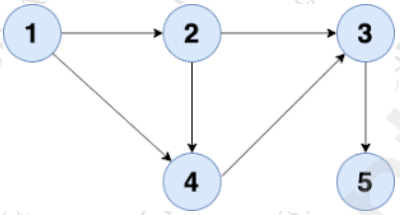
1T01873 - S.E. Computer Science & Engineering (Artificial Intelligence & Machine Learning) (R-2019) SEMESTER - III / 49373 - Data Structure
QP CODE: 10027655 DATE: 30/05/2023.

(3 Hours) **Total Marks: 80**

N.B: (1) Question No. 1 is compulsory
(2) Attempt any three questions out of the remaining five questions

Q.1	(a)	Explain various types of data structures with example.	**5**
	(b)	Define Graph and explainvarious graph representationtechniques.	**5**
	I	Convert the following expression to postfix. (f-g) * ((a+b) * (c-d))/e	**5**
	(d)	Differentiate between B tree and B+ tree.	**5**
Q.2	(a)	Apply linear probing and quadratic probing hash functions to insert values in the Hash table of size 10. Show number of collisions occurs in each technique. 27, 72, 63, 42, 36, 18, 29,101	**10**
	(b)	Construct B+ tree of order 3 for the following dataset 90, 27, 7, 9, 18, 21, 3, 4, 16, 11, 1, 72	**10**
Q.3	(a)	Write BFS algorithm. Show BFS traversal for the following graph with all the steps. 	**10**
	(b)	Write a C program to implement linear queue using array.	**10**
Q.4	(a)	Write a program to perform the following operations on the Singly linked list: i. Insert a node at the end ii. Delete a node from the beginning iii. Search for a given element in the list iv. Display the list	**10**
	(b)	Write a C program to implement Stack using Linked List	**10**
Q.5	(a)	Write a program to evaluate postfix expression using stack data structure	**10**
	(b)	Construct AVL for following elements 50, 25, 10, 5, 7, 3, 30, 20, 8, 15	**10**
Q.6	(a)	Construct Binary Tree from following traversal. In–order Traversal: D B H E I A F J C G Post order Traversal: D H I E B J F G C A	**10**
	(b)	Write a C program for polynomial addition using a Linked-list.	**10**