Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– II EXAMINATION – SUMMER 2015

Subject Code: 2620002 **Date:30/05/2015**

Subject Name: Object-Oriented Programming Concepts & Programming

Time:10:30 am - 01:00 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) Select most appropriate answer(s) :

i. Which reference modifier is used to define reference variable? **01**
   a. &
   b. $
   c. #
   d. None of the above

ii. Where does the default parameter can be placed by user? **01**
   a. Leftmost
   b. Rightmost
   c. Both a & b
   d. None of the above

iii. Constructors are used to **01**
   a. Initialize object
   b. Construct data members
   c. Both a & b
   d. None of the above

iv. Which method is used to perform data conversion from user defined data type 1 to user defined data type 2? **01**
   a. 1 – parameter constructor
   b. Conversion function
   c. Both a & b
   d. None of the above

v. What is function template? **01**
   a. Creating a function without having to specify the exact type
   b. Creating a function with exact type
   c. Both a & b
   d. None of the above

vi. Which symbol is used to create multiple inheritance? **01**
   a. (.) Dot
   b. (,) Comma
   c. ($) Dollar
   d. (&) Ampersand

vii. What is RTTI? **01**
   a. Information about an object's data type at run time
   b. Information about variables
   c. Information about given block
   d. None of the above

(b) Fill in the following blanks :

i. In C++, we can throw only _____ error at a time. **01**

ii. _____function is used to enter a string with white spaces. **01**

iii. _____ function is used to return total number of characters read during last input operation. **01**

iv. ios::_____ forces a float with an integer value to be printed with its decimal point and trailing zeroes. **01**

v. _____ function is used to move file pointer to a particular location when file is open with ofstream class. **01**

vi. _____ keyword is used to access variable in namespace. **01**

vii. _____ is a template data structure. **01**

Q.2 (a) i. Explain friend class with suitable example. **05**

ii. Comment on following code : **02**

```
void Exception_function(int test) throw()
{
        if(test==0) throw test;
        if(test==1) throw 'a';
        if(test==2) throw 123.23;
}catch(…) { cout<<"…"; }
```

(b) i. Explain copy constructor with suitable example. **05**

ii. Write the output of following code : **02**

```
namespace alpha { a = 10; }
namespace beta { a = 110; }
int main () {
        a = 1110;
        alpha :: a;
        beta :: a;
        cout<<a;
        return (0);
}
```

OR

(b) i. Explain constructor overloading with suitable example. **05**

ii. Write the output of following code : **02**

```
namespace alpha { a = 10; }
namespace alpha { b = 110; }
int main () {
  alpha::a = alpha::b = 7;
  cout<<alpha::a<<alpha::b;
  return(0);
}
```

Q.3 (a) Illustrate the program to demonstrate significance of static member data. **07**

(b) Explain function template with suitable example. **07**

OR

Q.3 (a) Illustrate the program to demonstrate pointer to object and pointer to members of a class. **07**

(b) Explain class template with suitable example. **07**

Q.4 (a) i. Illustrate the program to demonstrate public, private and protected members of a class with respect to publicly inherited derived class. **06**

ii. Write down the function to move file pointer to the end of a file opened with ifstream class. **01**

	(b)	i.	Write a C++ program to explain virtual function by creating a base class c_polygon which has virtual function area(). Two classes c_rectangle and c_traingle derived from c_polygon and they have area() to calculate and return the area of rectangle and triangle respectively.	**06**
		ii.	List various sequence containers.	**01**
			OR	
Q.4	**(a)**	i.	Illustrate the program to demonstrate 'has a' type of inheritance.	**06**
		ii.	Write down the function to write object called emp to the file called emp.dat opened with ofstream class.	**01**
	(b)	i.	Illustrate the program to demonstrate virtual base class.	**06**
		ii.	List various associative containers.	**01**
Q.5	**(a)**	i.	Create a class called rectangular having member data xco and yco of type double. Define another class called polar having member data radius and angle of type double. For the above classes : - Define necessary constructors. - Define necessary get() and put() functions to enter and display the result. - Define function to convert polar coordinates to rectangular coordinates. (Conversion formulas : xco=radius*cos(angle); yco=radius*sin(angle);)	**05**
		ii.	Write a C++ program to read characters from a file.	**02**
	(b)	i.	Write a C++ program to demonstrate overloading of ++ operator to convert given string to uppercase and -- operator to convert given string to lower case. (Assume necessary class with member data and member functions).	**05**
		ii.	Write a C++ code using concept of STL to sort integer array of size 10.	**02**
			OR	
Q.5	**(a)**	i.	Create a class called time12 having member data pm of type bool (true=pm & false=am), hrs and mins of type int. Define necessary constructors and display12() function display time in 12H format (i.e. 10.35 pm). Create another class called time24 having member data hours, minutes and seconds of type int. Define necessary constructors and display24 function to display time in 24H format (i.e. 22:15:10). Write a conversion routine to convert 24H format of time to 12H format.	**05**
		ii.	Write a C++ program to write characters into a file.	**02**
	(b)	i.	Write a C++ program to create a class called stack having member data top and s[10]. Overload ++ operator to push elements onto the stack, overload -- operator to pop the elements from a stack and include member function display() to display the elements of stack in order.	**05**
		ii.	Write a C++ code using concept of STL to count number of 5s in an integer array of size 10.	**02**

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