ICSE 2023 EXAMINATION

SPECIMEN QUESTION PAPER

COMPUTER APPLICATIONS

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   [20]

Choose the correct answer and write the correct option.

(i)   Wrapping up of data and methods together as one unit is termed as:

     (a)   Inheritance

     (b)   Polymorphism

     (c)   Encapsulation

     (d)   Abstraction

(ii)   The datatype which is specified that the method does not return a value is:

     (a)   Void

     (b)   void

     (c)   VOID

     (d)   boolean

(iii)   The logical operator which is an unary operator:

     (a) &&

     (b) ||

     (c) !

     (d) >>

(iv)   The Scanner class is a _____ class.

     (a) Primitive

     (b) Derived

     (c) Wrapper

     (d) super class

(v)   Math.pow(625, ½) + Math.sqrt(144)

     (a) 17.0

     (b) 13.0

     (c) 37.0

     (d) 13

(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;

(vii) Multiple branching statement of java is:

(a) For

(b) while

(c) do... while

(d) switch

(viii) The number of bytes occupied by the constant 45 are:

(a) Four bytes

(b) two bytes

(c) Eight bytes

(d) one byte

(ix) do.....while loop is an

(a) entry controlled loop

(b) infinite loop

(c) exit controlled loop

(d) Finite loop

(x) for(k=1;k<=2;k++)

　　　{ for(m=1;m<=4;m++)

　　　{ System.out.println(m*2);

　　　}

　　　}

　　　How many times the inner loop is executed?

(a) 4 times

(b) 8 times

(c) 2 times

(d) 16 times

(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

(xii)   int res='A'; What is the value of res?

(a)   A

(b)   66

(c)   65

(d)   97

(xiii)   The style of expressing single line comment is:

(a)   /* comment*/

(b)   * comment

(c)   // comment

(d)   /* comment

(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)

(xv)   The output of Double.parseDouble("71.25") +0.75 is:

(a)   72

(b)   72.0

(c)   71.0

(d)   71.75

(xvi) The method to convert a string to upper case is:

(a) toUpperCase(char)

(b) toUPPERCASE(String)

(c) toUpperCase(String)

(d) touppercase(String)

(xvii) The output of the method "DETERMINATION".substring(2, 6) is:

(a) "TERM"

(b) term

(c) "Term"

(d) "TERMI"

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

(a) 10 bytes

(b) 40 bytes

(c) 20 bytes

(d) 80 bytes

(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

(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

Question 2

(i)   Evaluate the expression: [2]

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

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

(ii)   Write java expression for: $\left| x^2 + xy \right|$ [2]

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

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

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

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

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

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

(vi)   ."MISSISSIPPI".replace('S', 't').toLowerCase()   [2]

(vii)   "REDUCE".compareTo("REVOLT") + "ANTARTICA".lastIndexOf('A')   [2]

(viii)   Define boxing with an example.   [2]

(ix)   Consider the following program and answer the questions given below: [2]

```
class sample
{    int a, b;
```

```
sample(int x, int y)
{    a = x; b = y;
}
void calculate()
{    int z;
     z = a+b;
     System.out.println(z);
}
}
```

(a) Name the global variables.

(b) What are the method variables?

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

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?

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]

Define a class with the following specifications:

Class name: employee

Member variables: eno – employee number

                           ename – name of the employee

                           age – age of the employee

                           basic – basic salary

[Declare the variables using appropriate data types]

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

Question 4 [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.

Question 5 [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.

Question 6 [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.

Question 7 [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

Question 8 [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".