



‘समानो यन्त्रः सभितिः समानी’

UNIVERSITY OF NORTH BENGAL
BCA Major 3rd Semester Examination, 2025

BCAPMAJ305-BACHELOR OF COMPUTER APPLICATION

OBJECT ORIENTED PROGRAMMING WITH C++

Time Allotted: 2 Hours 30 Minutes

Full Marks: 60

The figures in the margin indicate full marks.

GROUP-A

Answer any four of the following

3×4 = 12

1. Differentiate between Object-Oriented Paradigm and Procedure-Oriented Paradigm.
2. Define reference variables with a small code snippet to illustrate their use.
3. Write a short note on Encapsulation in C++.
4. State the role of inline functions and mention one limitation.
5. Explain the difference between array of objects and object as function argument.
6. What is the use of the this pointer?

GROUP-B

Answer any four of the following

6×4 = 24

7. Discuss in detail the benefits and real-world applications of OOP.
8. Compare and contrast C structures and C++ classes with examples.
9. Demonstrate with code how default arguments and function overloading can coexist in C++.
10. Write a C++ program to implement copy constructor and explain its importance.
11. Describe different visibility modes in inheritance with an example hierarchy.
12. Differentiate between static data members and static member functions with suitable examples.

GROUP-C

Answer any two of the following

12×2 = 24

13. Write a comprehensive note on dynamic polymorphism: Explain virtual functions, pure virtual functions, and abstract classes with a program example.
14. Implement a C++ program to overload the binary '+' operator using both member function and friend function approaches.
15. Explain types of constructors with syntax and program examples. Discuss the role of the destructor.
16. Describe with examples the concept of multiple inheritance and explain how virtual base classes solve the diamond problem.

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UNIVERSITY OF NORTH BENGAL
BCA Major 3rd Semester Examination, 2025

BCAPMAJ306-BACHELOR OF COMPUTER APPLICATION
COMPUTER SYSTEM ARCHITECTURE

Time Allotted: 2 Hours 30 Minutes

Full Marks: 60

The figures in the margin indicate full marks.

GROUP-A

Answer any *four* questions

3×4 = 12

1. What is the need of having a bus system?
2. Differentiate between RTL and Programming Language.
3. Define an interrupt.
4. What is microprogrammed control Unit?
5. Discuss any two memory reference instructions.
6. What is cache memory?

GROUP-B

Answer any *four* questions

6×4 = 24

7. Explain logical shift, circular shift and arithmetic shift with example.
8. Discuss the basic design of a CPU of a computer system.
9. Differentiate between RISC and CISC architecture.
10. Describe the structure of a microprogrammed control unit with the help of a block diagram.
11. Explain any three addressing modes available in a computer system.
12. Write micro operations for fetch and decode cycle.

GROUP-C

Answer any *two* questions

12×2 = 24

13. Design a bus system to interconnect four 4-bit registers with the help of decoders and multiplexers.
14. Write notes on the different registers available in a typical computer system.
15. Discuss the various cycles (excluding interrupt cycle) involved in the execution of instructions with the help of a flow control diagram.
16. Describe Booth's multiplication algorithm with the help of an example.

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