

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- 2024
B.Tech-III Semester (CSE/IT)

COURSE CODE (CREDITS): 18B11CI311 (3)

MAX. MARKS: 35

COURSE NAME: Object-Oriented Systems and Programming

MAX. TIME: 2 Hours

COURSE INSTRUCTORS: Dr. Amol Vasudeva, Dr. Deepak Gupta, Dr. Hari Singh, and Dr. Amit Jakhad

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make suitable assumptions wherever required for solving problems

Q No	Question	CO	Marks
Q1	Mention two-three special characteristics about the friend functions and static data members. Write a C++ program to swap the private data members of two classes by passing the class objects as arguments using Friend function.	CO-1	5
Q2	The concept of virtual table is used to perform dynamic binding in C++. Explain this concept in details with a suitable example.	CO-4	4
Q3	Write a C++ program to write the records/ objects into a file Student.txt of a class Student having protected data members <code>char name[80]</code> and <code>int age</code> . Further, write code to perform the following. a) Count the number of records in the file. b) Find the n^{th} record from the file and display it.	CO-6	5
Q4	Write a program to convert <i>Minute</i> class object into <i>Hour</i> class object and vice versa, using constructors.	CO-5	4
Q5	Create a polymorphic base class <i>CParent</i> having data members as name and age, and derive two classes <i>CChild1</i> and <i>CChild2</i> . Implement an object factory to generate a total of 7 objects of derived classes and use RTTI to know the type and count of objects belonging to each class	CO-3, CO-7	4
Q6	Implement a C++ class <i>CStudent</i> having a data member as name and member function as <code>showName()</code> , which displays the name of the student. Create an object of <i>CStudent</i> initializing the data member and use pointers to class members to access name and <code>showName ()</code>	CO-7	4
Q7	Define a class template <i>Queue</i> (using array) with functions to insert and delete the elements. Test this class for <i>int</i> and <i>float</i> data types. The program should throw user-defined exceptions if the queue is full or empty.	CO-2, CO-7	5
Q8	A hospital wants to computerize appointments with doctors. A hospital has a panel of doctors in different specializations (eye, skin, orthopaedics, etc.). An appointment is done through telephone, e-mail, SMS, in person, as well as on-line. There are two shifts (Morning and Evening). Not more than twenty five patients are given an appointment with one doctor in any shift. If the number exceeds twenty five, the appointment is fixed for the next day. The system generates daily and weekly reports showing the name of doctors, name of patients and date of appointment. Draw the use-case diagram for the problem description given above.	CO-8	4