

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2EXAMINATION- 2024

B. Tech-II Semester (CSE/IT)

COURSE CODE (CREDITS): 18B11CI311 (3)

MAX. MARKS: 25

COURSE NAME: Object-Oriented Systems and Programming

COURSE INSTRUCTORS: Dr. Amol Vasudeva, Dr. Deepak Gupta, Dr. Hari Singh, & Dr.

Maneet Singh

MAX. TIME: 1 Hour30 Minutes

Note: (a) All questions are compulsory.

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

Q No	Question	CO	Marks
Q1	<p>Define a class <code>String</code> with data members as <code>char *str</code>, <code>int size = 50</code>. The class includes constructors and the following member functions:</p> <p>a) Function to convert an array of characters (basic type) to <code>String</code> class type (user-defined type).</p> <p>b) An operator function to overload <code>+</code> operator to concatenate two <code>String</code> objects.</p> <p>Note that if objects of the <code>String</code> class are initialized to have too many characters, i.e. exceeding the size 50, then only first (size-1) characters should be copied into <code>str</code>.</p> <p>In the <code>main()</code> method, you must be able to use the following statements:</p> <pre>String s1; String s2 s1 = String("The rate of change of "); s2 = String("momentum is directly proportional to the force."); String s3 = s1 + s2;</pre>	CO-5	6
Q2	<p>Define a class <code>Student</code> with data members as <code>rollnumber</code>, <code>name</code>, and <code>age</code>. The class also has methods to <code>enter</code> and <code>display</code> the values of data members, respectively. You may also include extra method(s) if required. Now, define a <code>main()</code> function to include the following:</p> <p>a) Create a file "<code>StudentData.txt</code>" and write multiple objects of <code>Student</code> class into this file.</p> <p>b) Read all the objects from the file "<code>StudentData.txt</code>" and display them on the screen.</p>	CO-6	6

Q3	Write a C++ program to illustrate the diamond problem in multiple inheritance, highlighting the ambiguity which occurs while accessing a method from the common base class, CBase. Further, implement virtual inheritance to resolve it.	CO-3	3
Q4	Write a C++ program that demonstrates how deleting an object of a derived class, CDerived, through a pointer to a base class, CBase, without using a virtual destructor can lead to incomplete destruction and result in resource leaks.	CO-4	3
Q5	Differentiate between the following terms: a) Multiple and Multilevel Inheritance b) Static and Dynamic Binding c) protected and private access specifiers d) seekg(0) and tellg() functions	CO-3 CO-4 CO-3 CO-6	2+2+2+1 =7

JUIT TEST-2 EXAMINATION- OCT 2024