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RV COLLEGE OF ENGINEERING®

(An Autonomous Institution affiliated to VTU)

I / II Semester B. E. Regular / Supplementary Examinations Aug-2024

INTRODUCTION TO C++ PROGRAMMING

Time: 03 Hours ***Maximum Marks: 100***

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer SIX full questions from Part B. In Part B question number 2 and 11 are compulsory. Answer any one full question from 3 and 4, 5 and 6, 7 and 8 & 9 and 10.

PART-A

			M	BT	CO
1	1.1	Distinguish between Procedure oriented programming and object oriented programming	02	2	1
	1.2	Name the data type which is used to verify the true or false condition in $C++$ programming.	01	1	1
	1.3	A _____ is a function that isn't a member of a class but has access to the class's private and protected members.	01	1	1
	1.4	_____ operator is used to define a member function outside the class.	01	1	1
	1.5	Identify the feature of $C++$ where a class can inherit from more than one classes.	01	1	3
	1.6	Which is a process of hiding unnecessary data and showing only relevant data?	01	1	1
	1.7	Illustrate the role of a constructor in class with a suitable example.	01	1	1
	1.8	Why do we need to handle exceptions? Give example.	01	1	1
	1.9	Mention the template class which has the contiguous memory locations when initiated.	01	1	4

PART-B

2	a	Explain in detail the general form of a $C++$ Program with a suitable example.	08	2	1
	b	Illustrate the categories of operators with suitable examples for each.	06	2	1
3	a	Elaborate on the behavior of constructors and destructors with sample programs and their output.	08	3	1
	b	Example the usage of inline functions and friend functions within a class through examples.	06	2	1
		OR			
4	a	Explain the following with relevant examples. i) Passing objects to functions ii) Returning objects iii) Object assignment iv) Local classes	10	2	2
	b	Differentiate between structures and classes with suitable examples.	04	2	1

5	a	Explain the role of the following: i) Virtual functions ii) Abstract classes	10	3	3
	b	Discuss the importance of default function arguments in $C++$ programming	04	2	3
		OR			
6	a	Write a $C++$ program to illustrate the operator overloading mechanism.	08	3	1
	b	Distinguish between static and dynamic polymorphism with suitable examples for each.	06	2	3
7	a	Using an appropriate example, demonstrate the working of multiple catch statements dealing with exceptions.	10	2	3
	b	Elaborate on the use of unexpected () function with a suitable example.	04	3	4
		OR			
8	a	Use appropriate examples to explain the process of handling the derived class exception.	08	2	3
	b	Write a $C++$ program to demonstrate try, throw and catch blocks.	06	3	4
9	a	With an example, explain compile-time polymorphism in detail.	08	2	3
	b	Elaborate on template class "list" with the help of an example.	06	3	4
		OR			
10	a	Write a template function to find the maximum number from a template array of size N.	10	3	4
	b	Write a short note on iterators in Standard Template Library (STL) in $C++$ programming.	04	2	4
		LAB COMPONENT			
11	a	Design and implement a class $STUDENT$ with attributes like: roll number, name, 3 tests mark. Implement member functions for the following: i) To read student data like name and test marks, ii) To compute average marks (considering best two out of three test marks) and iii) To display the student information. Declare an array of $STUDENT$ objects in the main function, use static data member to generate unique student roll number.	10	3	3
	b	Design and implement a $C++$ program to create an abstract class: $SHAPE$ to represent any shape in general. The class should have two pure virtual functions to read dimensions and to compute the area. Create three derived classes $CIRCLE, RECTANGLE$, and $SQUARE$ by inheriting the features of class $SHAPE$. Implement the functions to read and compute the area. Add constructors, method to display the results as required. (Assume appropriate attributes).	10	3	3