1];
    System.out.println(x[0]+" "+x[1]);
}
```

ICSE 2025 Examination (T25 861)

[2025] Q2(i) [2] Write the java expression to find the product of square root of P and the square root of Q using the methods of Math class.

[2025] Q2(iii) [2] Write the Java statement for creating an object named ‘sifra’ of the class ‘Robot’, which takes three double parameters.

[2025] Q2(iv) [2] Convert the given loop into exit controlled loop.

```
int a,b;
for ( a=10 ,b=1; a>=1 ;a-=2)
{
    b+=a;
    b++;
}
System.out.print(b);
```

[2025] Q2(vii) [2] John was asked to write a Java code to calculate the surface area of a cone [A = πrl, where l = √(r² + h²)]. The following code was written by him. Specify the type of the error in the above program, correct and write the program to be error free.

```
class area
{   double area (double r, double h)
    {   double l, a;
        a=22.0/7*r*l;
        l=Math.sqrt(r*r+h*h);
        return a;
    }
}
```

[2025] Q2(ix) [2] (a) Write the Java statement to initialise the first 6 odd numbers in a 3 × 2 array.

(b) What is the result of x[0][1] + x[2][1] of the above array?

ICSE 2025 Specimen Paper

[Specimen 2025] Q2(i) [2] Rewrite the following code using single if statement.

```
if (code== 'g ')
    System.out.println ("GREEN ");
else if (code== 'G ')
    System.out.println ("GREEN ");
```

[Specimen 2025] Q2(iii) [2] A student executes the following program segment and gets an error. Identify the statement which has an error, correct the same to get the output as WIN.

```
boolean x = true;
switch(x)
{   case 1: System.out.println ("WIN"); break;
    case 2: System.out.println ("LOOSE");
}
```

[Specimen 2025] Q2(iv) [2] Write the Java expression for $\sqrt[3]{x} + \sqrt{y}$

[Specimen 2025] Q2(viii) [2] A student is trying to convert the string present in x to a numerical value, so that he can find the square root of the converted value. However the code has an error. Name the error (syntax / logical / runtime). Correct the code so that it compiles and runs correctly.

```
String x= "25";
int y=Double.parseDouble (x);
double r=Math.sqrt (y);
System.out.println (r);
```

ICSE 2024 Examination (T24 861)

[2024] Q2(i) [2] Write Java expression for: $|a + b| / \sqrt{(a^2 + b^2)}$

[2024] Q2(iii) [2] Rewrite the following do while program segment using for:

```
x = 10; y = 20;
do
{
    x++;
    y++;
} while (x<=20);
System.out.println(x * y );
```

[2024] Q2(viii) [2] The following code to compare two strings is compiled, the following syntax error was displayed – incompatible types – int cannot be converted to boolean. Identify the

statement which has the error and write the correct statement. Give the output of the program segment.

```
void calculate()
{
    String a = "KING", b = "KINGDOM";
    boolean x = a.compareTo(b);
    System.out.println(x);
}
```

[2024] Q2(x)(b) [1] Write the statement to access the Scanner class in the program.

ICSE 2024 Specimen Paper

[Specimen 2024] Q2(i) [2] Write the Java expression for $(p + q)^2$

[Specimen 2024] Q2(iii) [2] The following code segment should print "You can go out" if you have done your homework (dh) and cleaned your room (cr). However, the code has errors. Fix the code so that it compiles and runs correctly.

```
boolean dh = True;
boolean cr= true;
if (dh && cr)
    System.out.println("You cannot go out");
else
    System.out.println("You can go out");
```

[Specimen 2024] Q2(iv) [2] Sam executes the following program segment and the answer displayed is zero irrespective of any non zero values are given. Name the error. How the program can be modified to get the correct answer?

```
void triangle(double b, double h)
{   double a;
    a = 1/2 * b * h;
    System.out.println("Area="+a);
}
```

ICSE 2023 Examination (T23 861)

[2023] Q2(i) [2] Write the Java expression for $(a + b)^x$

[2023] Q2(iii) [2] Convert the following do…while loop to for loop:

```
int x=10;
do
{   x--;
    System.out.print(x);
} while (x>=1);
```

[2023] Q2(v) [2] Rewrite the following code using the if-else statement:

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

ICSE 2023 Specimen Paper

[Specimen 2023] Q2(ii) [2] Write java expression for: $| x^2 + xy |$

[Specimen 2023] Q2(iii) [2] Rewrite the following using ternary operators:

```
if ( x > y )
    c = 'A';
else
    c = 'a';
```

[Specimen 2023] Q2(iv) [2] Rewrite the following while loop using for loop:

```
int x = 5;
while ( x <= 5 )
{
    x++;
}
System.out.println(x);
```

ICSE Specimen Paper 2020 onwards

[Specimen 2020+] Q2(b) [2] Rewrite the following condition without using logical operators:

```
if ( a>b || a>c )
    System.out.println(a);
```

[Specimen 2020+] Q2(c) [2] Rewrite the following loop using for loop:

```
while(true)
    System.out.print("*");
```

[Specimen 2020+] Q2(d) [2] Write the prototype of a function search which takes two arguments a string and a character and returns an integer value.

[Specimen 2020+] Q3(e) [2] Write a statement in Java for: $\sqrt{((a+b)^3 / |a-b|)}$ [expression reconstructed from the PDF text — verify against the original paper]

[Specimen 2020+] Q3(i) [2] Write a java statement for each to perform the following task:

(i) Find and display the position of the last space in a string str.

(ii) Extract the second character of the string str.

ICSE Specimen Paper (older pattern, undated)

[Specimen (older)] Q1(d) [2] Write an expression in Java for: $\cos x + \sqrt{(a^2 + b^2)}$

C2. Programs (Section B)

ICSE 2026 Examination (T26 861)

[2026] Q3 [15] Define a class named StepTracker with the following specifications:

Member Variables:

- String name — stores the user's name.
- int sw — stores the total number of steps walked by the user.
- double cb — stores the estimated calories burned by the user.
- double km — stores the estimated distance walked in kilometers.

Member Methods:

- void accept() — to input the name and the steps walked using Scanner class methods only.
- void calculate() — calculates calories burned and distance in km based on steps walked using the following estimation table:

Metric	Calculation Formula
Calories Burned	steps walked × 0.04 (e.g., 1 step burns 0.04 calories)
Distance (Km)	steps walked / 1300 (e.g., 1300 steps is approx. 1 km)

- void display() — Display the calories burned, distance in km and the user's name.

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

[2026] Q4 [15] Write a program to accept the designations of 100 employees in a single dimensional array. Accept the designation from the user and print the total number of employees with the designation given by the user as input.

Example:

```
Trainee  Manager  Chef  Manager  Director  Manager
Input: Manager        Output: 3
```

[2026] Q5 [15] Write a program to accept a two-dimensional integer array of order 4 x 5 as input from the user. Check if it is a Sparse Matrix or not. A matrix is considered to be a sparse, if the total number of zero elements is greater than the total number of non-zero elements. Print appropriate messages.

Example:

```
4 3 0 1 0
1 0 0 2 0
1 0 1 0 0
0 3 2 0 0

Number of zero elements = 11
Number of non zero elements = 9
Matrix is a Sparse Matrix
```

[2026] Q6 [15] Write a program to accept a number and check if it is a Mark number or not. A number is said to be Mark when sum of the squares of each digit is an even number as well as the last digit of the sum and the last digit of the number given is same.

Example: n = 246

```
sum = 2 x 2 + 4 x 4 + 6 x 6 = 56
56 is an even number as well as last digit is 6 for both sum as well as the
number.
```

[2026] Q7 [15] Define a class to overload the method format as follows:

- void format (): To print the following pattern using Nested for loops only:

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

- int format (String s): To calculate and return the sum of ASCII codes of each character of the String.

```
Example: CAB
Output: 67 + 65 + 66
        198
```

- void format (int n): To calculate and display the sum of natural numbers up to n given by the formula $n(n + 1) / 2$.

[2026] Q8 [15] Write a program to accept a word and print the Symbolic of the accepted word. Symbolic word is formed by extracting the characters from the first consonant, then add characters before the first consonant of the accepted word and end with "TR".

```
AIRWAYS   Symbolic word is RWAYSAITR
BEAUTY    Symbolic word is BEAUTYTR
```

ICSE 2025 Examination (T25 861)

[2025] Q3 [15] Define a class named CloudStorage with the following specifications:

Member Variables:

- int acno - stores the user's account number.
- int space - stores the amount of storage space in GB purchased by the user.
- double bill - stores the total price to be paid by the user.

Member Methods:

- void accept() - prompts the user to input their account number and storage space using Scanner class methods only.
- void calculate() - calculates the bill total price based on the storage space purchased using the pricing table provided:

Storage range	Price per GB (Rs)
First 15 GB	15
Next 15 GB	13
Above 30 GB	11

- void display() - displays the account number, storage space and bill to be paid.

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

[2025] Q4 [15] Define a class to accept values into a 4 x 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 = Squareroot of 201 = 14.177446878757825
```

[2025] Q5 [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]

Example : "COmmITmeNt"

```
Number of Uppercase letters – 5
Number of Lowercase letters – 5
String is a Super String
```

[2025] Q6 [15] Define a class to initialise the following data in an array. Search for a given character input by the user, using the Binary Search technique. Print "Search Successful" if the character is found otherwise print "Search is not Successful".

```
'A', 'H', 'N', 'P', 'S', 'U', 'W', 'Y', 'Z', 'b', 'd'
```

[2025] Q7 [15] Define a class to overload the method print( ) as follows:

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

```
@#@#@
@#@#@
@#@#@
@#@#@
```

- double print(double a, double b) – To display the sum of numbers between a and b with difference of 0.5.

```
e.g. if a = 1.0, b = 4.0
output is: 1.0 + 1.5 + 2.0 + 2.5 + ……. + 4.0
```

- int print(char ch1, char ch2) – compare the two characters and return the ASCII code of the largest character.

[2025] Q8 [15] Define a class to accept a number. Check if the sum of the largest digit and the smallest digit is an even number or an odd number. Print appropriate messages.

```
Sample Input:    6425           3748
Largest digit:   6              8
Smallest digit:  2              3
Sample Output:   Sum is even    Sum is odd
```

ICSE 2025 Specimen Paper

[Specimen 2025] Q3 [15] (Buffered Reader / Data Input Stream should not be used in the programs.) Define a class with the following specifications:

Class name: Bank

Member variables:

- double p – stores the principal amount
- double n – stores the time period in years
- double r – stores the rate of interest
- double a – stores the amount

Member methods:

- void accept () – input values for p and n using Scanner class methods only.
- void calculate () – calculate the amount based on the following conditions:

Time in (Years)	Rate %
Upto ½	9
> ½ to 1 year	10
> 1 to 3 years	11
> 3 years	12

```
a = p (1 + r/100)^n
```

- void display () – display the details in the given format.

```
Principal    Time    Rate    Amount
xxx          xxx     xxx     xxx
```

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

[Specimen 2025] Q4 [15] Define a class to search for a value input by the user from the list of values given below. If it is found display the message "Search successful", otherwise display the message "Search element not found" using Binary search technique.

```
5.6, 11.5, 20.8, 35.4, 43.1, 52.4, 66.6, 78.9, 80.0, 95.5
```

[Specimen 2025] Q5 [15] Define 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 characters remain the same.

```
Example: Input  : #IMAGINATION@2024
         Output : #JLBFJMBSJPM@2024
```

[Specimen 2025] Q6 [15] Define a class to accept values into 4x4 array and find and display the sum of each row.

```
Example:
A[][]={{1,2,3,4},{5,6,7,8},{1,3,5,7},{2,5,3,1}}
Output:
sum of row 1 = 10 (1+2+3+4)
sum of row 2 = 26 (5+6+7+8)
sum of row 3 = 16 (1+3+5+7)
sum of row 4 = 11 (2+5+3+1)
```

[Specimen 2025] Q7 [15] Define a class to accept a number and check whether it is a SUPERSPY number or not. A number is called SUPERSPY if the sum of the digits equals the number of the digits.

```
Example 1:
Input: 1021
Output: SUPERSPY number [SUM OF THE DIGITS = 1+0+2+1 = 4, NUMBER OF DIGITS = 4]

Example 2:
Input: 125
Output: Not an SUPERSPY number [1+2+5 is not equal to 3]
```

[Specimen 2025] Q8 [15] Define a class to overload the method display() as follows:

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

```
1 2 1 2 1
1 2 1 2 1
1 2 1 2 1
```

- void display (int n, int m): To print the quotient of the division of m and n if m is greater than n otherwise print the sum of twice n and thrice m.
- double display (double a, double b, double c) – to print the value of z where $z = p \times q$, $p = (a + b) / c$, $q = a + b + c$

ICSE 2024 Examination (T24 861)

[2024] Q3 [15] 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 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:

- 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	Rs.800
Next 5 Kgs	Rs.700
Above 10 Kgs	Rs.500

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

- void print ( ) – To print the details
- void main ( ) – to create an object of the class and invoke the methods

[2024] Q4 [15] Define a class to overload the method perform as follows:

- double perform (double r, double h) to calculate and return the value of Curved surface area of cone: $CSA = \pi rl$, where $l = \sqrt{(r^2 + h^2)}$
- void perform (int r, int c) Use NESTED FOR LOOP to generate the following format:

```
r = 4, c = 5   output –
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
```

- void perform (int m, int n, char ch) to print the quotient of the division of m and n if ch is Q else print the remainder of the division of m and n if ch is R

[2024] Q5 [15] Define a class to accept a number from user and check if it is an EvenPal number or not. (The number is said to be EvenPal number when number is palindrome number (a number is palindrome if it is equal to its reverse) and sum of its digits is an even number.)

```
Example: 121 – is a palindrome number
Sum of the digits – 1+2+1 = 4 which is an even number
```

[2024] Q6 [15] Define a class to accept values into an integer array of order 4 x 4 and check whether it is a DIAGONAL array or not. An array is DIAGONAL if the sum of the left diagonal elements equals the sum of the right diagonal elements. Print the appropriate message.

```
Example:
3 4 2 5
2 5 2 3
5 3 2 7
1 3 7 1

Sum of the left diagonal elements  = 3 + 5 + 2 + 1 = 11
Sum of the right diagonal elements = 5 + 2 + 3 + 1 = 11
```

[2024] Q7 [15] Define a class pin code and store the given pin codes in a single dimensional array. Sort these pin codes in ascending order using the Selection Sort technique only. Display the sorted array.

```
110061, 110001, 110029, 110023, 110055, 110006, 110019, 110033
```

[2024] Q8 [15] Define a class to accept the gmail id and check for its validity. A gmail id is valid only if it has: @ , . (dot) , gmail , com

Example: icse2024@gmail.com is a valid gmail id.

ICSE 2024 Specimen Paper

[Specimen 2024] Q3 [15] Define a class called with the following specifications:

Class name: Eshop

Member variables:

- String name: name of the item purchased
- double price: Price of the item purchased

Member methods:

- void accept(): Accept the name and the price of the item using the methods of Scanner class.
- void calculate(): To calculate the net amount to be paid by a customer, based on the following criteria:

Price	Discount
1000 – 25000	5.0%
25001 – 57000	7.5%
57001 – 100000	10.0%
More than 100000	15.0%

- void display(): To display the name of the item and the net amount to be paid.

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

[Specimen 2024] Q4 [15] Define a class to accept values in integer array of size 10. Sort them in an ascending order using selection sort technique. Display the sorted array.

[Specimen 2024] Q5 [15] Define a class to accept a string and convert it into uppercase. Count and display the number of vowels in it.

```
Input: robotics
Output: ROBOTICS
Number of vowels: 3
```

[Specimen 2024] Q6 [15] Define a class to accept values into a 3×3 array and check if it is a special array. An array is a special array if the sum of the even elements = sum of the odd elements.

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

[Specimen 2024] Q7 [15] Define a class to accept a 3 digit number and check whether it is a duck number or not. Note: A number is a duck number if it has zero in it.

```
Example 1:
Input: 2083
Output: Invalid

Example 2:
Input: 103
Output: Duck number
```

[Specimen 2024] Q8 [15] Define a class to overload the method display as follows:

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

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

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

```
Example: n = 4329
output -  3.0
          1.414213562
          1.732050808
          2.0
```

ICSE 2023 Examination (T23 861)

[2023] Q3 [15] Design a class with the following specifications:

Class name: Student

Member variables: (Declare the variables using appropriate data types)

- name – name of student
- age – age of student
- mks – marks obtained
- stream – stream allocated

Member methods:

- void accept() – Accept name, age and marks using methods of Scanner class.
- void allocation() – Allocate the stream as per following criteria:

mks	stream
≥ 300	Science and Computer
≥ 200 and < 300	Commerce and Computer
≥ 75 and < 200 *	Arts and Animation
< 75	Try Again

* the comparison symbol is unclear in the PDF text; reconstructed.

- void print() – Display student name, age, mks and stream allocated.

Call all the above methods in main method using an object.

[2023] Q4 [15] Define a class to accept 10 characters from a user. Using bubble sort technique arrange them in ascending order. Display the sorted array and original array.

[2023] Q5 [15] Define a class to overload the function print as follows:

- void print() to print the following format

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

- void print(int n) To check whether the number is a lead number. A lead number is the one whose sum of even digits are equal to sum of odd digits.

```
e.g. 3669   odd digits sum  = 3 + 9 = 12
            even digits sum = 6 + 6 = 12
     3669 is a lead number.
```

[2023] Q6 [15] Define a class to accept a String and print the number of digits, alphabets and special characters in the string.

```
Example: S = "KAPILDEV@83"
Output:  Number of digits – 2
         Number of Alphabets – 8
         Number of Special characters – 1
```

[2023] Q7 [15] Define a class to accept values into an array of double data type of size 20. Accept a double value from user and search in the array using linear search method. If value is found display message "Found" with its position where it is present in the array. Otherwise display message "not found".

[2023] Q8 [15] Define a class to accept values in integer array of size 10. Find sum of one digit number and sum of two digit numbers entered. Display them separately.

```
Example: Input: a[ ] = {2, 12, 4, 9, 18, 25, 3, 32, 20, 1}
Output: Sum of one digit numbers : 2 + 4 + 9 + 3 + 1 = 19
        Sum of two digit numbers : 12 + 18 + 25 + 32 + 20 = 107
```

ICSE 2023 Specimen Paper

[Specimen 2023] Q3 [15] Define a class with the following specifications:

Class name: employee

Member variables: (Declare the variables using appropriate data types)

- eno – employee number
- ename – name of the employee
- age – age of the employee
- basic – basic salary

Member methods:

- void accept() – accept the details using scanner class
- void calculate() – to calculate the net salary as per the given specifications:

```
net = basic + hra + da – pf
hra = 18.5% of basic
da  = 17.45% of basic
pf  = 8.10% of basic
```

If the age of the employee is above 50 he/she gets an additional allowance of Rs.5000.

- void print() – to print the details as per the following format:

```
eno     ename     age     basic     net
```

- void main() – to create an object of the class and invoke the methods

[Specimen 2023] Q4 [15] Define a class to overload the method print as follows:

- void print () – to print the format

```
1
2 3
4 5 6
7 8 9 10
```

- boolean print (int n) – to check whether the number is a Dudeney number. A number is dudeney if the cube of the sum of the digits is equal to the number itself.

```
Eg : 512 = (5+1+2)³ = (8)³ = 512
```

- void print (int a, char ch) – if ch = s or S print the square of the number else if ch = c or C print the cube of the number.

[Specimen 2023] Q5 [15] Define a class to accept 10 integers and arrange them in descending order using bubble sort. Print the original array and the sorted array.

[Specimen 2023] Q6 [15] Define a class to accept values into a double array of size 20 and print the range of the array, range is the difference between the largest and the smallest elements of the array.

[Specimen 2023] Q7 [15] Define a class to accept a string and print the same in reverse, also print the number of vowels in the string.

```
Eg : S = "BEAUTIFUL"     Output – "LUFITUAEB"
                         No. of vowels = 5
```

[Specimen 2023] Q8 [15] Define a class to accept the names of 10 students in an array and check for the existence of the given name in the array using linear search, if found print the position of the name, if not found print the appropriate message. Also print the names which begins with the word "SRI".

ICSE Specimen Paper 2020 onwards

[Specimen 2020+] Q4 [15] Anshul transport company charges for the parcels of its customers as per the following specifications given below:

Class name : Atransport

Member variables:

- String name – to store the name of the customer
- int w – to store the weight of the parcel in Kg
- int charge – to store the charge of the parcel

Member functions:

- void accept ( ) – to accept the name of the customer, weight of the parcel from the user (using Scanner class)
- void calculate ( ) – to calculate the charge as per the weight of the parcel as per the following criteria:

Weight in Kg	Charge per Kg
Upto 10 Kgs	Rs.25 per Kg
Next 20 Kgs	Rs.20 per Kg

Weight in Kg	Charge per Kg
Above 30 Kgs	Rs.10 per Kg

A surcharge of 5% is charged on the bill.

- void print ( ) – to print the name of the customer, weight of the parcel, total bill inclusive of surcharge in a tabular form in the following format:

```
Name       Weight     Bill amount
-------    ---------  ---------------
```

Define a class with the above-mentioned specifications, create the main method, create an object and invoke the member methods.

[Specimen 2020+] Q5 [15] Write a program to input name and percentage of 35 students of class X in two separate one dimensional arrays. Arrange students details according to their percentage in the descending order using selection sort method. Display name and percentage of first ten toppers of the class.

[Specimen 2020+] Q6 [15] Design a class to overload a function Sum( ) as follows:

- (i) int Sum(int A, int B) – with two integer arguments (A and B) calculate and return sum of all the even numbers in the range of A and B.

```
Sample input: A=4 and B=16
Sample output: sum = 4 + 6 + 8 + 10 + 12 + 14 + 16
```

- (ii) double Sum(double N) – with one double argument (N) calculate and return the product of the following series: sum = 1.0 x 1.2 x 1.4 x …… x N
- (iii) int Sum(int N) – with one integer argument (N) calculate and return sum of only odd digits of the number N.

```
Sample input : N=43961
Sample output : sum = 3 + 9 + 1 = 13
```

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

[Specimen 2020+] Q7 [15] Using the switch statement, write a menu driven program to perform following operations:

- (i) To print the value of Z where $Z = (x^3 + 0.5x) / Y$, where x ranges from –10 to 10 with an increment of 2 and Y remains constant at 5.5. [formula reconstructed from the PDF text — verify against the original paper]
- (ii) To print the Floyd's triangle with N rows

```
Example: If N = 5, Output:
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

[Specimen 2020+] Q8 [15] Write a program to input and store integer elements in a double dimensional array of size 4×4 and find the sum of all the elements.

```
7 3 4 5
5 4 6 1
6 9 4 2
3 2 7 5
Sum of all the elements: 73
```

[Specimen 2020+] Q9 [15] Write a program to input a string and convert it into uppercase and print the pair of vowels and number of pair of vowels occurring in the string.

```
Input:  "BEAUTIFUL BEAUTIES"
Output: Pair of vowels: EA, AU, EA, AU, IE
        No. of pair of vowels: 5
```

ICSE Specimen Paper (older pattern, undated)

[Specimen (older)] Q4 [15] Define a class taximeter having the following description:

Data members/instance variables:

- int taxino – to store taxi number
- String name – to store passenger's name
- int km – to store number of kilometres travelled

Member functions:

- taximeter() – constructor to initialize taxino to 0, name to " " and b [as printed in the paper; presumably km] to 0.
- input() – to store taxino, name, km
- calculate() – to calculate bill for a customer according to given conditions:

Kilometers travelled (km)	Rate/km
≤ 1 km	Rs 25
1 < km ≤ 6	Rs 10
6 < km ≤ 12	Rs 15
12 < km ≤ 18	Rs 20
> 18 km	Rs 25

- display() – To display the details in the following format:

```
Taxino    Name    Kilometres travelled    Bill amount
  -         -              -                   -
```

Create an object in the main method and call all the above methods in it.

[Specimen (older)] Q5 [15] Write a menu driven program to find the sum of the following series depending on the user choosing 1 or 2 (use switch-case):

```
1.  S = 1/4 + 1/8 + 1/12 + ......... upto n terms
2.  S = 1/1! - 2/2! + 3/3! - ....... upto n terms
```

where ! stands for factorial of the number and the factorial value of a number is the product of all integers from 1 to that number, e.g. 5! = 1 × 2 × 3 × 4 × 5.

[Specimen (older)] Q6 [15] Write a program to accept a sentence and print only the first letter of each word of the sentence in capital letters separated by a full stop.

```
Example:
INPUT SENTENCE : "This is a cat"
OUTPUT         : T.I.A.C.
```

[Specimen (older)] Q7 [15] Write a program to create an array to store 10 integers and print the largest integer and the smallest integer in that array.

[Specimen (older)] Q8 [15] Write a program to calculate the sum of all the prime numbers between the range of 1 and 100.

[Specimen (older)] **Q9 [15]** Write a program to store 10 names in an array. Arrange these in alphabetical order by sorting. Print the sorted list. Take single word names, all in capital letters, e.g. SAMSON, AJAY, LUCY, etc.