TEXAS INTERNATIONAL COLLEGE

MID-TREMINAL EXAM - 2024

Bachelor Level (B.Sc. CSIT) **Semester: 2nd Semester**

Subject: OOP in C++(CSC166)

Full Mark: 60 Time: 3 hours Pass Mark :30

SET A

Section A

Attempt any two questions: **(2 x 10 = 20)**

1. Write a program according to the specification given below:
    a. Create a class Teacher with data members tid & subject and member functions for reading and displaying data members.
    b. Create another class Staff with data members sid & position, and member function for reading and displaying data members.
    c. Derive a class Coordinator from Teacher and Staff and the class must have its own data member department and member functions for reading and displaying data members.
    d. Create two object of Coordinator class and read and display their details.
2. What are the main features of the Object-Oriented Programming? Explain with suitable practical example.
3. Explain types of polymorphism briefly. Write down roles of polymorphism. How can we achieve dynamic polymorphism? Explain with an example.

Section B

Attempt any eight questions. $(\mathbf{8 \times 5 = 40})$

1. What is operator overloading? Explain their types with suitable examples.
2. What is function overloading? How is it different from function overriding? Write a program that gives an example of function overriding.
3. Explain about this pointer with an example.
4. What is container class? Differentiate container class from inheritance.
5. What is constructor and destructor? Explain with suitable example.
6. Write a program that decreases an integer value by 1 using overloading -- operator.
7. How does memory get allocated when an object is created? Explain with suitable diagram.
8. Differentiate between private, protected, and public derivation with suitable examples.
9. Write short notes on: $(2 \times 2.5 = 5)$
    a. Virtual Function
    b. Function Template

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SET B

Section A

Attempt any two questions. **(2 x 10 = 20)**

1. Define a class REPORT with the following specifications:
   Private members:

adno	4-digit admission number
name	20 characters
marks	an array of 5 floating point values
average	average marks obtained
GETAVG()	a function to compute the average obtained in five subject

   Public members:

READINFO()	a function to accept values for adno, name, marks. Invoke the function GETAVG()
DISPLAYINFO()	a function to display all data members of report on the screen

   You should give function definition for all the member functions.
2. Explain types of polymorphism briefly. Write down roles of polymorphism. How can we achieve dynamic polymorphism? Explain with an example.
3. What is object-oriented approach? How is it different from structured programming? What are the main features of the object-oriented programming?

Section B

Attempt any eight questions. $(\mathbf{8 \times 5 = 40})$

1. Differentiate between operator overloading and function overloading.
2. Explain the inline function with an example.
3. What is the use of new and delete operators?
4. Define the various ambiguity situations that may occur during the process of inheritance. How can you resolve that ambiguity situation?
5. What is constructor? Explain their types with suitable example.
6. Write a program that increases an integer value by 1 using overloading ++ operator.
7. How does a memory get allocated when an object is created? Explain with suitable diagram.
8. What is inheritance? Explain their types.
9. Write short notes on: $(2 \times 2.5 = 5)$
    a. Abstract Class
    b. Protected Access Specifier