



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : BCA-402

OBJECT ORIENTED PROGRAMMING WITH C++

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the
following : 10 × 1 = 10

- i) Which of the following statements is correct ?
 - a) Destructor has a default value
 - b) Destructor is a take argument
 - c) Destructor deallocates memory
 - d) None of these.

- ii) How many times static member variable is initialized ?
- a) 0
 - b) 1
 - c) Depends on the number of object created
 - d) None of these.
- iii) A friend function can access
- a) only private member
 - b) only public member
 - c) both (a) and (b)
 - d) none of these.
- iv) All the public members of base class become the protected members of derived class. This happens in
- a) Virtual inheritance
 - b) Protected inheritance
 - c) Private inheritance
 - d) Public inheritance.

- v) Which of the following enables the code reusability ?
- a) Inheritance
 - b) Function overloading
 - c) Exception handling
 - d) Template.
- vi) Default visibility mode of class is
- a) Public
 - b) Private
 - c) Protected
 - d) all of these.
- vii) If a class contains at least one pure virtual function then the class is called
- a) Virtual base class
 - b) Abstract base class
 - c) both (a) and (b)
 - d) none of these.
- viii) Scope resolution operator usually
- a) limits the visibility of variables to a certain function
 - b) specifies a particular class
 - c) resolve ambiguity
 - d) both (b) and (c).

- ix) The argument of a copy constructor is passed by
- a) Value
 - b) Reference
 - c) Pointer
 - d) both (a) and (c).
- x) In binary operator overloading how many arguments does a friend function take ?
- a) One
 - b) Two
 - c) Three
 - d) Four.
- xi) Exception handling handles
- a) compilation time error
 - b) run time error
 - c) both (a) and (b)
 - d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What do you mean by 'Top-down approach' and 'Bottom-up approach' of programming ? What are the differences between Structure and Class in C++ ? $2 + 3$
3. How data members are allocated in memory for objects of a class ? Show how 'Static' data members work with an example. $1 + 4$

4. What is Virtual Class ? Explain if friend function can be virtual or not. 2 + 3
5. What is Copy Constructor ? Where is it used ? What is Reference variable ?
6. What is the purpose of the Constructor ? Why destructor cannot be overloaded ?

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What do you mean by data hiding in C++ ?
b) Show array of object with an example.
c) Why 'Friend' functions cannot be defined inside a class definition ?
d) Write a C++ program to show 'setw' manipulator. 3 + 5 + 3 + 4
8. a) What do you mean by default constructor and constructor with default argument ?
b) Explain the use of inline function. What are the limitations of inline function ?
c) Write down the properties of a 'destructor'. Why should we define destructor in the time of using dynamic memory allocation in a Class ?

$5 + 4 + (4 + 2)$

9. a) Write a program that creates base class called the Number. This class holds an integer value and contain a virtual function called displayNum(). Create two derived classes called HexNum and OctalNum that inherits Number. Override displayNum() in the derived classes so that it displays the value in Hexadecimal and Octal respectively. Write a main function to create object of HexNum and OctalNum classes and display the hexadecimal and octal form of the supplied integer value. Use the base class pointer to call a function.

10

- b) Distinguish between overloaded function and function template. 5
10. a) Write a program to show binary operator overloading using friend function.
- b) Why is it better to use friend function in binary operator overloading ? Explain this with the help of the following statements :
- $$S = obj + 2; S = 2 + obj;$$
- c) What is 'casting operator function' ? Show class to class type conversion with 'casting operator function'. 6 + 3 + (2 + 4)

11. Write short notes on any *three* of the following : 3 × 5

- a) Constructors in derived class
 - b) 'This' pointer
 - c) Run-time polymorphism and virtual function
 - d) Class templates
 - e) Inheritance.
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