C++ which compares the salary of Husband class and Wife class and prints the minimum salary using friend function. 4+6

4. What are **constructors** and **destructors**? Explain their types and importance in detail 3+7

5. What is exception handling? Write a program to read three numbers x, y and z and evaluate R given by

$$R = \frac{z}{(x - y)}$$

Use exception handling to throw an exception in case division by zero is attempted. 5+5

6. Define an abstract class Shape with a pure virtual function area(). Derive Rectangle and Circle classes from Shape, implement area() in both, and display area using base class pointers.2+8

7. Write short notes on the following using suitable examples:

   i. sizeof() operator

   ii. scope resolution operator

   iii. virtual functions

   iv. exception handling 2+2+2+4

8. What is the difference between <cstring> and <string> header files? Write a program in C++ to reverse a string using recursion but without using any in-built string functions. 4+6

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B.Tech Even Semester Examination, May, 2025

Computer Science & Engineering

(4th Semester)

Course No: CSE-404

(Object Oriented Programming with C++)

Full Marks: 50

Pass Marks: 25

Time: 2 hours

Note:

1. Attempt any five questions
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. Defne and implement a class BankAccount with the following attributes and methods:

   i. Attributes: Account number, account holder name, balance

   ii. Methods: deposit, withdraw, display account info

   Extend this class using inheritance to create a Savings_Account class that adds interest calculation. 10

2. Discuss operator overloading in brief. Write a program in C++ to concatenate two strings by overloading '+' operator. 4+6

3. Explain static variable and static function in C++ taking a suitable example? Write a program in