

II B. Tech I Semester Supplementary Examinations, September - 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

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- 1 a) Describe about different type of Asymptotic notation with suitable example? [8M]
 b) Explain the iterative merge sort and recursive merge sort algorithms with an example. [7M]
- Or
- 2 a) Write Abstract Data Type for an array implementation of polynomial addition. [8M]
 b) Discuss about distribution sort with suitable example. [7M]
- 3 a) Write an algorithm to insert and delete an element from circular linked list with suitable example? [8M]
 b) Write an algorithm for representing the polynomial $10x^6 + 5x^3 - 4x + 6$ using linked lists. [7M]
- Or
- 4 a) Explain the procedure to insert and delete element from sparse matrix. [8M]
 b) Write an algorithm to insert new node at the beginning, at middle position and at the end of a Reversing Singly Linked List. [7M]
- 5 a) Explain the ADT operations for linked list implementation stack? [8M]
 b) Discuss about implementation of queues using linked list. [7M]
- Or
- 6 a) Convert the given infix expression $A+B^{\wedge}C+(D*E/F)*G$ into its postfix expression, and evaluate the same using stack. Here $A=4, B=6, C=3, D=5, E=6, F=2, G=7$. [8M]
 b) Write an algorithm to push and pop an element from linked stack. [7M]
- 7 a) Prove the properties of a binary tree of height h has $(2^{h+1} - 1)$ nodes. [8M]
 b) Explain about representation of AVL trees in detailed? [7M]
- Or
- 8 a) Explain about different type of tree traversal techniques. Explain each with suitable example. [8M]
 b) What is Balanced Binary tree? Explain about representation of Balanced Binary tree using linked list. [7M]
- 9 a) Explain Warshall's algorithm to find transitive closure of a graph with a suitable Example. [8M]
 b) Explain about Graph Isomorphism and its properties. [7M]
- Or
- 10 a) Write an algorithm to find non-recursive Breadth first search with suitable example? [8M]
 b) Consider $G=(V,E,W)$ be undirected graph, connected weighted graph. Let 'M' be feasible subset of $E \in G$, and $(V_s, V-V_s)$ be any cut that respect M. Also, an edge (V_i, V_j) be a light edge crossing the cut. Then the edge (V_i, V_j) is a safe edge for the subset M. [7M]

