

THE FIRST PRE-BOARD (SECOND COMPARATIVE)
EXAMINATION 2022-23
Class X (ICSE)
COMPUTER APPLICATIONS

Maximum marks: 100

Time: Two hours

Instructions:

- * Answers to this paper must be written on the answer script provided separately.
- * All subsections of each question are to be answered in the correct order.
- * All working including rough work should be done on the same sheet as the rest of the answer.
- * 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 the paper is the time allowed for writing the answers.
- * Please do not write anything on the question paper except your name and roll number.
- * The intended marks for questions or parts of questions are given in brackets [].
- * Attempt all questions from **Section A** and any **four** questions from **Section B**.

SECTION A [40 marks]

(Attempt all questions from this section.)

Question 1

Choose the correct answer and write the correct option.

[20]

- (i) The operator which requires three operands to operate:
- | | |
|---------|-------------------------|
| (a) * | (b) switch case default |
| (c) ? : | (d) * = |
- (ii) A _____ is a template to create objects that share common characteristics and behaviour.
- | | |
|---------------|---------------|
| (a) procedure | (b) method |
| (c) class | (d) attribute |
- (iii) Which of the following is NOT a character literal?
- | | |
|----------|----------|
| (a) "\n" | (b) '\t' |
| (c) '?' | (d) '5' |
- (iv) Which of the following is a primitive data type?
- | | |
|-----------|------------|
| (a) array | (b) class |
| (c) short | (d) object |
- (v) What will be the result after evaluating the following:
 $(3 + 9 * 3) / 3 - 1$
- | | |
|--------|--------|
| (a) 15 | (b) 11 |
| (c) -1 | (d) 9 |

- (vi) The parameters that are passed to the method when it is invoked are called:
 (a) formal parameters (b) normal parameters
 (c) actual parameters (d) virtual parameters
- (vii) Which of the following methods can be used to input a character?
 (a) next(0) (b) nextLine(0) *next().line(0);*
 (c) next().character(0) (d) next.charAt(0) *next().charAt(0);*
- (viii) The Java package that includes Math class:
 (a) java.math (b) java.util
 (c) java.lang (d) java.io
- (ix) A sequence of statements enclosed between a pair of curly brackets is called:
 (a) simple statement (b) compound statement
 (c) ternary statement (d) fall through statement
- (x) Which of the following *for* loops will cause the body of the loop to be executed 5 times?
 (a) for (int i = 0; i < 5; i++) { } (b) for (int i = 1; i < 5; i++) { }
 (c) for (int i = 5; i > 1; i--) { } (d) for (int i = 0; i <= 5; i++) { }
- (xi) The return type of a constructor can be:
 (a) any primitive data type (b) void
 (c) does not have any return type (d) any primitive or reference data type
- (xii) In which package is the wrapper class Integer available?
 (a) java.io (b) java.awt
 (c) java.util (d) java.lang
- (xiii) String str[] = {"Radhika", "Rishika", "Shubh", "Jayant", "Rudra", "Abha", "Aman"};
 System.out.println (str[4].length() + str.length);
 Output of the above statements will be:
 (a) 12 (b) 14
 (c) Rudra.5 + 7 (d) Rudra.12
- (xiv) The number of bytes occupied by character constant 'k' are:
 (a) 1 byte (b) 2 bytes
 (c) 4 bytes (d) 8 bytes
- (xv) What will be the output of the following statement?
 System.out.println('a' - 'A');
 (a) 32 (b) -32
 (c) 'a' - 'A' (d) will give an error

(xvi) The correct statement to extract and print 'CATION' from the string "APPLICATIONS" will be:

- (a) System.out.println("APPLICATIONS".substring(5,11));
- (b) System.out.println("APPLICATIONS".substring(5,10));
- (c) System.out.println("APPLICATIONS".substring(5));
- (d) System.out.println("APPLICATIONS".substring(6,11));

(xvii) The method of String class to remove all the leading and trailing blanks from a string is:

- (a) remove()
- (b) removespace()
- (c) trim()
- (d) trimspaces()

(xviii) Which characteristic of Java is represented by overloaded methods?

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

(xix) What will be the type of error in the following part of the program?

```
int x = 10, y = 20;
{
    int z = 30;
    System.out.println(x + y + z);
}
System.out.println(x + y + z);
```

- (a) syntax error
- (b) runtime error
- (c) logical error
- (d) will not give any error

(xx) If $x = 3$ and $y = 7$ then what will be the value of x and y after the execution of the following statement?

$x -= x++ - ++y;$

- (a) $x = 4$ $y = 8$
- (b) $x = -8$ $y = 8$
- (c) $x = 8$ $y = -8$
- (d) $x = 8$ $y = 8$

Question 2

(i) Name the Java method which:

- (a) joins the two strings
- (b) returns the cube root of a value.

[1]

[1]

(ii) Write the statement to assign 100.0 to the last element of the array marks.

[2]

(iii) Rewrite the following part of a Java program using *switch case* structure:

```
if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')
```

```
System.out.println("Lower case vowel");
```

```
else
```

```
System.out.println("Not a lower case vowel");
```

[2]

(iv) Rewrite the following using ternary operator:
if (age >= 18)
System.out.println ("Eligible to vote");
else
System.out.println ("Not eligible"); [2]

(v) What will be the output of the following program snippet?
String str1 = "Sharp";
String str2 = "clean Teeths";
String s1 = str2.substring(5,11).replace('e', 'o');
System.out.println (str1.concat(s1)); [2]

(vi) State the output of the following statement:
System.out.println("Prize".compareTo("Price") * "JAI JAGAT".indexOf('A')); [2]

(vii) Write the statement to perform each of the following tasks on a string.
(a) Find and display the index of the last space in a string stored in str. [1]
(b) Convert a number stored in a string variable n to long data type. [1]

(viii) Write any 2 differences between linear search and binary search. [2]

(ix) In the program given below, state the name and the value of the following:

- (a) method argument or argument variable
- (b) local variable
- (c) class variable
- (d) instance variable.

```
class test
{
    static int j = 10;
    int k = 20;
    public static void main( )
    {
        test obj = new test( );
        System.out.println(j);
        obj.method(3);
        int a = 5;
        System.out.println(a);
    }
    void method(int p)
    {
        System.out.println(p);
        System.out.println(k);
    }
}
```

[2]

- (x) If $x = 4$, $y = 3$ and $z = 2$, then what will be the value stored in variable z after evaluating the following expression?

$z *= ++z - 2 + (x++ - ++y);$

[2]

SECTION B [60 marks]

(Answer any four questions from this Section.)

The answer in this section should consist of the program in either BlueJ environment or any program environment with Java as the base.

Each program should be written using variables description / mnemonics code so that the logic of the program is clearly depicted. Flowcharts and algorithms are not required.

Question 3

Define a class **car** in Java with the following description:

Instance variables/Data members:

int cno : stores car number
String name : stores name of the customer
int kms : stores the number of kilometres the car travelled
double charge : stores the charge for a travel.

Member functions:

void input() : accepts and stores details from the customer
void compute() : computes the rental charge

The charges for a travel are calculated as follows:

Kilometres travelled	Charge (Rs)
up to 40 km	500.00

above 40 km up to 80 km	1100.00
-------------------------	---------

above 80 km	1100.00 + 12 per km above 80 km
-------------	---------------------------------

void display() : displays the detail in the following format:

Car No.	Name	Km travelled	Charge
---------	------	--------------	--------

-----	-----	-----	-----
-------	-------	-------	-------

 [15]

Question 4

Write a menu driven program to perform the following (use *switch case* construct):

- (a) To find and print the sum of the series given below:

$$s = 1/2 + 3/4 + 5/6 + \dots + 19/20$$

- (b) To print the pattern given below using iteration statements:

1 1

2 1 2

3 1 2 3

4 1 2 3 4

[15]

Question 5

Design a class in Java to overload a method named check() to perform the following:

void check(int a)

: checks and prints whether value in variable a is a three digit number or not

int check(char x, char y)

: checks whether the sum of the ASCII values of the characters in x and y is even or odd. Returns 1 if the sum is even and 0 if it is odd

boolean check(String str) : checks whether the string in str begins with a vowel or not. It returns true if it begins with a vowel otherwise it returns false.

[15]

Question 6

Design a class in Java that accepts list of integers in an array. From the list print the digit that occurs most frequently. For example for n = 5 if the numbers in the array are:

281	825	91	48	70
-----	-----	----	----	----

then the output should be 8.

Value of n is to be entered by the user. If 2 or more digits occur most frequently then the program should print the digit with a lowest value.

[15]

Question 7

Special words are those words which start and end with the same letter.

For example : ASIA, EUROPE, EXAMPLE

Palindrome words are those words which read the same from left to right and vice-versa.

For example : MADAM, NITIN, ROTATOR

All palindromes are special words but all special words are not palindromes.

Define a class in Java to accept a word. Check and display whether the word is a palindrome, or only a special word or none of them.

[15]

Question 8

Write a program in Java to accept 25 decimal values in array. Sort array in descending order using bubble sort technique.

Print the array before and after the sort.

[15]