

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT*(An Autonomous Institute U/s UGC Act 1956)***IMSc-IT SEMESTER-II, SEMESTER END EXAMINATION – WINTER 2025****SUBJECT CODE: 1BS204****DATE: 09-01-2026****SUBJECT NAME: OBJECT ORIENTED PROGRAMMING****TIME: 11:00 AM to 01:30 PM****TOTAL MARKS: 70****Instructions**

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A**Marks BL CO****Q.1 Multiple-Choice Questions****[05]**

- | | | | |
|--|----------|----------|----------|
| (a) A class containing at least one pure virtual function is called | 1 | R | 3 |
| (i) Derived class | | | |
| (ii) Base class | | | |
| (iii) Virtual class | | | |
| (iv) Abstract class | | | |
| (b) Runtime polymorphism is achieved using | 1 | U | 3 |
| (i) Virtual functions | | | |
| (ii) Operator overloading | | | |
| (iii) Function overloading | | | |
| (iv) Templates | | | |
| (c) Hybrid inheritance is a combination of | 1 | U | 3 |
| (i) Two or more types of inheritance | | | |
| (ii) Multilevel and Hierarchical | | | |
| (iii) Single and Multiple | | | |
| (iv) Only Multiple inheritance | | | |
| (d) Which symbol is used to declare a template in C++? | 1 | U | 5 |
| (i) template | | | |
| (ii) # | | | |
| (iii) typename | | | |
| (iv) @ | | | |

- | | |
|--------------------------------------|-------------------------------|
| (e) Function templates are used to | 1 R 5 |
| (i) Create functions with data types | (ii) Replace inline functions |
| (iii) Reduce code duplication | (iv) Increase memory usage |

- Q.2 Attempt Any Two** **[10]**
- | | |
|--|--------------|
| (a) Explain multiple and multilevel inheritance. | 5 R 3 |
| (b) Explain function overloading in C++. | 5 U 3 |
| (c) Write a C++ program using inheritance to calculate area of different shapes. | 5 A 3 |

- Q.3 Attempt Any Two** **[10]**
- | | |
|--|--------------|
| (a) Explain the types of polymorphism in C++. | 5 R 3 |
| (b) Explain the concept of abstract class using pure virtual functions. | 5 U 3 |
| (c) Write a C++ program using polymorphism to implement bank account operations. | 5 A 3 |

- Q.4 Attempt Any Two** **[10]**
- | | |
|---|--------------|
| (a) Explain the syntax of a class template. | 5 R 5 |
| (b) Explain function template in detail. | 5 U 5 |
| (c) Explain the components of STL. | 5 U 5 |

SECTION B

Marks BL CO

Q.5 Multiple-Choice Questions

[05]

(a) Which keyword is used to declare a constant in C++?

1 R 1

(i) define

(ii) final

(iii) constant

(iv) const

(b) The operator :: is known as

1 U 1

(i) Bitwise operator

(ii) Ternary operator

(iii) Conditional operator

(iv) Scope resolution operator

(c) Which keyword is used to define an inline function?

1 R 2

(i) inline

(ii) virtual

(iii) static

(iv) register

(d) How are class members accessed in C++?

1 U 2

(i) Using :

(ii) Using .

(iii) Using ;

(iv) Using ::

(e) Which keyword is used to explicitly generate an exception?

1 U 4

(i) try

(ii) catch

(iii) exception

(iv) throw

Q.6 Attempt Any Two

[10]

(a) Explain types of variables in detail.

5 R 1

(b) Explain difference between Procedure Oriented and Object Oriented Programming.

5 U 1

(c) Explain loops in detail.

5 U 1

Q.7 Attempt Any Two

[10]

(a) What is Constructor? Explain its types in detail.

5 R 2

(b) Explain data hiding and abstraction.

5 U 2

(c) Explain Inline function with Example.

5 U 2

Q.8 Attempt Any Two

[10]

(a) Explain types Exception in detail.

5 R 4

(b) Explain try, catch and throw with example.

5 U 4

(c) Write a program to illustrate nested try-catch blocks.

5 A 4
