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**Fourth Semester B.E. Degree Examination, June/July 2013**  
**Object Oriented Programming with C++**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1 a. What is reference variable? Write a C++ program to swap two integers using reference variables. (06 Marks)
- b. What is function overloading? Write a C++ program to find area of square, rectangle and triangle using overloaded functions. (06 Marks)
- c. What is 'this' pointer? Where and how does the compiler insert it implicitly? (08 Marks)
- 2 a. What is friend function? Create a class called complex that contains a real and imaginary part. Write a C++ program to compute sum of two complex numbers using friend function. (06 Marks)
- b. Create a class STUDENT with data members as roll number, name and percentage. Write a C++ program to create 'n' number of objects of class STUDENT, to initialize the data member of each object and to display them. Find the rankers among the 'n' students and display. (08 Marks)
- c. What are namespaces? How do they help in preventing pollution of the global namespace? (06 Marks)
- 3 a. What is memory leak? What operator and how it can be used to prevent a memory leak? (06 Marks)
- b. What is the 'new handler'? How is the 'set – new – handler( )' function used to set our own new handler? (06 Marks)
- c. What are constructors and destructors? Write a C++ program to copy one string to another string using copy constructor and destructor. (08 Marks)
- 4 a. What is inheritance? What are the effects and benefits of inheritance? (05 Marks)
- b. Write a C++ program to create a class STUDENT with data members as roll number and name. Derive class TEST from STUDENT with marks for two subjects as its data members and class RESULT for TEST calculates the total and percentage in the RESULT class. Create 'n' number of objects for RESULT class and display total percentage for every student. (08 Marks)
- c. What is multiple inheritance? What are ambiguities in multiple inheritance and how they will be resolved? Explain with an example. (07 Marks)

**PART – B**

- 5 a. What is a virtual function? When is it needed? Explain mechanism of virtual functions. (06 Marks)
- b. Briefly describe the class hierarchy provided by C++ stream handling. (06 Marks)
- c. Describe the read( ) and write( ) functions, their prototype, use and the way they input and output data. (08 Marks)

- 6 a. Write a C++ program to create a file called 'source.txt' and write its contents to the file called 'dest.txt' so that the contents in dest.txt are reverse of source . txt. (06 Marks)
- b. What are the rules must follow while overloading operators. (06 Marks)
- c. Write a C++ program to define class STACK and implement its operations using overloaded + operator and decrement operator. (08 Marks)
- 7 a. What are new and delete operators? Explain the syntax for overloading the 'new' and 'delete' operators, with an example. (05 Marks)
- b. Write a C++ program for the following :
- i) To read string using extraction operator
  - ii) To concatenate two strings using + operator
  - iii) To copy one string to another using = operator
  - iv) To display strings on monitor using insertion operator. (10 Marks)
- c. What are smart pointers? How are they created? (05 Marks)
- 8 a. What is RTTI? What are its practical uses? Explain. (05 Marks)
- b. Write a C++ program to create a template class QUEUE with add, delete and display member functions. Using this class template implement a queue of integer and doubles. (10 Marks)
- c. Explain the limitation of exception handling in C++, with an example. (05 Marks)

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