	UNIT-I / PART-A
1	Distinguish between methods and messages
2	Define abstraction and encapsulation
3	Justify the need for static members
4	What is the difference between a local variable and a data member?
5	What is the difference between a parameter and an argument?
6	What are the advantages of default arguments?
7	What is an inline function?
8	What do you mean by dynamic initialization of variables?

	UNIT-I / PART-B
1	(i) Highlight the features of object oriented programming language. (ii) Explain function overloading with an example.
2	Write a C++ program to explain how the member functions can be accessed using pointers
3	i) Explain default arguments with example ii) What is a static member and list its common characteristics
4	i) List the different types of constructor. Write a program to illustrate the use of different types of constructor ii) Write short notes on storage classes

	UNIT-II / PART-A
1	What is a constructor? How do we invoke a constructor function?
2	What is the significance of overloading through friend functions?
3	Define run time polymorphism
4	What are the operators that cannot be overloaded?
5	What are pure virtual function? Give example
6	What is the need for initialization of objects using constructors?
7	Write some special characteristics of constructor
8	What is destructor?

	UNIT-II / PART-B
1	Write brief notes on Friend function and show how to modify a Class's private Data with a Friend Function.
2	Explain the different types of constructors with suitable examples.
3	i) Write a program to perform dynamic initialization of objects ii) Write a program to illustrate the process of multi-level multiple inheritance concept of C++ language.
4	i) Write the rules for overloading the operators. ii) Write a C++ program to add two complex numbers using operator overloading.

	UNIT-III / PART-A
1	What are templates?
2	What is meant by abstract class?
3	Illustrate the exception handling mechanism
4	What is namespace?
5	What is stream? Why they are useful?
6	Distinguish between class template and function template
7	Define Allocators
8	What is the use of function adaptors?

	UNIT – III / PART-B		
1	i)	Write the syntax for member function template	
	ii)	Write a C++ program that illustrates multiple catch statements	
2	i.	Write a function template to find the minimum value contained in an array.	
	ii.	List the advantages of exception handling mechanisms	
3	i.	Write a program to read a string to store it in a file and read the same string from the file to display it on the output device.	
	ii.	What is STL? Brief on its key components and their types	
4	Explain in detail about Abstract Class with suitable example		

	UNIT-IV / PART-A	
1	What do you mean by balanced trees?	
2	What are the various rotations in AVL trees?	
3	Define AVL Tree.	
4	What is the minimum number of nodes in an AVL tree of height h?	
5	What do you mean by disjoint set ADT?	
6	Define Fibonacci heaps	
7	Compare 2-3 tree with 2-3-4 tree	
8	What is meant by amortized analysis?	

	UNIT-IV/PART-B		
1	i.	Construct B tree to insert the following key elements (order of the tree is 3) 5,2,13,3,45,72,4,6,9,22	
	ii.	Discuss how to insert an element in AVL. Explain with example	
2	Describe any scheme for implementing Red Black trees. Explain Insertion and Deletion algorithm in detail. How do these algorithms balance the height of the tree? Insert the following sequence {20,10,5,30,40,57,3,2,4,35,25,18,22,21}		
3	Explain Fibonacci heap Deletion and Decrease Key operation using cascading cut procedure with example		
4	i.	What is a Red Black Tree? Mention the properties that a R-B tree holds	
	ii.	Show the results of inserting 43,11,69,72 and 30 into an initially empty AVL tree. Show the results of deleting the nodes 11 and 72 one after the other of the constructed tree.	

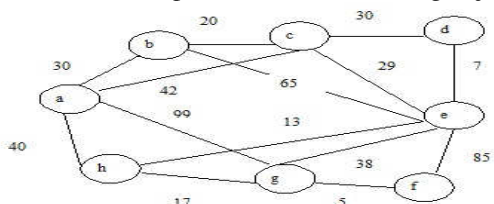|	UNIT-V/PART-A	
1	Name the different ways of representing a graph with an example	
2	What is a minimum spanning tree?	
3	What is the purpose of Dijkstra's algorithm?	
4	Differentiate BFS and DFS	
5	What is an acyclic graph?	
6	Define in degree of a graph.	
7	Define Graph	
8	When is a graph said to be weakly connected?	

	UNIT-V / PART-B
1	Write and explain the prim's algorithm with an example
2	Explain topological sort with suitable algorithm and example
3	Compare BFS and DFS with suitable example
4	Find the shortest path from 'a' to 'd' using Dijkstra's algorithm in the graph shown

Figure : 1