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## Model Question Paper-with effect from 2022 (CBCS Scheme)

### Fifth Semester B. Tech Degree Examination

#### Data structure using C++

TIME: 03Hours

Max. Marks: 100

Note: Answer any FIVE full questions, choosing at least ONE question from each MODULE

Module-1			*Bloom's Taxonomy Level	COs	Marks
Q.01	a	Describe the design process involved in the software development life cycle. What steps are typically followed during this phase?	L2	1	10
	b	What is a constructor in object-oriented programming ? Highlight its characteristics and types.	L2	1	10
OR					
Q.02	a	What is operator overloading in C++? Explain with a detailed example and syntax.	L2	1	10
	b	What are function templates in C++? How do they facilitate generic programming? Provide an example to illustrate.	L2	1	10
Module-2					
Q.03	a	What are pointer data types and pointer variables in C++? Provide an explanation and examples.	L2	2	10
	b	What is a dynamic array in C++?How is it created and managed?	L2	2	10
OR					
Q.04	a	What is a copy constructor in C++? Explain its purpose with an example.	L2	2	10
	b	What is an array-based list in C++?Explain its structure and usage	L2	2	10
Module-3					
Q.05	a	What are the properties of a linked list? Explain its key characteristics.	L2	3	10
	b	What is a doubly linked list? Discuss its structure and functionality	L2	3	10
OR					
Q.06	a	What is a stack in data structures ? Describe its operations with examples.	L2,L3	3	10
	b	How are stack elements stored and managed using an array? Explain with details	L2,L3	3	10
Module-4					
Q.07	a	What are the basic operations of a queue? Explain their functionality with examples.	L2,L3	4	10
	b	How is a queue used in simulations ? Discuss its applications with examples.	L2.L3	4	10
OR					
Q.08	a	How does the binary search algorithm work ? Explain with a detailed example.	L2,L3	4	10
	b	How is insertion sort implemented for a linked list? Describe the process With an example.	L2,L3	4	10

Module-5					
Q.09	a	What is a binary tree? Explain its structure and key features.	L2	5	10
	b	How can binary tree traversal be implemented non-recursively? Explain the algorithm with examples.	L2,L3	5	10
OR					
Q.10	a	How can functions be passed as parameters to other functions ? Describe the process with examples.	L2,L3	5	10
	b	What is the tree rotation procedure in binary trees ? Explain its purpose and steps.	L2	5	10

\*Bloom's Taxonomy Level: Indicate as L1,L2 ,L3,L4etc.It is also desirable to indicate the Cos and Pos to be attained by every bit of questions.