



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

**ANSWER KEY**

---

*Maximum Marks: 100*

*Time allowed: Two hours*

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

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

*This time is to be spent in reading the question paper.*

*The time given at the head of this Paper is the time allowed for writing the answers.*

---

*This Paper is divided into two Sections.*

*Attempt all questions from Section A and any four questions from Section B.*

*The intended marks for questions or parts of questions are given in brackets [ ]*

---

### SECTION A

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

#### Question 1

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

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

i. When a class serves as base class for many derived classes, the situation is called

- a. Polymorphism      b. Encapsulation  
c. **Inheritance**      d. Abstraction

ii. The expression which uses the && operator is known as

- a. Relational      b. **Logical**      c. Arithmetic      d. Assignment

iii. Precedence of shorthand operator is \_\_\_\_\_ than Unary operator

- a. Higher      b. **Lower**      c. Equal      d. Not related

iv. When the object of a wrapper class is assigned to primitive type variable, the object is automatically converted to the primitive type is called as

- a. **Unboxing**      b. Boxing      c. Implicit Conversion      d. Inheritance

v. How many bytes are allocated for the array a[] if int a [] = new int [4];

- a. 40 bytes      b. **16 bytes**      c. 20 bytes      d. 32 bytes

vi. The wrapper class of char type is

- a. character      b. Chracter      c. **Character**      d. Char

vii. The output of System.out.print(Math.ceil(Math.min(-4.3,-7.8))); is

- a. **-7.0**      b. -8.0      c. 7      d. 6



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

### Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

viii. Which of the following is not a token?

- a. **Byte code**                      b. identifiers                      c. literals                      d. operators

ix. Name the type of error in the following statement

```
System.out.println(10/0);
```

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

x. The size of the array a[ ]={ 3,8,2,1,12,11,13} is

- a. 6                      b. **7**                      c. 9                      d. 8

xi. The output of the given statements is

```
String a = "Success", b = "Happiness";  
boolean h = a.substring(4).equals(b.substring(6));
```

- a. ess                      b. ness                      **c. true**                      d false

xii. \_\_\_\_\_ compiles the Java source code into byte code

- a. Virtual machine                      b. java interpreter  
c. **JVM compiler**                      d. object code

xiii. The java statement to access the 5<sup>th</sup> character in the string str is:

- a. str.indexOf(i)                      b. **str.charAt(4)**  
c. str.substring(5)                      d. str.length()

xiv. A method prototype which has function name display() which takes two characters as input and an integer number as a return type is

- a. void display(int a ,int b)                      b. int display(int a ,int b)  
c. **int display(char a ,char b)**                      d. char display(int a ,int b)

xv. The method compareTo() returns \_\_\_\_\_ when two strings are equal and in lowercase :

- a. true                      b. **0**                      c. 1                      d. false

xiv. Which of the following is a valid String constant?

- a. true                      b. 'false'                      c. false                      d. **"true"**



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

### Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

xvii. The output of the following snippet is

```
System.out.print("Output is ");
for(int m=5;m<=50;m+=5)
{
if(m%6==0)
continue;
else
if(m%3==0)
System.out.println(m);
}
```

a. **Output is 15  
45**

b. 16 35

c. Output is 15

d. 45 15

xviii. Assertion (A): A loop that in which there is no statement associated in its body is called as an infinite loop.

Reason(R) : In the infinite loop the test condition will always be true.

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**

xix. Read the following text and choose the correct answer

A constructor is a special member function used to initialise the data members whenever an object is created for the class. The different types of constructors are

- Default constructor
- Parameterised constructor

How do we invoke a constructor in the program?

a. We should create a separate method with the return type as void

**b. When an object is created the constructor is invoked**

c. The method call should be initialised to a data type.

d. A pure function needs to be created to call the constructor



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

### Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

xx. Assertion (A): When you pass an object as an argument to a function , it is called as pass by reference.

Reason(R) : The reference of an object is passed as parameter and not the value of the argument.

**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

### Question 2

i. Write the java expression for  $\sqrt[3]{(a + b)^2}$  [2]

Ans: `Math.cbrt(Math.pow(a+b),2)`

ii. Evaluate the expression when the value of  $p=5$  [2]

`p*=++p + --p/++p +p;`

Ans: 60

iii. The following code segment should add the fifth and eight elements of the array and display the answer as 56. However the code has errors. Fix the code so that it compiles and runs correctly. [2]

```
int s[]={2,22,3,32,4,42,5,52};
if(s[3]%2==0)
int sum=s[5]+s[7];
System.out.println(sum);
```

Ans: sum should be initialized before the if condition and the value `s[5]` should be changed to `s[4]`

iv. John executes the following line of the program and the answer displayed will be a floating-point value, but he expects to get the answer as 0. Name the error and how can the given statement be modified. [2]

`System.out.println(Math.sqrt(2)/10);`

Should explicitly convert the print statement to int

`System.out.println((int)Math.sqrt(2)/10);` The error is logical error

v. How many times will the loop be executed? What will be the output? [2]

```
int a=12010;int d;
while(a>0)
{
```



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

### Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

```
d=a%100;
if(++d/3==0)
break;
else
a=a/1000;
System.out.println(d);
}
```

Ans: 11

13

The loop will be executed twice

vi. What will be the output of the following string methods? [2]

a. `System.out.println("All the Best".length()/2);`

Ans: 6

b. `System.out.println("Acquatic".equalsIgnoreCase("ACQUATIC"));`

Ans: true

vii. Differentiate between actual and formal parameters. [2]

Ans: Actual parameters : Defined in method call.

Formal parameters: Parameters in method definition and preceded by data type.

viii. Predict the output of the following: [2]

`String s="123.45";`

`int x=Integer.parseInt(s.substring(0,3));`

`float y=Float.parseFloat(s.substring(3));`

`System.out.println(x+y);`

Ans: 123.45

ix. Name the following: [2]

a. The return type of `compareTo` function

Ans: int

b. A principle of OOP, which allows a method to be used for multiple purposes.

Ans: Polymorphism

x. Give the output of the following code-snippet: [2]

`double z[]={0.3,4.5,23.0,4.5};`

`System.out.println(Math.pow((z[1]+z[3]),2));`

`System.out.println(z.length);`

Ans: 81.0

4



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

### Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

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

*The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base.*

*Each program should be written using variable description / mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required*

### Question 3

[15]

Design a class named Bill, which will contain the following members:

#### **Data Members:**

units,amt of int data type.

#### **Member Functions:**

Parameterised constructor to initialise units.

void show( ) to display the contents of units and amt.

void compute(int u ) :calculate the electricity bill with the help of the below mentioned charges:

- 1 to 100 units – Rs.10/unit
- 100 to 200 units – Rs.15/unit
- 200 to 300 units – Rs.20/unit
- above 300 units – Rs.25/unit

In the main( ) create an object and initialise u with any value and calculate amt by invoking the compute( ) function and display the contents of U an amt using show( ) function.

Class name – 1 mark

Data members – 1 mark

Method names – 1 mark

If conditions together – 4 marks( 1 mark each )

Calculation of bill- 4 marks(I mark each)

Main method- I mark

Creating an object -1 mark

Calling of functions- 2 marks( I mark each)

### Question 4

[15]

Write a program to input height of 10 Students in feet ( like 5.8, 6.1, ..... ) in a single dimensional array. Sort the heights in ascending order, using bubble sort technique and display the sorted array.

Variable description – 2 marks

Initialising the array – 1 mark

Accepting elements in an array – 2marks

**Bubble sort technique**



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

For loop -4 marks(2 marks each for loop)

Initializing the variables – 1 mark

Swapping the variables – 3 marks

Displaying the sorted array – 2 marks(1 mark for the for loop and 1 mark for the print statement)

### Question 5

[15]

Write a program to accept a string and convert it into uppercase. Replace all the vowels in the string with the character '#' and display the new string.

Variable Description – 2 marks

Accepting a string -1 mark

Initializing a new string – 1 mark

Upper case conversion 1 mark

For loop -2 marks

Character extraction 2 marks

If condition -3 marks

Creating a new string 1 mark

Displaying the new string -2 marks

### Question 6

[15]

Write a program to overload the function display() for the following tasks:

- i) To display the following pattern using the function void pattern (char ch,int n) where n is the number of lines and ch is the character to be printed.

\*\*\*\*\*

\*\*\*\*

\*\*\*

\*\*

\*

- ii) To display the sum of the following series

$$S = a^2 + a^4 + a^6 + \dots + n \text{ terms}$$

Declaring the methods 2 marks(Should include the parameters properly, if not no marks allotted)

First method

For loops – 4 marks(2 marks each)

Print statements- 2 marks (1 mark for each statement)

Second method

Accepting a and n from the user – 1 mark

Initializing sum = 1 mark



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

Finding the sum which includes the Math pow function -3

Displaying the sum – 1 mark

### Question 7

[15]

Write a program to accept a number and check if it's a Peterson number or not.

A number is said to be **Peterson** if the sum of factorials of each digit is equal to the sum of the number itself.

For example:

Input: Enter a number=145

Output= $1!+4!+5!=145$

Variable description 2 marks

Accepting a number – 1 mark

Loop for extraction of numbers – 2 marks

Number extraction logic – 2 marks

Loop for finding the factorial – 2 marks

Initializing the factorial variable – 1 mark

Finding the factorial logic – 2 marks

If condition – 2 marks

Final print statement – 1 mark

### Question 8

[15]

Define a class to accept values into a  $3 \times 3$  array and find the sum of all the odd numbers in the array.

Example:

Input:  $A[][] = \{\{ 4, 5, 6\}, \{ 5, 3, 2\}, \{ 4, 2, 5\}\}$ ;

Output: Sum of odd numbers= $5+5+3+5=18$

Variable description – 2 marks

Initialising the array – 2mark

Accepting elements in an array – 2marks

Initializing the sum – 1 mark

For loop for the calculation – 2 mark

If condition – 2 marks

Sum calculation – 2 marks

Printing the sum – 2 marks