R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, August/September - 2022
DATA STRUCTURES
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a)   Write applications of single linked list to represent polynomial expressions.
  b)   Explain sparse matrix representation using array with an example. Discuss the advantages and disadvantages of the method.   [7+8]

2.a)   Explain the basic operations of queue with pseudo code.
  b)   Write an algorithm to insert and delete a key from circular queue.   [7+8]

3.a)   Construct max heap for the following:
       140, 80, 30, 20, 10, 40, 30, 60, 100, 70, 160, 50, 130, 110, 120
  b)   Discuss representation of Graph using arrays and linked list.   [7+8]

4.a)   State and explain insertion sort with example.
  b)   Define hashing. Explain various types of collision resolution techniques in hashing.
                                                                                          [7+8]

5.a)   What is a binary search tree? Write an algorithm for inserting and deleting a node in a binary search tree.
  b)   Write a short note on AVL trees and RED Black trees.   [7+8]

6.a)   Show how to reverse a single linked list.
  b)   List various operations of linked list and explain how to insert a node anywhere in the single linked list.   [7+8]

7.a)   Explain the procedure to convert infix expression to postfix expression with the following expression: ((A –(B+C) * D) / (E+F))
  b)   Write an algorithm for evaluating a postfix expression using stack. Evaluate the following postfix notation 123*+5-   [7+8]

8.a)   Explain in-order traversal of threaded binary tree with an example.
  b)   Write in-order, pre-order and post-order traversal of a binary tree.   [7+8]

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