

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST – 1 EXAMINATION, SEPTEMBER 2016

B.TECH III SEMESTER

COURSE CODE: 10B11CI311

MAX. MARKS: 15

COURSE NAME: Object-Oriented Programming

COURSE CREDITS: 04

MAX. TIME: 1 HRS

Note: All questions are compulsory. Carrying of mobile phone during examination will be treated as case of unfair means. Make your own assumptions, if required.

1. Define a class *Complex* with data members as *real* and *imaginary*. The class has methods to *enter* and *display* the complex number in the form of $a + bi$. The class should be a doubleton class, i.e. it cannot be instantiated more than twice (One cannot define more than two objects of this class). [3 marks]
2. A *CollegeCourse* class includes fields representing *department*, *course number*, *credit hours* and *tuition fee*. The *CollegeCourse* class is inherited by a class called *LabCourse*, which includes one more field to hold the *lab fee charged*, in addition to the *tuition fee*. Both the classes must include default and parameterized constructors. Default and parameterized constructors of the child class should call the default and parameterized constructors of the base class, respectively. There should also be a mechanism to count the number of objects defined for each of the above classes. Create appropriate functions for these classes and write a *main()* function that instantiates and uses the objects of each class. [4 marks]
3. Define a class *Employee* with data members as *empid*, *emp_name*, *salary* and *address*. The class has methods to *enter* and *display* the records of an employee. Use the class object to store multiple records of the employee into a text file called "*emp.txt*". One should be able to perform the following operations on the file.
 - i. Read and display the record of a particular employee, on the basis of *emp_name*.
 - ii. Update the address of a specified employee, on the basis of his/her *empid*.[5 marks]
4. Differentiate between the following terms:
 - i. Static function and friend function
 - ii. Function overloading and function overriding
 - iii. ios::ate and ios::app modes in the context of file handling [3 marks]