

N.B. (1) Question No. 1 is compulsory.

(2) Attempt any four questions out of remaining six questions.

1. (a) Explain Call-by-Value and Call-by-Reference with one programming example each. 10

(b) What will be the output of the following code : 10

(i) #include <iostream.h>

int main ()

{

int a = 3 ;

cout << " " << a << endl ;

cout << " " << (a++) << endl ;

cout << " " << (++a) << endl ;

return 0 ;

}

(ii) #include <iostream.h>

int main ()

{

int x = 4, y = 9 ;

int z ;

z = (x++) + (--y) + y ;

cout << "Value = " << z << endl ;

z = (--x) + x + (y--);

cout << "value = " << z << endl ;

return 0 ;

}

(iii) #include <iostream.h>

int main ()

{

int a, b, c ;

a = 2, b = 5 ; c = 10 ;

cout << "Value = " << (a + b * - c) << endl ;

cout << "Value = " << (- c / b * c - a) << endl ;

cout << "Value = " << (- a + ++b % a) << endl ;

return 0 ;

}

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2. (a) What is object-oriented programming ? List basic concepts of it ? Explain each concept : 10
 (b) Write a C++ program to check if the given number is "Armstrong Number". 10
 An Armstrong number of 3 digits is an integer such that the sum of the cubes of its digits is equal to the no. itself.

3. (a) Explain storage class with one programming example. 10
 (b) Write a C ++ program to display :— 10

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*      *      *      *
      *      *      *
          *      *
              *
  
```

4. (a) Explain Bitwise operators in C++. 5
 (b) Write a C++ program to read and display elements of a square matrix and then transpose the matrix. Use single two dimensional matrix throughout the program. 15

5. (a) Explain recursion and write a recursive function for calculating factorial of a N number. 10
 (b) Write a C++ program to find how many objects of a class has been created using static members function. 10

6. (a) Write a C++ program to find volume of cube, cylinder and rectangle using method overloading. 10

- (b) Define structure within structure consisting of following elements :— 10

- (i) Employee code
- (ii) Employee name
- (iii) Employee salary and
- (iv) Employee date_of_joining

Write a C++ program to read at least 10 records and display them.

7. (a) Write a program to generate Fibonacci series. 5
 (b) Write a program to check whether given number is prime number or not and display respectively. 5
 (c) Explain difference between declaration and definition. 5
 (d) Explain the concept of constructor and Destructor in C++ . 5