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Roll No

CS/CT/CO-303-CBGS

B.Tech., III Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Data Structures

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

iii) In case of any doubt or dispute the English version question should be treated as final.

1. a) Discuss various classifications of data structures with an example.
- b) Write an algorithm for traversing nodes in a single linked list? Explain with an example.

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PTO

[2]

2. a) Define :

:

i) Data and information

ii) Abstract Data Types

iii) Polynomials

b) What are circular linked list? What operations you can perform on circular linked lists?

3. a) Write an algorithm for insertion and deletion in Priority Queues.

Priority Queues'

b) Write an algorithm which reverses the order of elements of stack using one additional stack and some additional variables?

4. a) How can you convert an infix expression to postfix expression using stack? Give one example.

Stack

O

b) Write functions to implement recursive versions of preorder, inorder and postorder traversals of a binary tree.

[3]

5. a) What is a binary search tree? Write down its properties. Suggest an example.
- b) Explain briefly.
- i) B Trees
- ii) Red Black Trees
6. a) Differentiate between Depth first search and Breadth first search algorithm?
Depth first search ~~Am~~ Breadth first search
- b) Write an algorithm which counts the number of connected
- o
7. a) Explain briefly.
- i) Minimum Spanning Tree
- ii) Applications of a graph
- b) Explain Dijkstra's algorithm for finding shortest path with an example.

Dijkstra's

[4]

8. a) Explain Quick sort? Sort the following elements using Quick sort:

32, 23, 56, 78, 12, 66, 37, 93, 29, 80

- b) Write short notes.

- i) Comparison of indexing and hashing
- ii) Radix sort
- iii) Insertion sort

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