



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

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

[10]

**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. 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



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

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

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 5th 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"

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;`



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

```
else
if(m%3==0)
System.out.println(m);
}
```

- a. Output is 15 b. 16 35 c. Output is 15 d. 45 15
45

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

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



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

Question 2

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

ii. Evaluate the expression when the value of p=5 [2]
`p*=++p + --p/++p +p;`

iii. The following code segment should add the fifth and eight elements of the array and displays 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);
```

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.

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

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

```
int a=12010;int d;
while(a>0)
{
d=a%100;
if(++d/3==0)
break;
else
a=a/1000;
System.out.println(d);
}
```

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

- `System.out.println("All the Best".length()/2);`
- `System.out.println("Acquatic".equalsIgnoreCase("ACQUATIC"));`

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

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);
```



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

ix. Name the following: [2]

- The return type of compareTo function
- A principle of OOP, which allows a method to be used for multiple purposes.

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);
```

SECTION B

(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.



KARNATAKA ICSE SCHOOLS ASSOCIATION

ICSE STD. X Preparatory Examination 2024

Subject: Computer Applications

Maximum Marks: 100

Time Allowed: 2 hours

Date: 24.01.2024

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.

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.

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

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

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

Question 8

[15]

Define a class to accept values into a 3×3 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