

DATA STRUCTURES

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the use of a header node?
 - Why cursor implementation of linked list is used?
 - What are the applications of queue?
 - Write the algorithm for balancing symbols.
 - What are the two methods of binary tree implementation?
 - Explain briefly about prim's algorithm.
 - What is radix sort?
 - Define polyphase merge.
 - Write the code for hash function.
 - Write general method of divide and conquer.

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- Explain the operations and implementation of list ADT.
- Give a procedure to convert an infix expression $a+b*c+(d*e+f)*g$ to postfix notation.

OR

- Explain briefly about various types of linked lists with suitable examples.

UNIT - II

- Compare the representation of stacks using linked list than arrays.
- List out the basic operations that can be performed on a stack.

OR

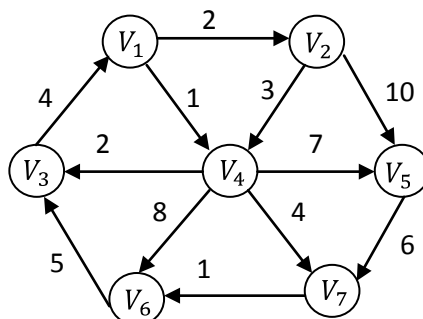
- What is a queue? Write an algorithm to implement queue with an example.

UNIT - III

- Explain heap structures. How are binary heaps implemented? Give its algorithm with example.

OR

- Explain Dijkstra's algorithm using the following graph. Find the shortest path between V_1 to $V_2, V_3, V_4, V_5, V_6, V_7$.



UNIT - IV

- 8 (a) Write a program to explain bubble sort. Which type of technique does it belong?
(b) What is the worst case and best case time complexity of bubble sort?

OR

- 9 (a) Demonstrate the selection sort results for each pass for the following initial array of elements. 21 6 3 57 13 9 14 18 2.
(b) Explain the algorithm for selection sort and give a suitable example.

UNIT - V

- 10 Write and explain linear search procedure or algorithm with a suitable example.

OR

- 11 Write a program that searches a value in a stored array using non recursive binary search.
