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# MANIPAL INSTITUTE OF TECHNOLOGY

**(A constituent unit of MAHE, Manipal 576104)**

**V SEM B.Tech. (BME) DEGREE END SEMESTER EXAMINATIONS NOVEMBER 2019**
**SUBJECT: OBJECT ORIENTED PROGRAMMING (BME 4006)**
(REVISED CREDIT SYSTEM)
**Friday 22, November 2019, 2 to 5 PM**

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

**Instructions to Candidates:**

1. **Answer all FIVE full questions.**
2. **Draw labeled diagram wherever necessary**

1A.. What is data hiding? Explain. 03

1B. Write a C++ code for to a class labelled "Patient" and create objects of the class. Explain the accessing of the data members. Consider the following members for representing the class specification: 04

| **Class: Patient** |
|---|
| Private Data members:<br>• Patent name<br>• Patient Age |
| Public Member functions:<br>• To read Patient Object<br>• To display Patient Object |

1C. What is a constructor? Design a constructor of the class "Patient" in Q1(B). 03

2A. How data member of class can be defined as static? Explain the changes in the characteristic of a data member when it is static. 03

2B. What is function overloading? Explain. 03

2C. Explain the mechanism of accessing private and public members (data member and member functions) of the class. The following are the details of the class members: 04

| **Class: Product** |
|---|
| Data members:<br>• product ID (private)<br>• cost (public) |
| Member functions:<br>• Read_data()<br>• Display() |

3A. Write a C++ program to specify a base class called "Organization" with name of the organization (O_name), year of establishment as private data members of the class. Write the C++ code to represent the base class, along with the derived classes. The classes are derived as shown in figure 3A. 03

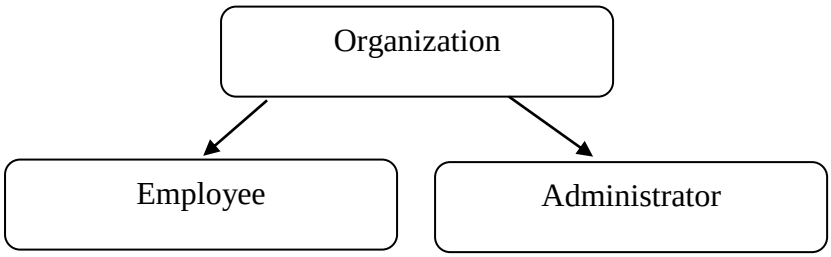


Figure 3A

3B. Explain the benefit of the concept *operator overloading*? Design an operator function for overloading a decrement operator. 04

3C. What is text mode of graphics? Explain the creation of a text mode window of size "10×5" using built-in graphics function. 03

4A. Explain how a friend function can be declared for accessing private members from two or more classes. Discuss the benefit of a friend declaration of a function. 03

4B. Explain the opening of a file in the following cases: 04
i) Using constructor for read only mode
ii) Using the member function "**open**" with appending mode

4C. Describe the visibility of base class members in the derived class when the derivation mode is private. Explain how the visibility of members are different in other derivation modes. 03

5A. What are 'synchronous exceptions'? Describe the exception handling mechanism using the following key words: try, throw and catch. 03

5B. How entry controlled statement is different that exist controlled statement. Identify a suitable statement for multiway branching. Discuss its benefit. 04

5C. What is polymorphism? List two major rules considered in the design of the virtual function. Explain the benefit of declaring these kind of function in a class. 03