TED (21) - 4133
(REVISION-2021)

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Reg.No……
Signature…….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL - 2024

DATA STRUCTURES

[Maximum Marks:75] [Time: 3 Hours]

PART - A

I. Answer all the following questions in one word or one sentence. Each question carries 'one' marks.

(9 x 1 = 9 Marks)

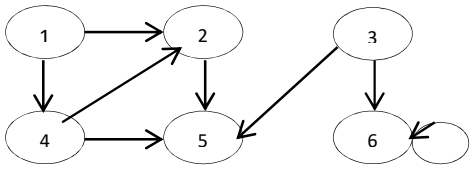
		Module Outcome	Cognitive level
1	Name any two basic operations on data structures.	M1.03	R
2	In a queue, insertion is done at the end called …….	M1.04	R
3	In a circular linked list, next pointer of the last node points to …..	M2.03	R
4	List any one disadvantage of singly linked list	M2.01	R
5	Define binary search tree.	M3.03	R
6	Number of edges from a node to a leaf in the longest path is called …… of that node.	M3.03	R
7	Define degree of a vertex in a graph.	M4.01	R
8	A graph in which all vertices are of the same degree is called ……	M4.01	R
9	Define path length.	M4.01	R

PART - B

II. Answer *any eight* questions from the following. Each question carries 'Three' marks.

(8 x 3 = 24 Marks)

		Module Outcome	Cognitive level
1	List the characteristics of linear and non-linear data structures.	M1.01	R
2	Convert to prefix form: (A+B)*C/(D-E).	M1.03	A
3	Write the functions to check whether on a queue implemented using array is i) Full or not ii) Empty or not	M1.04	R
4	Develop an algorithm for deleting a node from beginning of a singly linked list.	M2.02	U

5	Describe doubly linked list.	M2.03	R
6	Explain how a stack can be implemented using linked list.	M2.04	U
7	Write the recursive pre-order traversal of a tree.	M3.03	R
8	Define the terms: (i) Sibling (ii) Height of tree	M3.01	R
9	Write the adjacency list for the graph given below: 	M4.02	A
10	Describe connected graph with an example.	M4.01	U

PART - C

Answer all the questions from the following. Each question carries 'seven' marks.

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Explain how a queue can be implemented using an array and write the function for traversing through it.	M1.02	U
	OR		
IV.	Write the algorithm for infix to postfix conversion and demonstrate with a simple example.	M1.03	A
V.	Explain double ended queue and priority queue.	M1.04	U
	OR		
VI.	List and briefly explain any three applications of stack.	M1.03	R
VII.	Develop the algorithm for inserting a new node at the end of a singly linked list.	M2.02	A
	OR		
VIII.	Develop the algorithms for inserting a new node to and deleting a node from a queue implemented using a linked list.	M2.04	U
IX.	Write the algorithm for deleting a leaf node and node with one child in a binary search tree.	M3.03	U
	OR		
X.	Differentiate between full binary tree and complete binary tree.	M3.01	U
XI.	Explain how to search for a node in a binary search tree with an example.	M3.03	A
	OR		
XII.	Explain threaded binary tree with the help of a diagram.	M3.04	U
XIII.	Write the algorithm for breadth–first search of a graph.	M4.03	U
	OR		
XIV.	Define the terms with a figure: (i) Bipartite graph (ii) Disconnected graph	M4.01	R

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