

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - III Computer Science & Business Systems : WINTER: 2025
SUBJECT: OBJECT ORIENTED PROGRAMMING

Day : Monday
Date : 15/12/2025

W-24144-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable calculator is allowed.
- 4) Assume suitable data if necessary.

Q.1 Define a constant pointer and a pointer to a constant. Write a C program demonstrating the usage of constant, pointer and array in a single function. (10)

OR

Q.1 Explain different types of preprocessor directives in C. Write a program that demonstrates the use of #define, #include, #ifdef, and #ifndef directives, and explain their impact during compilation. (10)

Q.2 Explain the concept of reference variables in C++. Differentiate between pass-by-value and pass-by-reference with suitable code snippets. What are the advantages of passing by reference? (10)

OR

Q.2 Differentiate between #define and const in C++. Discuss scope, type safety, and memory implications. Support your explanation with an example for each. (10)

Q.3 Define the terms 'class' and 'object' in OOP. How are objects instantiated and used in C++? Write a class and demonstrate object creation and method calling with code. (10)

OR

Q.3 Explain how data abstraction, data hiding, and encapsulation are interrelated in the context of OOP. Illustrate your answer with a well-structured C++ example (10)

Q.4 What is the purpose of 'this' pointer in C++? How is it used to differentiate between data members and function parameters? Write a class definition that uses this keyword effectively. (10)

OR

Q.4 Explain the concept of a friend class in C++. Why is it sometimes necessary to use it? Write a program where a friend class accesses the private data of another class. (10)

Q.5 Describe the concept of class hierarchy in C++. Explain how it helps in organizing objects and relationships between classes in a program. Provide a sample class hierarchy for a banking system and explain the relationships between classes. (10)

OR

Q.5 What are pointers to objects in C++? Explain how they are different from normal object references. Provide an example of using pointers to objects to dynamically allocate memory and demonstrate their advantages in memory management. (10)

Q.6 Explain formatted output in C++ using the iostream library. How can manipulators like setw, setprecision, and fixed be used to format the output? Provide examples demonstrating their use. (10)

OR

Q.6 Write a C++ program to read data from a file, process it, and write the results to another file. Include the handling of file open errors and the use of file stream classes (ifstream, ofstream). (10)

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