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S. No. of Question Paper : 816

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Unique Paper Code : 234101/251305

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

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

Semester : I/III

Maximum Marks : 75

Duration : 3 Hours

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

There are two parts in the Question Paper.

Parts of a question should be attempted together.

Part I : All its questions are compulsory.

Part II : Attempt any four questions.

Part I

Question No. 1 is compulsory. Parts of the question should be attempted together.

1. (a) What do you understand by object oriented programming ?

2

(b) Write a C++ statement to print the following line. Assume the total value of sales is contained in the variable name cost.

2

The sales total is : \$ 100.54.

P.T.O.

(c) If

$x = 2, y = 3$ and $z = 1,$

what is the value of each of the following expressions ?

(i) $z - (x + z) \% 2 + 4$

(ii) $x - 2 * (3 + z) + y.$

(d) Explain the difference between $a++$ and $++a$ with the help of an example.

(e) What are default parameter arguments ? Explain with an example.

(f) Differentiate between break and continue statements with the help of examples.

(g) What do you understand by formal and actual parameters with respect to functions ? Explain with suitable example.

(h) Explain the statement :

$result = a < b ? a : b;$

Find the value of result for $a = 7$ and $b = 13.$

(i) Add two numbers $(7)_{10}$ and $(-10)_{10}$ using 2's complement.

(j) Can a constructor be inherited ? How base class members can be initialized through derived class constructor ?

(k) What is overriding of function in C++ ? Explain with the help of an example.

Part II

Attempt any four questions.

2. (a) What are lvalue and rvalue expressions ? Give suitable examples.

(b) Write a C++ function to swap the values stored in two variables.

(c) Give the output of the following program :

```
#include <iostream>
```

```
using namespace std;
```

```
int array 1 [] = {1200, 200, 2300, 1230, 1543};
```

```
int array 2 [] = {12, 14, 16, 18, 20};
```

```
int temp, result = 0;
```

```
int main( )
```

```
{
```

```
for (temp = 0; temp < 5; temp++)
```

```
result += array 1 [temp];
```

```
for (temp = 0; temp < 4; temp++)
```

```
result += array 2 [temp];
```

```
cout << result;
```

```
return 0;
```

```
}
```

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(5)

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816

2

(a) What do you understand by operator overloading in C++ ?

(b) Design a class *fraction* having data members: *numerator* and *denominator*. Write C++ functions to perform the following operations on class *fraction* :

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(i) Parameterized constructor to initialize the members of class.

(ii) Add two fractions using operator overloading of '+'.
(iii) Display the result in fraction format as *numerator/denominator*.

(c) Find error(s) in the following code. Also mention how those error(s) can be removed :

2

```
class A
```

```
{
```

```
public :
```

```
int x;
```

```
private :
```

```
int y;
```

```
};
```

```
class B : private A
```

```
{
```

```
public :
```

```
int z;
```

```
};
```

```
int main()
```

```
{
```

```
A O1 ;
```

```
B O2 ;
```

```
O1 . x = 1;
```

```
O1 . y = 2;
```

```
O2 . x = 5;
```

```
O2 . z = 15;
```

```
return 0;
```

```
}
```

4. (a) What are the advantages of Inheritance ?

(b) Write a program to find minimum and maximum number from the given one-dimensional array.

Read the array from the user.

2

5

P.T.O.

(6)

(c) Define a class *student* having data members *rollno*, *name*, *course*, *subject*, *address*. Write member functions to *input* the personal details of student and to *display* them.

5. (a) How is exception handling done using *try* and *catch*?

(b) What will be the output of the following code segment? Justify your answer:

```
int x = 3;
```

```
switch (x) {
```

```
case 3 : x = x + 3;
```

```
case 1 : x++; break;
```

```
case 5 : x = x + 5;
```

```
case 6 : x = x + 6;
```

```
}
```

```
cout << x;
```

(c) Write a C++ function that counts the number of characters and lines in a text file.

(a) What are virtual functions? Is it possible to declare an object of a class that contains a virtual function? Justify your answer.

(7)

(b) Give the output of the following code:

```
{
    char str [5] = "abcde";
    cout << str [3];
    cout << str;
    return 0;
}
```

(c) What are friend classes? What are its advantages?

7. (a) Give the output of the following program:

```
#include <iostream>
```

```
using namespace std;
```

```
class Box
```

```
{ public :
```

```
double length, breadth, height;
```

```
};
```

```
int main()
```

```
{ Box Box 1;
```

double volume;

Box 1 . height = 5;

Box 1 . length = 6;

Box 1 . breadth = 7 . 1;

volume = Box 1 . height * Box 1 . length * Box 1 . breadth;

cout << "Volume of Box 1 : " << volume << endl;

return 0;

}

(b) What are Inline member functions? How are they declared implicitly and explicitly? 4

(c) Describe the functioning of the following function : 4

str 1 . compare (str 2)

with the help of an example.