

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E SEM-V Examination-Nov/Dec.-2011

Subject code: 152004**Date: 29/11/2011****Subject Name: Object Oriented Programming With C++****Time: 02.30 pm-05.00 pm****Total marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is friend function? Explain with example? **07**
(b) Declare a class called time having hours, minutes and seconds as member variables. Define a member function called add_time that accepts two objects of type time class, performs addition of time in hours, minutes and seconds format and returns an object of type time class. Write appropriate functions for initialization and display of member functions. **07**

- Q.2** (a) What are virtual functions? What is the difference between static and dynamic binding? **07**
(b) Create a class employee which has name, employee code and salary as its data members. Derive two classes called manager and clerk from employee. Manager has number of assistance as its data members and clerk has allowance as its data members. Override the function display() in both the derived classes which display information related to it. Use constructor and show how to achieve run time polymorphism. **07**

OR

- (b) Write a program for addition and multiplication operation for complex numbers using operator overloading. **07**
- Q.3** (a) Write a generic function that will sort an array of integer, float value. Create a menu with appropriate options and accept the values from the user. **07**
(b) Explain following : **07**
1. Exception handling
2. Abstract class.
3. seekg and tellg functions.

OR

- Q.3** (a) Write a program using put() to write characters to a file until user enters a dollar sign. **07**
(b) Explain following:- **07**
1. setw() and setfill.
2. ios::ate and ios::out
3. copy constructor.

- Q.4** (a) Define base class having member variables- name and id number of student along with required member functions. Derive a class from the base class having following member variables: subject_name, no_of_subjects, SPI. Define required member function to calculate SPI and display name, ID number, number of subject, name of subjects, SPI of students. Also define main function. **07**
(b) Explain following with example: **07**
1. Dynamic_cast
2. Container class

OR

- Q.4 (a)** List and explain in brief various functions required for random access file operations? **07**
- (b)** Compare the functionality of references and pointer along with their advantages and disadvantages on each other? **07**

- Q.5 (a)** Explain public, private and protected access specifiers and show their visibility when they are inherited as public, private and protected? **07**
- (b)** List all the types of inheritance. Explain hybrid inheritance with example? **07**

OR

- Q.5 (a)** Explain: **07**
1. This pointer
 2. Default arguments
 3. Static data members and member functions

- (b)** 1. Give the output of following fragment assume header files included:

```
class A
{
    int x;
    public:
    A fun(int,A);
    A(int a)
    { x=a;}
    ~A()
    {
        cout<<"\n Destructor is called";
    }
};
A A::fun(int b,A t)
{
    t.x=b+x;
    cout<<t.x;
    return t;
}
void main()
{A ob1(1),ob2(0);
 ob2=ob1.fun(1,ob1);
}
```

07

2. Elaborate the error in following fragment:

```
class base
{
    public:
    virtual int f(int a)=0;
};
class derived: public base
{
    public:
    int f(int a,int b)
    {
        return a*b;
    }
};
```
