

I TERM EXAMINATION : 2023-24

Class - X

Time : 2 hrs.

Subject - Computer Application

M.M. : 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 to write the answers.

This paper is divided into TWO sections.

Answer ALL the questions in Section A and any FOUR questions from Section B.

The intended marks for questions or parts are given in [].

SECTION - A [40 MARKS]

Attempt ALL questions from this section.

Q.1- Choose the correct answer from the following option:-

[20]

- i. The access specifier which gives the most accessibility is _____.
a. private b. public c. protected d. default
- ii. What is the following statement doing?
Car hybrid = new Car();
a. Method invocation b. assignment
c. declaration d. Object creation
- iii. Which of the following is not a jump statement in Java?
a. Jump b. return c. break d. continue
- iv. Default value of double datatype is _____.
a. 0.0f b. 0.0i c. 0.0d d. none of these
- v. if $y = 14$ find $z = (++y) * (y++ + 5)$
a. 300 b. 310 c. 315 d. 320
- vi. if $a = 48$ and $b = 13$: find $a + b + 5/a + b$
a. 64 b. 63 c. 49 d. 50
- vii. Evaluate n if value of $p = 5$ and $q = 19$:: $n = (q - p) > (p - q) ? (q - p) : (p - q)$
a. 13 b. 14 c. 15 d. $\frac{16}{15}$
- viii. What is the name of the Java Interpreter?
a. Compiler b. JVM c. JDK d. JRE
- ix. Java is a case sensitive language. Which is the most appropriate statement with respect to this context :
a. Upper and Lower case letters are ignored
b. Only uppercase letters are ignored
c. Only Lowercase letters are ignored.
d. Upper and Lower case letters are distinguished
- x. What is the code name of Java which is platform independent?
a. Object code b. Byte code
c. Source code d. None of these
- xi. Predict the output for `Math.sqrt(-36)`;
a. 6 b. -6 c. NAN d. None of these
- xii. 'Division by 0' is which type of error?
a. Syntax Error b. Run time Error
c. Logical Error d. None of these
- xiii. Return type of `Math.round()` is _____.
a. double b. float c. int d. long

- xiv. If $b = -15.6$ find $p = \text{Math.rint}(\text{Math.abs}(b))$;
 a. 14.0 b. 15.0 c. 17.0 d. 16.0
- xv. Which loop executes atleast once?
 a. do-while b. while c. for d. switch
- xvi. How many times will following code print "Java"?
`for(int i = 1; i <= 5; i++);`
`System.out.println("Java");`
 a. 1 b. 2 c. 3 d. 4
- xvii. The loop which does not have the body of the loop is known as _____
 a. Infinite Loop b. Step Loop
 c. Null Loop d. None of these
- xviii. How many times the following loop executes?

```
int i = 1;
while(i < 10)
{
  if(i++ % 2 == 0)
  System.out.println(i);
}
```

- a. 4 b. 5 c. 9 d. 10
- xix. Which of the following statement is used to terminate the loop?
 a. continue b. break c. return d. None of these
- xx. Default delimiter used in Scanner class is :
 a. comma b. colon c. slash d. space

- Q.2- i. How are data hiding and encapsulation related? Explain. [2]
 ii. Explain Logical operators. [2]
 iii. Write different ways of writing comments in Java programs. [2]
 iv. Rewrite using if-else
`comm(sale >= 10000) ? sale * 15/100 : sale * 5/100;` [2]
 v. Write a Java expression for the following:- [2]

$$f = \frac{\sqrt{a+b}}{a^2 + b^2} - cd$$

- vi. Write the equivalent Java statements for the following using ONLY mathematical functions. [2]
 a. Print the positive value of -101
 b. Print the rounded off value of 234.49
- vii. Give the output for the following statements : [2]
 a. `Math.floor(8.96);`
 b. `Math.min(10, 23) + Math.pow(2, 3);`
- viii. Analyse the following program segment and answer the following segment: [2]
 a. Write the output of the program segment.
 b. How many times the body of the loop gets executed?

```
for(int a = 10; a <= 50; a += 4)
{
  if(a%6 == 0)
  break;
  else
  if(a % 5 == 0)
  System.out.println(a);
}
```

ix. Convert the following if-else-if construct into switch case: [2]

```

if(var == 'A')
{
    System.out.println("good");
}
else if(var == 'B')
{
    System.out.println("very good");
}
else if(var == 'C')
{
    System.out.println("excellent");
}
else
{
    System.out.println("work hard");
}

```

x. Convert the following segment into an equivalent while loop [2]

```

int x, c;
for(x = 10, c = 20; c > 10; c = c - 2)
    x++;

```

SECTION - B [60 MARKS]

Attempt any FOUR questions from this Section.

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

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

Flow charts and algorithms are not required.

Q.3- A Dudeney number is a positive integer that is a perfect cube such that the sum of its digits is equal to the cube root of the number. Write a program in Java to input a number and check whether it is a Dudeney number or not. [15]

Example : Input 512
 Sum of digits → 5 + 1 + 2 = 8 Cuberoot of 512 is 8
 So 512 is a Dudeney number

Q.4- Write a program to input a number and check whether it is a magic number or not. A number is said to be Magic number if the sum of its digits are calculated till a single digit is obtained by repeatedly adding the sum of its digits. If the single digit comes to be 1 then the number is a magic number. [15]

Example : 199 → 1 + 9 + 9 = 19 → 1 + 9 = 10 → 1 + 0 = 1

Q.5- Write a menu driven program to perform the following according to users choice using switch statement. [15]

- Volume of Sphere → $\frac{4}{3} \pi r^3$
- Volume of Cylinder → $\pi r^2 h$
- Volume of Cone → $\pi r^2 \frac{h}{3}$

Q.6- WAP to calculate the electricity bill depending on the units consumed and the slab criteria given below : [15]

- For first 50 units ₹ 0.50/unit
- For next 120 units ₹ 0.85/unit
- For next 130 units ₹ 1.20 / unit
- For unit above 300 units ₹ 1.75/ unit

Add a surcharge of 20 % and Govt. Tax of 15.5 % on the bill to calculate the total bill to be paid by the customer

Display the Name of the Customer ,Units consumed and bill amount in following manner.

Name of the customer	Units	Bill
xxxxxxxxxxxxxxxxxxxx	xxxx	xxx

Q.7- Write a menu driven program to display the following patterns on the screen depending on the user's choice : [15]

- a. 1 2 3 4 5
 6 7 8 9
 10 11 12
 13 14
 15
- b. 1
 1 0
 1 0 1
 1 0 1 0
 1 0 1 0 1

Q.8- a. Design a class to input a range and display all the palindrome numbers within that range. [15]

- b. Design a class to input a number and check if it is a term in Fibonacci series. Fibonacci series is the series in which next term is the sum of previous two terms.

(Fibonacci series :: 0 1 1 2 3 5 8 13.....)

[15]