U.S.N

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Second Semester – Master of Computer Applications (MCA)

Semester End Examination; June/July - 2015

Object Oriented programming Using C++

Time: 3 hrs   *Max. Marks: 100*

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each **Unit**.
     ii) Assume suitable missing data if any.

UNIT - I

1. a. Explain the elements of object oriented programming with an example each.   10

   b. Explain const and volatile qualifiers with an example program.   10

2. a. What are Inline functions? How do you define inline functions within a class?   5

   b. Write a C++ program to find area of a triangle, area of a rectangle and area of a circle using function overloading concept.   7

   c. Explain the following parameter passing techniques with an example.   8

      i) Pass-by-address   (ii) Pass-by- reference

UNIT – II

3. a. Create a class STUDENT with the data members: Roll_no, Name, Marks1, Marks2, Marks3 and member functions to

      (i) read the student details

      (ii) display student details   10

      (iii) find average of two best marks.

      Write C++ program that creates 10 student objects & perform the above said functions.

   b. Explain static data members and static member function with an example program.   10

4. a. What is a constructor? List the types of constructor? Write a C++ program to demonstrate parameterized constructor and copy constructor.   10

   b. Create a class "Time" that stores times in hours and minutes format. Write a C++ program that reads the time, display the time and performs addition of two time objects using object as function arguments (Pass-by-reference).   10

UNIT - III

5. a. Illustrate friend functions with an example program.   10

   b. Write a C++ program to perform addition and multiplication of two complex numbers by overloading '+' and '*' operators.   10

6 a.   List the rules of using operator overloading in C++.   4

  b.   Write a C++ program to swap two numbers using function template.   6

  c.   Write a C++ program to overload the prefix operator ++ and postfix operator - - using
     member function.   10

UNIT - IV

7 a.   What is inheritance? Briefly explain different types of inheritances with diagram.   10

  b.   With a C++ program to create a class STUDENT with data members USN, name & age.
     Using inheritance, create the classes UGSTUDENT having fields as semester, fees and   10
     stipend. Enter the data for 5 students. Find the semester wise average age for all UG students.

8 a.   What are virtual functions? With an example, explain the need for virtual functions.   10

  b.   Distinguish between virtual and pure virtual functions.   5

  c.   Explain how constructors are called in multilevel inheritance with example.   5

UNIT -V

9 a.   What are iostreams? Give the stream class hierarchy.   10

  b.   Write a short note on manipulators.   5

  c.   Discuss the various forms of get ( ) function supported by the input stream. How are they
     used?   5

10 a. What are Exceptions? How exceptions are handled in C++?   10

  b.   Explain the categories of containers supported by STL.   10

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