

**Fourth Semester B. Tech. (Computer Science and Engineering)  
Examination**

**OBJECT ORIENTED PROGRAMMING**

Time : 3 Hours]

[Max. Marks : 60

**Instructions to Candidates :—**

- (1) Support your answers with proper code wherever required.
- (2) Assume suitable data wherever necessary.

1. (a) Explain in brief class, public, static, void, main, String[ ]. 4(CO1)  
(b) Consider a class item. The data members are item\_description, price, quantity. Overload increase\_price() to take an argument of double and the other should take an object of item(it will increase the price of the product passed as an argument).  
Create an object array and demonstrate the working. Write appropriate constructors and display methods. 6(CO1)
2. (a) "Interface help in multiple inheritance." Justify the statement with a proper example.  
Why can we define variables as static final in an Interface ? 4(CO1)  
(b) Consider a class MyInteger which store an integer number. Use inheritance to extend the features of MyInteger and create a class MyFractions. MyFraction stores the fraction in form of 1/7. MyInteger and MyFractions classes provide the functionality to add the two objects. Write appropriate main() to test all the methods. 6(CO1)
3. (a) Create a class student. Read the data from the file "student.txt". The file stores that data as NAME, ROLL\_NO, DOB. Read the data and store in the student object. The file contains data of 10 students. The DOB is stored in the format of DD/MM/YYYY. Check if the MM given is

a valid month. If the month is not valid then throw a user defined exception MonthException.

Use proper exception handling wherever necessary.

Demonstrate the use of finally block.

Write main() to demonstrate the use of all functions. 10(CO2)

4. (a) Consider the student class from Q3(a). Define a collection class which stores this data in sorted order according to Roll\_No. 5(CO2)  
(b) Write a generic method to exchange the positions of two elements in an array. Demonstrate the use of generic method with an integer array, string array and double array. 5(CO2)
5. (a) Create a simple class "simple thread" which extends Thread. Decide the code to be entered in run() method. Create two threads of this class having higher and lower priority in main. Demonstrate how priorities affect the output. 5(CO3)  
(b) Consider a table Orders stored in database. It contains Item Name, Quantity and Rate. Write a program to fetch all the records from Orders, calculate total amount and display it. 5(CO3)
6. (a) Elaborate on the need of design pattern. 4(CO4)  
(b) Discuss singleton design pattern with an example. 6(CO4)

