

Code No:153AK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, March - 2022

DATA STRUCTURES

(Common to CSE, IT, ECM, CSBS, CSIT, ITE, CSE(SE), CSE(CS), CSE(AIML), CSE(DS), CSE(IOT), CSEN)

Time: 3 Hours

Max. Marks: 75

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

- 1.a) Define a single linked list. Write the structure of the linked list with a neat sketch.
- b) Explain the operations of queue. [8+7]

- 2.a) Write a program to implement stack operations.
- b) What are the applications of the queue? Explain. [8+7]

- 3.a) Explain the operations of the skip list representation.
- b) Is linear probing and open addressing same? Justify your answer. [10+5]

- 4.a) Discuss the hash functions.
- b) List and explain the advantages of extendible hashing. [10+5]

- 5.a) Construct a Red-Black tree with the following elements 40, 16, 36, 54, 18, 7, 48, 5. Delete element 18 and add element 66.
- b) Write an algorithm of single rotation and double rotation of an AVL tree. [9+6]

- 6.a) Explain the splaying operations of splay tree with an example.
- b) Define Binary search tree. [12+3]

- 7.a) Write an algorithm to implement a depth-first search with an example.
- b) Perform heap sort algorithm for (10 15 6 2 25 18 16 2 20 4). [12+3]

- 8.a) Difference between tree and tries.
- b) Illustrate the Brute force algorithm. [5+10]

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