Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: 140705   **Date: 17-06-2013**
Subject Name: Object Oriented Programming with C++
Time: 10:30am – 01:00pm   **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)** Explain basic concepts of Object-Oriented Programming. **07**
    (b) (i) What is Reference variable? What is its major use? Give Example. **04**
         (ii) Define Function Overloading. Give proper example. **03**

Q.2 **(a)** What is Constructor? Write the characteristics of constructor function. Define Class named point which represents 2-D Point, i.e P(x, y). Define Default constructor to initialize both data member value 5, Parameterized constructor to initialize member according to value supplied by user and Copy Constructor. Define Necessary Function and Write a program to test class Point. **07**

    (b) What is Inline Function? In which Situation Inline Function may not work? How does an inline function differ from a preprocessor macro? Write program using Inline Function to find largest of three numbers. **07**

OR

    (b) Create a class Account. It has three data member account id, name and balance. Define function to assign value and display value. Define function that search account number given by the user. If account number exists, print detail of that account. Write a program using array of object. Declare at least 5 account and print details. **07**

Q.3 **(a)** Define Friend Function. Create two classes DM and DB which store the value of distances. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object stores the results may   a DM object or DB object, depending on the units in which the results are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display. **07**

         1 Feet = 0.3048 Meter   1 Meter = 3.28 Feet
         1 Inch = 2.54 Centimeter   1 Centimeter = 0.3937 Inch

    (b) (i) Explain Visibility mode. **03**
         (ii) What is Type conversion? Explain Basic to class type conversion with example. **04**

OR

Q.3 **(a)** Define Operator overloading. Create class Time that has three data members hour, minute and second and two constructor, default constructor and parameterized constructor to initialize data member. Write a program to add two times by overloading operator +. **07**

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(b)	(i)	Explain this pointer.	**03**
	(ii)	How does main() function in C differ from C++? Give General format of Class.	**02**
	(iii)	Explain generic pointer.	**02**

Q.4 (a) Define Inheritance. Write the types of Inheritance. Explain Inheritance with example. Consider Example with respect to print result of Student and Student Details. **07**

(b)	(i)	How is Polymorphism achieved at Compile Time and Run Time.	**03**
	(ii)	Define and Discuss Pure Virtual Function.	**02**
	(iii)	How do they differ ? :	**02**

        char const * ptr
        char * const ptr

OR

Q.4 (a) What is the purpose of Static? Write Characteristics of Static Data Member and Static Member Function. Write a program that demonstrates the Static Data Member And static member function. **07**

(b) Write a program that reads a text file and creates another file that is identical except that every character is in upper case. **07**

Q.5 (a) What is Generic Programming? How it is implemented in C++. Write General format of class templates and function Template. Write program to swap Number using Function Template. Function prototype is given below: **07**

        void swap(int, int, float , float)

 Swap two integer number and swap two float number.

(b)	(i)	Explain new and delete operator. What are the advantages of new operator Over malloc?	**04**
	(ii)	Explain Scope Resolution Operator with example.	**03**

OR

Q.5 (a) What is Exception? Explain Exception Handling Mechanism. Write a program that demonstrates use of multiple catch. Add at least three catch block in your Program. **07**

(b) (i) Write output for the following (Assume all libraries has been included): **04**

```
1. int main()
   { float f = -76.54321;
     cout.fill ('*');
     cout.precision(3);
     cout.setf(ios::internal, ios::adjustfield);
     cout.setf(ios::scientific, ios:floatfield);
     cout.width(15);
     cout << f << "\n"; }
2. int main()
   { float f = 123.4;
     cout.setf(ios::showpoint);
     cout.setf(ios::showpos);
     cout.precision(3);
     cout.setf(ios::fixed, ios::floatfield);
     cout.setf(ios::internal, ios:adjustfield);
     cout.width(10);
     cout << f << "\n";  }
```

(ii) Explain Function : seekp(), tellg()   **03**

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