**Subject: Object Oriented Programming**

**Unit test: 1 full marks: 32 pass mark: 12**

**Time: 1 hr 12 minutes**

**Q. Attempt four questions where Q3 and Q5 are compulsory.**

1. Why do we need friend function? Explain how any member function of a class can be friend of other class with a suitable example. **8**
2. When do we use static data member and static function in a class? Exemplify. Why don't you use an object to call the Static Member Function, explain with example? Explain the relation between constant object and constant function with example. **2+2+4**
3. Define operator overloading. Write operator functions as member function of a class to overload arithmetic operator +, logical operator '<=' and stream operator '<<' to operate on the objects of user defined type time (hr, min, sec). **8**
4. Why the o..verloading of binary operator with member function does requires only one argument? How do you convert user-defined data type to a basic data type? Show with example. **8**
5. Define constructor and destructor. Write down different types of constructors with syntax. Create a class mdistance to store the values in meter and centimeter and class edistance to store values.in.feet and inches. Perform addition of object of mdistance and object of edistance by using friend function. **8**

**UNIT TEST 2 -MIDTERM**

Answer all the questions. Unneccesary explanation is strictly prohibited.

1. Mention the characteristics of OOP? Write down the freatures of C++. Explain the difference between OOP and POP. Have you ever realize the importance of C++ over C in your practice? if so how? If not why? Explain your opinion. [2+2++2+2]
2. What is class and object? Explain with suitable analogy. When static variables and this pointer is used? How template and exception hanlling is useful? Explain with an example [2+2+4]
3. Explain about the access specifiers in details. Write down about the constructor types and function overriding. Is the virtual keyword has the advantage?if so how? List all the overloaded operators. [2+2+2+2]
4. Write a program to divide two complex numbers. Your program must: [10]
   1. Have Class name: DivideComplex
   2. Use template for data types: check for c1(2,3) c2(4,5) and (2.8,3.8) c2(4.99,5.88).
   3. Use this pointer to assign given values to **real** and **img** data member through parameterized constructor and display value like: 2+3i in same constructor.
   4. Use friend function: Pass object as an argument and use formula for dividing complex number as (a+ib)/(c+id)= (ac-bd)+i(ad+bc)/(c^2-d^2). Use pow() for square as pow(x,2) and include it’s header file.
   5. Handle the exception as well. If c2(5,5) then (c^2-d^2) = 0 then it leads result to **inf.**
5. Write a program to add two matrices using the concept of operator overloading.[6]