

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT*(An Autonomous College U/s UGC Act 1956)***IMSc-IT SEMESTER-II, SEMESTER END EXAMINATION – SUMMER 2025****Subject Code: 1BS204****Date: 19-05-2025****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) Which symbol is used to inherit a base class into derive class in C++?	1	R	3
(i) :			
(ii) ::			
(iii) =>			
(iv) ->			
(b) Which type of inheritance results in a diamond problem?	1	U	3
(i) single			
(ii) Multilevel			
(iii) multiple			
(iv) Hierarchical			
(c) Which header is required to use vector?	1	U	5
(i) <vector.h>			
(ii) <vector>			
(iii) <vectors>			
(iv) <stl_vector>			
(d) Which of the following is a sequence container in STL?	1	R	5
(i) set			
(ii)map			
(iii) stack			
(iv)vector			

(e) What will map<string, int> store?	1	5
(i) Only keys	(ii) Only values	
(iii) Key-value pairs	(iv) Unique values only	

Q.2 Attempt Any Two	[10]		
(a) What is Inheritance? List the types of Inheritance. Explain Multilevel Inheritance.	5	R	3
(b) Explain Multiple Inheritance with Example.	5	U	3
(c) Create a base class college with public members college_id and college_name. Create another class branch with public data branch_name and department_name. Create class Student which inherits both College and Branch classes. Student class can have public members rollno and name. Write a method to display (1).college data (2). branch data (3). student data.	5	A	3
Q.3 Attempt Any Two	[10]		
(a) What is polymorphism? How can we achieve polymorphism in C++? Give simple example.	5	R	3
(b) Explain Friend function with example	5	U	3
(c) Express about a Virtual Function. Give simple example.	5	A	3
Q.4 Attempt Any Two	[10]		
(a) What is template? Explain function template.	5	U	5
(b) List out Numeric algorithms with description.	5	R	5
(c) Write a C++ program to swap two numbers using template function.	5	A	5

SECTION B

	Marks	BL	CO
Q.5 Multiple-Choice Questions	[05]		
(a) Operator <i>new</i> and <i>delete</i> are known as	1	R	1
<div>(i) Free store Operator</div> <div>(ii) Ternary Operator</div> <div>(iii) Binary Operator</div> <div>(iv) Logical Operator</div>			
(b) Choose the valid identifier	1	U	1
<div>(i) 1_var</div> <div>(ii) friend</div> <div>(iii) dis&123</div> <div>(iv) shiva_1</div>			
(c) By default, class members are	1	R	2
<div>(i) public</div> <div>(ii) private</div> <div>(iii) protected</div> <div>(iv) static</div>			
(d) Return type of constructor is:	1	R	2
<div>(i) int</div> <div>(ii) no return type</div> <div>(iii) void</div> <div>(iv) float</div>			
(e)	1	U	4
<pre>try { throw 10; } catch (double d) { cout << "Double"; } catch (int n) { cout << "Default"; } </pre> What will be the output of above code? <div>(i) Default</div> <div>(ii) Compile-time error</div> <div>(iii) Double</div> <div>(iv) Run-time error</div>			
Q.6 Attempt Any Two	[10]		
(a) What are benefits of OOP? Explain.	5	R	1
(b) Point out the need of preprocessor directive <code>#include<iostream></code> .	5	U	1
(c) Write a C++ program that ask for temperature in Fahrenheit and display it in Celsius.	5	A	1

Q.7	Attempt Any Two	[10]		
(a)	Describe public, private and protected in C++.	5	R	2
(b)	What is encapsulation? Explain with example.	5	U	2
(c)	Write a program to display car features and specification by overloading constructor.	5	A	2
Q.8	Attempt Any Two	[10]		
(a)	Explain exception handling in C++.	5	R	4
(b)	Explain when to use multiple catch handlers.	5	U	4
(c)	Write a C++ program to catch multiple exceptions	5	A	4
