

Pre-Board Examination : 2022-23

Class - X

Computer Applications

Time allowed : Two Hours

Maximum Marks : 100

Answer 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 in Section A and any four questions from Section B.

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

Section – (A)

[40 Marks]

(Attempt ALL questions.)

Question 1.

Choose the correct answers to the questions from the given options : (Do not copy the question. Write the correct answer only.) [20]

- (a) The process of restricting the free flow of data from the outside world is known as
- (i) Encapsulation (ii) Inheritance
(iii) Function (iv) Class
- (b) Method that accepts a string without space is
- (i) next() (ii) Next()
(iii) NextLine() (iv) nextLine()
- (c) `int x=5; System.out.println(x+x*5);`
- (i) 25 (ii) 26 (iii) 30 (iv) 10
- (d) Which of the following is valid syntax to accept a double value ?
- (i) `public static void main(double n)`
(ii) `double n= nextDouble();`
(iii) `double n=Double.parse Double(br.readLine());`
(iv) `double n=in.next();`
- (1) (i), (iii) (2) (i), (ii) & (iii)
(3) (ii), (iii) (4) (ii), (iv)
- (e) The Scanner class is a class.
- (i) Primitive (ii) Non Primitive
(iii) Wrapper (iv) Super

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- (f) The Operator which is an Unary operator
- (i) ! (ii) >= (iii) % (iv) &&
- (g) What will be the output of the following :
- ```
int a[] = {5,10,15,20,25};
a[2+1] = a[2]+1;
System.out.println(a[3]);
```
- (i) 10                      (ii) 25                      (iii) 16                      (iv) 35
- (h) The output of the method "Element OF".substring(3, 9) is :
- (i) ment O                      (ii) lement OF  
(iii) Elet OF                      (iv) elementOf
- (i) If String x= "Good" and String y="Morning". What will be the output of the following statement :
- ```
System.out.println(y + " hi" + (x.length()));
```
- (i) Morning7 (ii) GoodMorning4
(iii) Morninghi4 (iv) Morninghigood7
- (j) The return type of equalsIgnoreCase() is
- (i) int (ii) float (iii) double (iv) boolean
- (k) What is the final value stored in variable x ?
- ```
double a= 9.56; double x=Math.pow(Math.floor(a),2);
```
- (i) -81.0                      (ii) 81.0                      (iii) -9.0                      (iv) 9.0
- (l) A function that is called by itself in its body is known as .....
- (i) Impure                      (ii) Pure                      (iii) Recursive                      (iv) Predefined
- (m) A private member can be accessed by .....
- (i) member of the same class  
(ii) a member of other class  
(iii) a function which is not a member function  
(iv) by all other classes
- (n) State the value of y after the following statement is executed :
- ```
char m='9';
y=Character.isLetterOrDigit(m);
```
- (i) True (ii) false (iii) true (iv) False

OR

A class member not declared under any visibility mode are :

- (i) default (ii) public (iii) private (iv) protected

- (o) Parameters used in method prototype are known as :
- (i) Defined parameter (ii) Passed parameter
(iii) Actual parameter (iv) Formal parameter
- (p) Give the output of the following program segment and also mention the number of times the loop is executed :
- ```
int a, b; for (a=6,b=4 ;a<=14; a+=6)
{if(a%b==0)
 break;}
System.out.println(a);
```
- (i) 7, 1              (ii) 12, 3              (iii) 6, 0              (iv) 12, 2
- (q) Name the search technique, in which at each stage, Compare the sought key with the key of the middle element of the array :
- (i) Linear              (ii) Binary              (iii) Random              (iv) Sequential
- (r) System.exit(0) is a function which terminates the .....
- (i) loop                                              (ii) switch  
(iii) program execution                      (iv) block
- (s) A method with many definitions is called .....
- (i) Multiple method                              (ii) Method overloading  
(iii) Floating method                              (iv) Recursive
- (t) The array double x[4] occupies :
- (i) 32 bytes              (ii) 16 bytes              (iii) 4 bytes              (iv) 8 bytes

**Question 2.**

- (a) Complete the following segment for the series : [4]  
 $s = a + a^2 + a^3 \dots \dots \dots a^n$   
 public static void main(....., .....)
 {
 for (int i=0; .....; i++)
 {
 sum=sum+.....;
 }
 }
- (b) Write the java expression for the following :  $\frac{|x + y|}{a^n}$  [2]
- (c) Write the following segment by using while loop [2]  
 for (int x=4,y=7;x<=6;x++,y- -)
 { if(x= =5)

```
{
 x=x+y;
 s=s+x;
 System.out.println(s); }
```

(d) Write the prototype of the function **search** which can take one String and one character value and return Boolean value. [2]

(e) Differentiate between Linear Search and Binary Search. [2]

(f) What will be the value stored in the variable `n`, if the following statement is executed : [2]

```
char n="Networking".charAt("Networking".indexOf('k'));
```

(g) Name the keyword for the following : [2]

(i) Distinguishes between current object and object passed to the method.

(ii) Distinguishes between instant variable as class variable

(h) Consider the following question code and answer the questions that follow : [2]

```
class acad
{
 int x,y;
 void access()
 {
 int a,b;
 acad stud = new acad ();
 System.out.println("Object & Class");
 }
}
```

(1) What is the object name of class acad ?

(2) Give the type of function used and its name.

(i) Find the value of `k` : [2]

```
int k =15;
k*= k++ * -- k;
```

### Section – (B)

[60 Marks]

*Attempt any four questions from this section.*

*The answer in this Section should consist of the programs in either Blue J 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.*

*Flow-charts and Algorithms are not required.*

## Question 3.

Define a class "Life insurance" with the following description :

[15]

**Instance variables/data members :**

- String name - To store the name of the policy holder.  
 double sum - To store the sum assured.  
 double premium - To store the first annual premium.  
 double dis - To calculate the discount of the policy holder.  
 double comm. - To calculate the commission of the agent.

**Member methods :**

- void input() - To input the name, the sum assured and first premium.  
 void calculate() - To compute the discount and commission as per the given tariff.

| Sum Assured                       | Discount | Commission |
|-----------------------------------|----------|------------|
| Up to Rs. 1,00,000                | 5%       | 2%         |
| Rs. 1,00,001 & up to Rs. 2,00,000 | 5%       | 3%         |
| Rs. 2,00,001 & up to Rs. 5,00,000 | 10%      | 5%         |
| More than Rs. 5,00,000            | 15%      | 7.5%       |

void display() - To display the details as :

- Name of the Policy Holder : .....  
 Sum Assured : .....  
 Premium : .....  
 Discount on the first Premium : .....  
 Commission of the Agent : .....

Write a main method to create an object of the class and call the above methods.

## Question 4.

Design a class to overload a function display() as follows :

[15]

- (a) int display (String str, char c) with one string argument and one character argument. Check the string is ended with the specified character. The method returns 1, if the character is same, otherwise returns zero.  
 (b) void display (char a, char b) with two character arguments. It prints all the characters between the given range of characters along with their ASCII value.

**Computer Applications**

( 6 )

X/SJ/1050

- (c) void display (int a) with one integer argument, find and display the reverse of the number.

**Question 5.**

Write a program to input a String of odd number of characters. Frame a new word by removing the middle character. Check whether a new String is palindrome or not. If yes, Display it in capital case, otherwise display it in Lowercase. [15]

Sample Input : Monknom

Sample Output : MONNOM

**Question 6.**

A Disarium number is a number in which the sum of the digits to the power of the respective positive is equal to the number itself .e.g.  $135 = 1^1 + 2^2 + 3^3$

Write a program in Java to enter a number containing four digits. Design a class disarium to check, if a given number is disarium number or not. [15]

**Question 7.**

Write a program to accept a list of 20 integers. Sort the first 10 numbers in ascending order and next the 10 numbers in descending order by using 'Bubble Sort' technique. Finally, print the complete list of integers. [15]

**Question 8.**

Write a program to accept the names of 10 cities in a single dimensional string array and their STD (Subscribers Trunk Dialling) codes in another single dimension integer array. Search the name of a city input by the user in the list (by using Linear search). If found, display "Search Successful" and print the name of the city along with its STD code, or else display the message "Search unsuccessful, No such city in the list". [15]