

Seat No. : \_\_\_\_\_

**NC-137**

**December-2015**

**S.Y.M.Sc. (CA & IT)**

**Object Oriented Programming with C++**

**Time : 3 Hours]**

**[Max. Marks : 100**

1. Answer the following : (Any **Four**) **20**
- (a) Can we pass class objects as function arguments ? Explain with the help of an example.
  - (b) Can we have more than one constructor in a class ? If yes, explain with the help of an example.
  - (c) What is the difference between nesting and inheritance ? Explain with the help of an example.
  - (d) What is file ? Discuss the various file mode options available.
  - (e) What is meant by exception handling ? Write a C++ program that throws an arithmetic exception whenever the result of addition becomes odd.
2. (a) Write a short-note on : (Any **Three**) **9**
- (1) Userdefined manipulator
  - (2) Static data member
  - (3) 'this' pointer
  - (4) Namespace
- (b) Answer the following : (Any **Eleven**) **11**
- (1) Define Encapsulation.
  - (2) What is cout ?
  - (3) Define Abstract class.
  - (4) List any two applications of void datatype.
  - (5) Name the operators that cannot be overloaded.
  - (6) Describe the syntax of the single inheritance.
  - (7) When reading is terminated by getline() function ?
  - (8) List the two datatypes added by the ANSI C++ standard committee.
  - (9) What is the application of scope resolution operator in C++ ?
  - (10) List any two error handling function of file.
  - (11) We have two classes X and Y. If a is an object of X and b is an object of Y and we want to say a=b what type of conversion should be used ?
  - (12) class A : public B, public virtual C, public D In which sequence constructor will be called ?

3. (a) Specify the output for the following code :

```
(1) template<class T1,class T2>
    T2sum(T1 a, T2b)
    {
        return a+b;
    }
void main()
{
    Cout<<sum(2,4.5);
}

(2) void main()
{
    string s1("Accept good & bad things from others");
    s1.erase(11,6);
    cout<<s1;
}

(3) void main()
{
    cout.width(12);
    cout.fill('%');
    cout.precision(0);
    cout.setf(ios::showpoint);
    cout.setf(ios::scientific,ios::floatfield);
    cout<<0.001235;
}

(4) class BC
{
    public:
    void show()
    {
        Cout<<"Hi From Base:";
    }
};

class DC : public BC
{
    public:
    void show()
    {
        Cout<<"Hi From Derived:";
    }
};

void main()
{
    BC *ptr;
    DC d1;
    ptr=&d1;
    ptr->show();
}
```

```

}
(5) int &max(int &a,int &b)
{
    if(a>b)
        return a;
    else
        return b;
}
void main()
{
    int x=10,y=20;
    max(x,y)=30;
    cout<<x<<y;
}
(6) void test(int x)
{
    try
    {
        if(x==0)
            throw x;
        else
            throw 'x';
    }
    catch (int)
    {
        Cout<<"Caught Int";
    }
    catch(...)
    {
        Cout<<"Don't Know Who Caught";
    }
}
void main()
{
    test(1);
}

```

- (b) Differentiate Between : **8**
- (1) Static linking and Dynamic linking
  - (2) OOP and POP

4. (a) Answer the following : **16**
- (1) Draw C++ stream class hierarchy.
  - (2) What does the following statement do ? `cout.write(p1,m).write(p2,n);`
  - (3) List the situations where inline function may not work.
  - (4) List any two differences between local class and global class.
  - (5) Explain function overloading with code.
  - (6) Explain pointers to function with code.
  - (7) Explain pointer to constant with code.
  - (8) Explain explicit keyword with code.

- (b) Write a function template for finding the sum of array element. **4**

5. (a) Do as directed :
- (1) Which of the following concept of oops allows compiler to insert arguments in a function call if it is not specified ?  
(A) Call by value                      (B) Call by reference  
(C) Default arguments                (D) Call by pointer
  - (2) Which of the following concepts of OOP means exposing only necessary information to client ?  
(A) Encapsulation                      (B) Abstraction  
(C) Data hiding                         (D) Data binding
  - (3) Which one of the following is the correct way to declare a pure virtual function ?  
(A) `virtual void Display(void){0};`  
(B) `virtual void Display = 0;`  
(C) `virtual void Display(void) = 0;`  
(D) `void Display(void) = 0;`
  - (4) Which of the following is an invalid visibility label while inheriting a class ?  
(A) Public                                (B) Private  
(C) Protected                            (D) Friend
  - (5) What is correct about the static data member of a class ?  
(A) A static member function can access only static data members of a class.  
(B) A static data member is shared among all the object of the class.  
(C) A static data member can be accessed directly from main().  
(D) Both A and B.
  - (6) Which of the following statements is correct ?  
(A) Base class pointer cannot point to derived class.  
(B) Derived class pointer cannot point to base class.  
(C) Pointer to derived class cannot be created.  
(D) Pointer to base class cannot be created.
  - (7) Member functions defined inside the a class become inline functions by default.(Specify T/F with reason)
  - (8) Constructors always return value.(Specify T/F with reason)
  - (9) Friend functions cannot be used to overload operators.(Specify T/F with reason)
  - (10) Memory management operators new and delete are also known as\_\_\_\_\_ operators.
- (b) Imagine a publishing company that markets both books and audio-cassettes version of their work. Create a class Publication that stores the title (string) and price (float) of a publication. From this class derive two classes: Book which adds a pagecount (int); and Tape which adds playing time in minutes (float). Each of the three classes should have a constructor to initialize the data and a function display() to display data to the user. (Achieve runtime polymorphism)