II B. Tech I Semester Regular Examinations, March - 2021
DATA STRUCTURES
(Com to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
~~~~~~~~~~~~~~~~~~~~~~~~

1	a)	Define ADT. Give any two examples.	[8M]
	b)	Explain Bubble sort with an example.	[7M]

Or

2	a)	Distinguish between linear and non linear data structures.	[8M]
	b)	Explain linear search with an example.	[7M]
3	a)	Describe in detail about Polynomial manipulation.	[8M]
	b)	List an algorithm to perform the insertion operations in a doubly linked list.	[7M]

Or

4	a)	Describe about the applications of linked lists.	[8M]
	b)	Discuss the deletion procedure for Single linked lists.	[7M]
5	a)	List and explain about the basic operations that can be performed on a stack.	[8M]
	b)	What is Queue? Explain its types.	[7M]

Or

6	a)	Write the procedure to convert infix to postfix expression.	[8M]
	b)	Write the procedure for Reversing a list using Stack.	[7M]
7	a)	If the depth of the binary tree is k, the maximum number of nodes in the binary tree is 2^k-1.Justify.	[8M]
	b)	Discuss how to insert an element in a AVL tree with example.	[7M]

Or

8	a)	Explain a full binary tree. Give an example.	[8M]
	b)	How does the AVL tree differ from binary search tree?	[7M]
9	a)	Explain BFT graphs traversal algorithms with suitable example.	[8M]
	b)	Explain types of graphs with examples.	[7M]

Or

10	a)	Explain Linked representation of graphs.	[7M]
	b)	Illustrate Kruskal's algorithm to find the minimum spanning tree of a graph.	[8M]

||"|"||"||"""|

R19

SET - 2

II B. Tech I Semester Regular Examinations, March - 2021
DATA STRUCTURES
(Com to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
~~~~~~~~~~~~~~~~~~~~~~~~~

1	a)	Explain Selection sort with an example.	[8M]
	b)	List and explain operations on Data Structures.	[7M]

Or

2	a)	Distinguish between linear and binary search technique.	[8M]
	b)	Explain an algorithm for Quick Sort.	[7M]
3	a)	Explain representation of Linked list in detail.	[8M]
	b)	Give an algorithm for the deletion and reverse operations on doubly linked list.	[7M]

Or

4	a)	Write an algorithm to demonstrate a polynomial using a linked list for Addition and Subtraction. Multiplication operations.	[8M]
	b)	List an algorithm to perform the insertion operations in a circular linked list.	[7M]
5	a)	Explain representation of Queues using Arrays.	[8M]
	b)	Define stack. Explain different operations performed on stack.	[7M]

Or

6	a)	List and explain about the basic operations that can be performed on a queue.	[8M]
	b)	Describe in brief applications of stack.	[7M]
7	a)	Write the procedure for preorder, inorder and postorder traversal of a binary tree.	[8M]
	b)	Create an expression tree for the expression: a*(b+c)+((d+e*f)*g)	[7M]

Or

8	a)	Explain the various rotations in AVL trees.	[8M]
	b)	Write the procedure for inserting and deleting a node in a binary search tree.	[7M]
9	a)	Explain DFT graphs traversal algorithms with suitable example.	[8M]
	b)	Illustrate Prim's algorithm to find the minimum spanning tree of a graph.	[7M]

Or

10	a)	Explain Adjacency Matrix representation of graphs.	[7M]
	b)	Write about Warshall's Algorithm with an example	[8M]

||"|"||"||"""|

R19

SET - 3

II B. Tech I Semester Regular Examinations, March - 2021
DATA STRUCTURES
(Com to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
~~~~~~~~~~~~~~~~~~~~~~~~

1	a)	Explain Classification of Data Structures.	[8M]
	b)	Describe divide and conquer technique is implemented in binary search.	[7M]

Or

2	a)	Write about Fibonacci search in detail.	[8M]
	b)	Classify the different sorting methods with examples.	[7M]
3	a)	Write procedure for Circular Linked list deletion operations	[8M]
	b)	List an algorithm to perform the insertion operations in a Single linked list.	[7M]

Or

4	a)	Write an algorithm to demonstrate a polynomial using a linked list for Multiplication operations.	[8M]
	b)	Explain Sparse Matrix Representation using Linked List.	[7M]
5	a)	Explain representation of Queues using Linked List.	[8M]
	b)	Explain how Factorial Calculation is performed using Stack.	[7M]

Or

6	a)	Write about Evaluating Postfix Expressions.	[8M]
	b)	Discuss about addition and deletion operations performed on a priority queue.	[7M]
7	a)	Given In order traversal of a binary tree is D,G,B,E,A,H,F,I,C and pre order traversal is A,B,D,G,E,C,F,H,I construct the binary tree.	[8M]
	b)	Explain how deletion can take place in AVL trees with suitable example.	[7M]

Or

8	a)	Construct the binary search tree for 150, 80, 40,30,10, 70, 110, 20, 90, 60, 50, 140,130	[8M]
	b)	Insert the following elements step by step in sequence into an empty AVL tree 15, 18, 20, 21, 28, 23, 30, 26 with explanation.	[7M]
9	a)	Develop an algorithm to compute the shortest path using Dijkstra's algorithm with suitable example.	[8M]
	b)	Write about Transitive closure procedure with an example	[7M]

Or

10	a)	Differentiate depth-first search and breadth-first search traversal of a graph with suitable examples.	[7M]
	b)	Classify strongly connected and weakly connected graph.	[8M]

||"|"||"||"""|

II B. Tech I Semester Regular Examinations, March - 2021
DATA STRUCTURES
(Com to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
~~~~~~~~~~~~~~~~~~~~~~~~

1	a)	Write short notes on Radix Sort.	[8M]
	b)	Discuss the running time of Divide-and-Conquer Merge sort algorithm with example.	[7M]

Or

2	a)	Describe the Selection sort to sort the following elements: 77, 33, 44, 11, 88, 22, 66, 55	[8M]
	b)	Write about Time and Space complexity.	[7M]
3	a)	Describe the various operations of the list ADT with examples.	[8M]
	b)	Explain Advantages and Disadvantages of Single Linked list.	[7M]

Or

4	a)	Illustrate how polynomial expressions are represented using lists? Explain.	[8M]
	b)	Define Sparse Matrix and its Representation with example.	[7M]
5	a)	Explain representation of Stack using Arrays.	[8M]
	b)	Classify the different types of queues.	[7M]

Or

6	a)	Develop an algorithm for deleting an element in a circular queue.	[8M]
	b)	Give an algorithm for push and pop operations on stack using a linked list.	[7M]
7	a)	Discuss the different traversal technique in binary tree with suitable examples.	[8M]
	b)	Discuss representation of binary trees.	[7M]

Or

8	a)	Show the result of inserting 15,17,6,19,11,10,13,20,8,14,12 one at a time into an initially empty binary search tree.	[8M]
	b)	Illustrate How delete operation performed on AVL tree.	[7M]
9	a)	Discuss an algorithm for Breadth first Search on a graph.	[8M]
	b)	Write about Dijkstra's shortest path procedure with an example	[7M]

Or

10	a)	Define minimum spanning tree. Give an example.	[7M]
	b)	Explain different ways representation of graphs.	[8M]

||"|"||"||""'|