

R16

Code No: 133AG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, September/October - 2023

DATA STRUCTURES THROUGH C++

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) What is a constructor? [2]
- b) What are various parameter passing techniques? [3]
- c) Give linked representation of sparse matrix. [2]
- d) What are the applications of stack? [3]
- e) What is the significance of max priority queue? [2]
- f) Distinguish between binary tree and threaded binary tree. [3]
- g) What is disadvantage of merge sort? [2]
- h) What is hash table? [3]
- i) Which data structure is used to implement BFS of a graph and why? [2]
- j) How a graph is represented through adjacency matrix? [3]

PART – B

(50 Marks)

- 2.a) Write a C++ program to demonstrate function overloading.
- b) Explain operator over loading with an example. [5+5]

OR

- 3.a) What is friend function? Explain.
- b) What is an access specifier? What is its significance? What are various access specifiers? Explain. [5+5]

4. What is circularly linked list? Explain insertion and deletion operations on circularly linked list. [10]

OR

5. Write a C++ program to demonstrate insertion and deletion operations on doubly linked list. [10]

- 6.a) What is priority queue? What are its applications?
- b) What are the properties of heap? [5+5]

OR

7. What is binary tree? Explain binary tree traversals with example. [10]

QA QA QA QA QA QA QA G

8.a) What is hashing? Explain various hashing functions.

b) Perform radix sort on following data:

2,13,4,21,5,6,15,10,33,41

[5+5]

QA QA QA QA OR QA QA QA G

9.a) Write a C++ program for quick sort.

b) Compare various sorting methods.

[5+5]

10. What is binary search tree? Explain insertion and deletion operations on binary search tree with examples. [10]

QA QA QA QA OR QA QA QA G

11. Compare and contrast various search trees. [10]

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