Reg.No.									

प्रज्ञानं ब्रह्म

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MANIPAL INSTITUTE OF TECHNOLOGY
(Constituent Institute of MANIPAL University)
MANIPAL-576104

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MANIPAL INSTITUTE OF TECHNOLOGY

III SEMESTER B.E. (CSE) (Revised credit scheme)
END SEMESTER MAKE UP EXAMINATION Jan - 2012
SUBJECT : OBJECT ORIENTED PROGRAMMING USING C++(CSE-209)

TIME : 3 HOUR **04 – 01 -2012 (9 – 12 am)** **MAX.MARKS : 50**

Note : **Answer any FIVE full questions. Missing data can be assumed.**

1. a) What is function prototyping? Why it is important in C++ ?
   b) What is data abstraction? How it is implemented in C++?
   c) What is dynamic memory allocation? Describe how it is achieved in C++?
   d) Explain what is a copy constructor. Explain with an example when the copy constructor is called. (2+2+2+ 4)

2. a) Explain what is 'this' pointer and how it functions.
   b) What is a constant member function? What is a mutable data member and how it is different from a static data member?
   c) Write a class definition for Date class that contains three positive integer data members: month day and year. Create a static member to hold a slash. Create two public member functions setDate() and showDate(). You will use the static slash in the showDate() function. The setDate() function accepts three integer arguments and passes them to the private functions setMonth(), setDay() and setYear() . If a month is greater than 12, then set it to 12. If a day is greater than 31, then set it to 31. Write a main function that instantiates several objects of date class and tests the class functions. (2+3+5)

3. a) In which order the constructors and destructors are called when an object of derived class is created ?
   b) Explain what is a pure virtual function? When it is needed?
   c) Assume that a bank maintains two kinds of accounts for customers- savings and current. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides the cheque book but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

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Create a class Account that stores customer name, account number and type of account. From this, derive the classes cur_acc and sav_acc to make them more specific to their requirements. Include the necessary member functions in order to achieve the following tasks:

i) Accept a deposit from the customer and update the balance.

ii) Display the balance

iii) Compute and deposit interest

iv) Permit withdrawal and update balance

v) Check the minimum balance, impose penalty if necessary and update the balance.

Do not use any constructors. Use member functions to initialize the class members.

(2+2+6)

4. a) Explain how error handling is achieved in case of streams.

   b) Explain the read() and write() functions, their prototype, use and the way they input and output the data.

   c) Explain the following functions for manipulating file pointers:

      i) seeekp() ii) seekg() iii) tellp() iv) tellg() (3+3+4)

5. a) List the operators that cannot be over loaded. List the operators that can be overloaded only with the member functions.

   b) What are smart pointers? How they are created?

   c) Create a PhoneBook class. Fields include firstName, lastName areaCode and phoneNumber. Include an extraction operator that prompts the user for values of each field. Also include an insertion operator that displays the values of each field. Write a main( ) function in which you declare an array of five PhoneBook objects and assign data to each. Demonstrate the use of overloaded operators. (2+2+6)

6. a) What is a standard template library? List any four template classes that are available in STL..

   b) Explain with syntax what a class template is. Write a template class for ‘stack’ with member functions push( ), pop( ) and display( ).

   c) Explain three components of exception handling. What is unwinding of stack?

(2+4+4)

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