CHRIST NAGAR HR SEC. SCHOOL, TRIVANDRUM

FIRST MODEL EXAMINATION 2022-'23

Std: X (ICSE)

COMPUTER APPLICATIONS

Time : 2 hrs

Marks : 100

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.)

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 [ ].

QUESTION 1   [20]

1. Which among the following is a valid class name?

   a. Simple Interest   b. · SimpleInterest

   c. 1SimpleInterest   d. Simple@Interest

2. _____ loop is an exit controlled loop.

   a. for loop   b. while loop

   c. · do while loop   d. none of the above

3. It is the process of converting one primitive data type to another primitive data type.

   a. Unboxing   b. Type Conversion

   c. · Type casting   d. b and c

4. The parameters in function call statement are called

   a. · Actual Parameter   b. · Formal Parameter

   c. Data   d. Reference

[P.T.O]

5. The java concept that is implemented through a superclass and a subclass.

   a. polymorphism

   b. inheritance

   c. data abstraction

   d. encapsulation

6. Which method can be defined only once in a program?

   a. main method

   b. finalise method

   c. static method

   d. private method

7. The output of "MAHATMA".substring(3,6) is:

   a. MAHA

   b. ATMA

   c. HAT

   d. ATM

8. Given array int Z[] = {15,16,17}; it will occupy _____ bytes in memory

   a. 3

   b. 12

   c. 24

   d. 64

9. The technique in which the change in the formal parameter gets reflected in the actual parameter is known as

   a. call by reference

   b. call by value

   c. call by argument

   d. call by method

10. When one loop is used within another loop, it is said to be a _____

    a. Outer loop

    b. inner loop

    c. nested loop

    d. none of these

11. Operators with higher precedence are evaluated before operators with relatively lower precedence. Arrange the operators given below in order of higher precedence to lower precedence. (i) && (ii) % (iii) >= (iv) ++

    The operators are arranged in order of higher precedence to lower precedence :

    a. (i) ++ (ii) % (iii) >= (iv) &&

    b. (ii) % (iii) >= (i) ++ (iv) &&

    c. (iii) >= (i) ++ (iv) && (ii) %

    d. (iv) && (ii) % (iii) >= (i) ++

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12. An object is an instance of a _____.

   a. method

   b. function

   c. class

   d. variable

13. Name a string function which removes the blank spaces provided in the prefix and suffix of a string

   a. isWhitespace()

   b. isblank space()

   c. · trim()

   d. concat()

14. System.out.println("SAMPLE".substring(1).replace('M', 'P'));

   a. SAPPLE

   b. AMMPLE

   c. › APPLE

   d. AMPLE

15. The method to convert int type data to String type is

   a. Integer.parseint(x);

   b. · Integer.toString(x);

   c. String.toString(x);

   d. Integer.parseInt(x)

16. The _____ statement terminates only the current iteration and continues the loop from the next iteration

   a. · break

   b. goto

   c. return

   d. continue

17. if int y=10 then find int z=(++y*y+++5);

   a) 150

   b) 126

   c) 175

   d) 187

18. The prototype of a function show() that returns a float and takes two integer arguments

   a. public void show()

   b. public void show(int a,int b)

   c. · public float show(int a,int b)

   d. public void show(int a,float b)

19. A non static method is also called

   a. class method

   b. instance method

   c. constant method

   d. · instance variable

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[P.T.O]

20. How many values can a function return ?

a) 0

b) · 1

c) 2

d) both a & b

QUESTION 2

a) Write an expression for the following: [2]

$$\left|\frac{x^3+y^3}{\sqrt{(x+y)^3}}\right|$$

b) Write the syntax of do while loop [2]

c) What do you mean by polymorphism? [2]

d) Write any 2 differences between constructor and a method. [2]

e) Difference between Entry controlled loop and Exit controlled loop [2]

QUESTION 3

a) Rewrite the following using while loop [2]

```
int a=100;
for(int b=2;b<=30;b+=5)
{
System.out.prinln(b+a);
a=a-2;
}
```

b) Give the output of the following code? [2]

```
System.out.println(Math.ceil(3.4)+Math.floor(4.9));
System.out.println(Math.pow(7,2)+3);
```

c) If int x[]={5,4,3,4,7,8}; what is the value of q? [2]

```
int q=x[2]+x[5]*x[1];
```

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d) How many times will the following loop execute? [2]

```
int n=1,i=1;
do
{
n++;
i++;
if(i==4)
{
n=1;break;
}
}
while(i<5);
```

e) What is the output of the following code? [2]

String s="Unity\n In \n Diversity \t India";

System.out.println(s);

Section – B [60 Marks]

(Attempt **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 descriptions/ Mnemonic Codes so that the logic of the program is clearly depicted.]

Question 4

Design a class **HotelBooking** with the following description:

Class name   : HotelBooking

Instance variables/Data Members

String name   : To store the name of the customer

[P.T.O]

char type	:	To store the type of the room customer wants to
long mobno	:	To store customer's mobile number
int amt	:	To store the basic amount of room
int total_amt	:	To store the amount to be paid after updating the original amount

member methods

void accept()		To take input for name,type,mobile number and amount
void update()		to update the amount as per the type selected.

(extra amount to be added in the amount as per the type as follows:)

Type of room	Amount
F (Full_AC)	4000
P (Partial_AC)	3000
C (Cooler)	2000
N (Normal)	1000

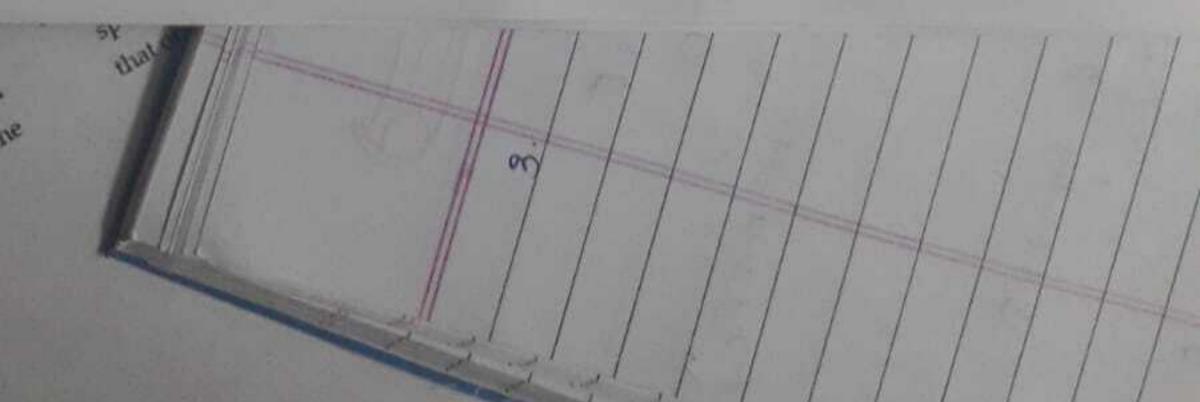| void display()	:	To display all details of a customer such as name,type,total amount and mobile number
main()	:	method to create an object of the class and call the above member methods

Question 5

Write a program that encodes a word into Pig Latin. To translate a word into Pig Latin word, convert the word into uppercase and then place the first vowel of the original word as the start of the new word along with the remaining alphabets. The alphabets are present before the vowel being shifted towards the end followed by "AY".

d) How many times will the following loop execute? [2]

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do
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[P.T.O]

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Sample Input 1	: London
Output	: ONDONLAY
Sample Input 2	: Olympics
Output	: OLYMPICSAY

Question6

Write a program to accept n names of items and its corresponding prices in two arrays using scanner class.Input the name of a particular item and print its price using a **Linear search** method. [15]

Question7

Write a program to initialize the names of any 8 elements of the Periodic table in a string array and their atomic number in an integer array. Sort the elements in ascending order of atomic number using **Bubble sorting** technique.

Display the name of elements along with their atomic number after sorting:
[15]

Sample Input: Elements [ ]

Ag	Mo	Sr	Kr	Ca	Fe	Li	Na

Ano [ ]

47	42	38	36	20	26	3	11

Output: Sorted elements

Li	Na	Ca	Fe	Kr	Sr	Mo	Ag
3	11	20	26	36	38	42	47

Question 8

Write a program to input a String. Convert the string to uppercase .Sort the String Lexicographically and print it.Then count the occurrence of duplicate letters in the changed string. [15]

Sample input	: ABSTRACT
Sample output	: **AABCRSTT**

Pair of duplicate letters = 2

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QUESTION 9

Define a class to overload the method to print as follows:

[15]

void print() — To print the format

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

void print(int n) — To check whether the number is
a Dudeney Number or not

[A number is Dudeney if the cube of the sum of digits is equal to the number itself. Eg: $512 = (5 + 1 + 2)^3$]

void print(int n,double x) — To find and display the sum of
the series given below:

$$S = \frac{x}{1} - \frac{x}{2} + \frac{x}{3} - \frac{x}{4} + \frac{x}{5} \ldots\ldots\ldots \text{ upto n terms}$$