Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- Vth SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 152004 **Date: 05/06/2012**

Subject Name: Object-Oriented Programming in 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) 1) What are static data members? What is difference between static data members of a class? Explain with example. 04

2) Differentiate between Procedure oriented and Object Oriented Programming. 03

(b) 1) What is the ambiguity problem in case of multiple inheritance? How it can be removed? 04

2) What is wrong with the following code segment and correct it. 03

```
const int m = 100;
int *ptr = &m;
```

Q.2 (a) 1) How do the following two statements differ in operation? 03

```
char *const p;
char const *p;
```

2) what are the values of m and n after the following two statements are executed:

a) 02

```
int m = 5;
int n = m++  *  ++m;
```

b) 02

```
int m = 1, n = 0;
n = m++;
```

(b) What is operator overloading? Write a program for overloading unary minus operator. 07

OR

(b) 1) What are the differences between pointers to constants and constant pointers? 03

2) Write a program which designs a template that performs multiplication of: 04

i) int type data

ii) double type data

Q.3 (a) 1) What is containership or delegation? How does it differ from inheritance? Explain with suitable example. 04

2) What are pure virtual destructors? How they different from normal destructors? 03

(b) 1) Can we have more than one constructor in a class? If yes, explain the need for such a situation. 04

2) What is virtual function and why do we need virtual function? 03

OR

Q.3 (a) Define the class Person which has name (char*) and age (int). Define the following 07

constructors

a. default

b. with name as argument (assume age is 18)
c. with name and age as argument
Also define the copy constructor.

(b) Explain all basic concepts of object oriented programming, with suitable example? 07

Q.4 (a) 1) What is run time polymorphism? How it is achieved? Explain with an example? 05

2) What are the advantages of using exception handling mechanism in C++? 02

(b) 1) What is the difference between opening a file with constructor function and opening a file with open ( ) function? 04

2) What is a file mode? Describe the various file mode options available. 03

OR

(a) a) What is generic programming? How is it implemented in C++? 04

b) What do you understand by overloading of template function? 03

(b) Write a program where multiple catch statements are used to handle various types of exceptions. Testing multiple catch. 07

Q.5 (a) Describe the mechanism of accessing data members and member functions in the following cases: 07

1) Inside the main program.
2) Inside a member function of the same class.
3) Inside a member function of another class.

(b) 1) What is the major difference between a sequence container and associative container? 04

2) How many times is the copy constructor called in the following code? 03

```
Apple func(Apple u)
{
Apple w=v;
Return w;
}
void main()
{
Apple x;
Apple y = func (x);
Apple z = func (y);
}
```

OR

Q.5 (a) 1) How does the “reinterpret_cast” differ from the “static_cast”? 03

2) What is an algorithm? How STL algorithms are different from the conventional algorithms? 04

(b) Write short notes on: 07

1) this pointer.
2) Exception handling.
3) Dynamic cast.

****