

(3 Hours)

Total Marks: 80

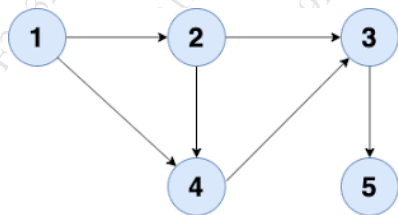
N.B: (1) Question No. 1 is compulsory

(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 explain various graph representation techniques. **5**
 I Convert the following expression to postfix. **5**
 $(f-g) * ((a+b) * (c-d))/e$
 (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. **10**
 27, 72, 63, 42, 36, 18, 29, 101
 (b) Construct B+ tree of order 3 for the following dataset **10**
 90, 27, 7, 9, 18, 21, 3, 4, 16, 11, 1, 72

- 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: **10**
 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
 (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 **10**
 50, 25, 10, 5, 7, 3, 30, 20, 8, 15

- Q.6 (a) Construct Binary Tree from following traversal. **10**
 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
 (b) Write a C program for polynomial addition using a Linked-list. **10**