

This question paper contains 4 printed pages]

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S. No. of Question Paper : 8825

Unique Paper Code : 234101/251305

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Name of the Paper : CSHT-101/CS-I : Programming Fundamentals/
Fundamentals of Programming Languages

Name of the Course : B.Sc. (Hons.) Computer Science I Semester/
B.Sc. (Hons.) Electronics III Semester

Semester : I/III

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are two parts in the question paper.

Part I : All its questions are compulsory.

Part II : Attempt any four questions out of five.

Part I

Question No. 1 is compulsory.

1. (a) What is the difference between Global and Local variables ? 2
- (b) Explain the use of 'this' keyword. 2
- (c) Discuss basic data types in C++. Give one example of each. 3
- (d) How is Data Hiding achieved in C++ ? 3
- (e) Why should constructor be public member of class ? 3
- (f) Distinguish between the construct 'struct' and 'union'. Give suitable example. 3
- (g) Is it possible to access private data members without using member function ? Justify your answer by giving suitable example. 3
- (h) Where do we use virtual functions ? Give its applications. 4
- (i) What are static variables and static functions ? How are static variables initialized ? What is the purpose of static variables and static functions ? 4
- (j) What is Copy constructor ? Identify the conditions in which copy constructor is called. Explain with suitable examples. 4

P.T.O.

(k) Convert the following numbers :

(i) $(63.125)_{10}$ to binary form

(ii) $(111111001110)_2$ to hexadecimal form.

4

Part II

Attempt only *four* questions from this part. *All* questions carry equal marks.

2. (a) Define an enumeration type 'month' with the name of months of a year as its members. Initialize each to the number of days in the corresponding month. Use the minimum number of assignments on the definition. Assume 28 days in February. 3

(b) Write a function to delete an element at *k*th position from a given array. Display the resultant compact array. 3

(c) Give output of the following :

```
class myclass
{
    public:
        int who;
        myclass(int id)
        {
            who = id;
            cout<< "Initializing" << who;
        }
        ~myclass()
        {
            cout<<"Destructing who";
        }
} obj1(1), obj2(2);
void main()
{
    myclass obj3(3);
    cout<< "This is C++ Program";
}
```

4

3. (a) Write a function to calculate and display the sum of only negative integers when N integers including positive, negative or zero value, are entered. 4

- (b) Consider the following class :

```
class Box
{
    int length, breadth, height;
    . . .
    . . .
};
```

Write member functions to overload unary decrement operator '--' that decrements the corresponding length, breadth and height of a Box. Write code for both prefix and postfix versions of the same. 6

4. (a) Write a program to determine square of a given number. Use function overloading to calculate square of integer, float or double depending on the type of input passed. 4

- (b) Assume a class D derived from a base class B. Class B is a friend of class A. Can class D access private data of class A ? Justify your answer. 3

- (c) Identify the error(s) in the following code :

```
class A
{
    private :int x;
    protected :int y;
    public :int z;
};
Class B : public A
{
    private :int u;
    protected :int v;
```

```

public :int w;
};
void main(void)
{
A obj1;
B obj2;
Obj1.x=1; Obj1.y=2; Obj1.z=3;
Obj2.x=11; Obj2.y=12; Obj2.z=13;
Obj2.u=14; Obj2.v=15; Obj2.w=16;
}

```

3

5. (a) Write complete program in C++ to append the contents of one file to another file. 6

(b) Write a function that handles the exception "divide by a negative number", allowing the user to correct the error. 4

6. (a) Given the following declarations :

```

int a =5, b = 7;
int *p = &a, *q = &b;

```

What is the value of each of the following expressions :

(i) ++a

(ii) ++(*p)

(iii) --(*q)

(iv) --b

2

(b) What is meant by call by value and call by reference ? Give *one* example of each. Under what conditions is call by reference preferred over call by value ? 4

(c) If str1 and str2 are C++ strings, write a code fragment to find the last occurrence of the first four characters of str1 in str2. 4