Code No: 123BP

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
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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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