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BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)/
BACHELOR OF SCIENCE/BACHELOR OF COMPUTER
APPLICATIONS (CYBER SECURITY)/
BACHELOR OF SCIENCE (CYBER SECURITY)
EXAMINATION : DECEMBER-2025
SEMESTER – II

Sub: Object Oriented Programming Using C++
(BCA242-20, BCA23-201, BSC24-201/BCA-CS242-20/BCAC23-201/BSCC24-201)

Date : 30/12/2025**Total Marks : 60****Time: 10.00 am to 12.30 pm**

Instructions:

1. All questions are compulsory unless and otherwise stated.
 2. Bold figures to the right of every question are the maximum marks for that question.
 3. Candidates are advised to attempt questions in order.
 4. Answers written illegibly are likely to be marked zero.
 5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
 6. Draw neat and labelled diagrams wherever necessary.
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Q.1 Fill in the blanks.**(5)**

1. In _____ inheritance, a derived class inherits from multiple base classes
 - a) single
 - b) multilevel
 - c) multiple
 - d) hybrid
2. Run-time polymorphism is primarily done through _____ functions
 - a) friend
 - b) virtual
 - c) function overloading
 - d) Inline
3. When multiple constructors are defined in a class with different parameter lists, it is called _____
 - a) default
 - b) copy
 - c) overloaded
 - d) destructor
4. The ability of an object to take on many forms is called _____.
 - a) polymorphism
 - b) inheritance
 - c) encapsulation
 - d) data abstraction
5. A _____ function can access the private and protected members of a class even though it is not a member of that class.
 - a) pure virtual function
 - b) friend
 - c) default argument
 - d) function overloading

Q.2. State True/False**(5)**

1. Object-Oriented Programming focuses on functions rather than objects.
2. C++ supports multiple inheritances.
3. Data members declared as private are accessible from outside the class.
4. The copy constructor is invoked when an object is passed by value to a function.
5. The ofstream class is used for reading from files.

Q.3. Answer the following. (Solve any 5) (10)

1. What is a pure virtual function?
2. What is the purpose of the scope resolution operator (::)?
3. Can you overload all operators in C++? List an operator that cannot be overloaded.
4. What is a file pointer?
5. Give one advantage of OOP over procedural programming.
6. What are member functions in a class?

Q. 4. Answer the following in detail. (Solve any 6) (30)

1. What is a destructor? Explain its purpose and when it is automatically invoked.
2. What is a friend function? Explain its purpose and how it can access members of a class with a C++ code example.
3. How multiple catch exceptions in C++ occur? Explain with an example.
4. Describe the concept of default arguments in functions with a suitable C++ example.
5. Explain the term Encapsulation, Object, data hiding and Abstraction
6. Write importance of 'this' pointer
7. Explain the use of the new and delete operators in C++ for dynamic memory management

Q. 5. Answer the following in detail. (Solve any 1) (10)

1. Design a C++ class named Employee with private data members: employeeID, name, salary. Include public member functions to:
 - Set the employee details.
 - Display the employee details.
 - Calculate a bonus (e.g., 10% of salary).
 - Implement a static member to count the total number of Employee objects created.
2. List the different types of inheritance in C++. Explain any two type.
