Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SIXTH SEMESTER B.TECH. (E & C) DEGREE END SEMESTER EXAMINATION

APRIL/MAY 2019

SUBJECT: OOP Using C++ (ECE - 4030)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. What are Abstract base classes? Explain the need of them with an example.

1B. Consider "result.txt" contains 10 lines of information. Write a program to read "result.txt" and display only first 4 lines of information on the screen.

1C. Write a program to input two integer values and swap the content with the help of a function using pass by reference variables.

(4+3+3)

2A. What is Visibility mode? What are the different inheritance visibility modes supported by C++? Give suitable examples.

2B. Write a program to declare the class 'matrix' to contain 3 x 3 integer data elements. Write the member functions to read and display the elements of the matrix class. Write a non-member function to transpose the content of matrix.

(6+4)

3A. Design Student class with rollno and name. Class internalTest and externalTest will inherit the Student class publicly. Class internalTest and externalTest have two variables marks1 and marks2. Both classes have the function to return the total marks, which is the summation of marks1 and marks2. Another class named Result will inherit internalTest and externalTest and displays the total result. The total result is the summation of internal and external marks. Write a program to create the object of the class Result and display the final result.

3B. Explain the Exception handling mechanism in C++. Write an interactive program to compute square of a positive number. The input value must be tested for validity. If it is negative the program should raise an exception.

(7+3)

4A. Define two classes 'Radian' and 'Degree' to represents the information in two systems. Use conversion routine to convert degree to radians using formula rad = deg * pi / 180). Write a program to create the object of the Degree class and convert it to Radian class object using data conversion method.

4B. Differentiate the unary and the binary operator overloading concept with the suitable examples.

(6+4)

5A. Create a class called Time that has three int member data for hours, minutes, and seconds. One constructor should initialize the time with zero values (reset), and another should initialize it to values given by user. Another member function should display it, in 11:59:59 (am/pm) format.

Input Validation: Accept values only between 0 and 23 for the hour, between 0 and 59 for the minute and seconds. If any user given parameter is invalid, then set that parameter to zero

5B. Compare the Static and the Dynamic polymorphism in C++ with the examples.

(6+4)