Object Oriented Programming using C++ (313304)

MSBTE K-Scheme · Computer Engineering · Semester III · Important Questions

How this list was made: Based on MSBTE papers S-2024…S-2026 available on msbte.ac.in (for this subject: Winter 2024, Summer 2025, Winter 2025 and Summer 2026). Every question of every paper was grouped with the questions that ask the same thing in different words. **High** = asked in 3 or 4 of the 4 papers, **Medium** = asked in 2 papers, **Low** = asked once or not yet asked but in the syllabus. Practice guidance only — not a prediction of the exam.

Paper pattern seen in all four papers: Q.1 any FIVE of 7 × 2 M · Q.2, Q.3, Q.4 any THREE × 4 M · Q.5, Q.6 any TWO of 3 × 6 M · Total 70 marks, 3 hours.

Unit I — Principles of Object Oriented Programming

#	Question / topic	Marks	Asked in (question no. and marks)	Probability
1	Define class and object / syntax of class declaration	2	W-24: Q1a (2); S-25: Q1b (2); W-25: Q1a (2), Q1d (2); S-26: Q1g (2)	High
2	Features / basic concepts / applications of OOP	2	S-25: Q1a (2); W-25: Q1c (2); S-26: Q1a (2)	High
3	Differentiate POP and OOP	4	W-24: Q4d (4); S-26: Q4a (4)	Medium
4	Scope resolution operator and memory management operators (new, delete)	4, 6	W-24: Q2a (4); S-26: Q5b (6)	Medium
5	Inline function	2 / 4	Not asked yet	Low (syllabus topic, not asked yet)
6	Default arguments / reference variable	2 / 4	Not asked yet	Low (syllabus topic, not asked yet)

Unit II — Classes, Objects, Constructors and Destructors

#	Question / topic	Marks	Asked in (question no. and marks)	Probability
1	Friend function — explain with example / rules	2, 4	W-24: Q1d (2); S-25: Q4a (4); W-25: Q3c (4); S-26: Q2b (4)	High
2	Program: array of objects — accept/display data for n objects with a condition (staff, mobile, employee)	4, 6	W-24: Q5a (6); S-25: Q2b (4), Q6c (6); S-26: Q5a (6)	High
3	Constructor — define, characteristics, types	2	W-24: Q1b (2); W-25: Q1b (2); S-26: Q1b (2)	High
4	Constructor overloading / multiple constructors in a class	4	W-24: Q4a (4); W-25: Q2b (4); S-26: Q3a (4)	High

5	Destructor — define, features; constructor vs destructor; program with constructor and destructor	2, 4, 6	S-25: Q1g (2); W-25: Q6a (6); S-26: Q4d (4)	**High**
6	Differentiate structure and class	4	W-24: Q3b (4); W-25: Q4e (4)	**Medium**
7	Parameterized constructor (explain / program using constructor)	4	W-24: Q4e (4); S-25: Q3b (4)	**Medium**
8	Static data member / static member function	2, 4	S-25: Q3c (4); S-26: Q1e (2)	**Medium**
9	Simple class program (member functions inside / outside class, e.g. rectangle area)	4	W-25: Q2a (4); S-26: Q3c (4)	**Medium**
10	Copy constructor	4	W-25: Q4d (4)	**Low**
11	Object as function argument	4	W-24: Q2b (4)	**Low**
12	Memory allocation for objects (diagram)	6	W-25: Q6c (6)	**Low**

Unit III — Extending Classes using Inheritance

#	Question / topic	Marks	Asked in (question no. and marks)	Probability
1	Program: multiple inheritance from given figure (e.g. Test + Sport → Result)	4, 6	W-24: Q5b (6); S-25: Q2c (4), Q5a (6); W-25: Q2d (4); S-26: Q6c (6)	**High**
2	Virtual base class — explain with example	2, 4, 6	W-24: Q2c (4); S-25: Q1d (2); W-25: Q5c (6); S-26: Q3d (4)	**High**
3	Single inheritance — explain / program	4, 6	W-24: Q3d (4); W-25: Q5a (6); S-26: Q2d (4), Q4e (4)	**High**
4	Types of inheritance — list / define	2, 4	W-24: Q3d (4); W-25: Q1g (2); S-26: Q1c (2)	**High**
5	Constructors in derived class (syntax / explain / program)	2, 4, 6	W-24: Q6b (6); S-25: Q1c (2); W-25: Q3d (4)	**High**
6	Multilevel inheritance — define with diagram / program	2, 6	S-25: Q1f (2); W-25: Q5a (6)	**Medium**
7	Visibility modes (public, private, protected)	2	W-24: Q1g (2); S-26: Q1f (2)	**Medium**
8	Abstract base class / pure virtual function	2	W-24: Q1e (2); S-25: Q1e (2)	**Medium**
9	Hybrid inheritance — define / program (Student, Test, Sports, Result)	4, 6	S-25: Q4d (4), Q6a (6)	**Low**
10	Hierarchical inheritance (program)	2 / 4	Not asked yet	**Low (syllabus topic, not asked yet)**

Unit IV — Pointers and Polymorphism

#	Question / topic	Marks	Asked in (question no. and marks)	Probability

1	Operator overloading — rules, unary/binary operator program	2, 4, 6	W-24: Q1f (2), Q6a (6); S-25: Q5c (6); W-25: Q3b (4)	**High**
2	Virtual function — explain / rules	4	W-24: Q3c (4); S-25: Q3d (4); W-25: Q3a (4)	**High**
3	Compile-time vs run-time polymorphism / run-time polymorphism	4	S-25: Q4c (4); W-25: Q2c (4); S-26: Q2a (4)	**High**
4	Function overloading — explain / program	2, 4	S-25: Q2d (4); W-25: Q1e (2); S-26: Q4c (4)	**High**
5	Program: pointer to object (product / book) — accept and display	6	W-24: Q5c (6); S-25: Q6b (6); S-26: Q5c (6)	**High**
6	Pointer to derived class	4	W-24: Q2d (4); S-26: Q3b (4)	**Medium**
7	'this' pointer	4, 6	W-25: Q4c (4); S-26: Q6a (6)	**Medium**
8	Polymorphism — types / need	2	W-24: Q1c (2); S-26: Q1d (2)	**Medium**
9	Pointer — declare and initialise	2	W-25: Q1f (2)	**Low**
10	Type casting	4	S-25: Q2a (4)	**Low**
11	Binary operator overloading (+ for complex numbers) / friend operator function	2 / 4	Not asked yet	**Low (syllabus topic, not asked yet)**

Unit V — File Operations

#	Question / topic	Marks	Asked in (question no. and marks)	Probability
1	File opening modes	4	W-24: Q3a (4); W-25: Q4a (4); S-26: Q4b (4)	**High**
2	Program: copy contents of one file to another (ABC.txt → PQR.txt)	6	W-24: Q6c (6); S-25: Q5b (6); S-26: Q6b (6)	**High**
3	Program: write into file / read and write data in file	4	W-25: Q4b (4); S-26: Q2c (4)	**Medium**
4	Opening a file using constructor	4	W-24: Q4c (4)	**Low**
5	Insertion and extraction operators	4	W-24: Q4b (4)	**Low**
6	Unformatted I/O functions in file (get, put, read, write)	4	S-25: Q4b (4)	**Low**
7	Detecting end of file (program)	4	S-25: Q3a (4)	**Low**
8	Program: count number of lines in a file	6	W-25: Q6b (6)	**Low**
9	Types of files (text and binary)	6	W-25: Q5b (6)	**Low**
10	Stream class hierarchy for file I/O	2 / 4	Not asked yet	**Low (syllabus topic, not asked yet)**
11	File pointers — seekg(), seekp(), tellg(), tellp()	2 / 4	Not asked yet	**Low (syllabus topic, not asked yet)**

Most repeated topics (all units)

1. Define class and object / syntax of class declaration — in 4 of 4 papers (5 questions)
2. Program: multiple inheritance from given figure (e.g. Test + Sport → Result) — in 4 of 4 papers (5 questions)
3. Friend function — explain with example / rules — in 4 of 4 papers (4 questions)
4. Virtual base class — explain with example — in 4 of 4 papers (4 questions)
5. Program: array of objects — accept/display data for n objects with a condition (staff, mobile, employee) — in 3 of 4 papers (4 questions)
6. Single inheritance — explain / program — in 3 of 4 papers (4 questions)
7. Operator overloading — rules, unary/binary operator program — in 3 of 4 papers (4 questions)
8. Features / basic concepts / applications of OOP — in 3 of 4 papers (3 questions)
9. Constructor — define, characteristics, types — in 3 of 4 papers (3 questions)
10. Constructor overloading / multiple constructors in a class — in 3 of 4 papers (3 questions)

Note: This is a **study guide prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in