

B.Tech I Year II Semester (R15) Regular & Supplementary Examinations May 2018

**DATA STRUCTURES**

(Common CSE & IT)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Define one-dimensional array with suitable example.
  - (b) List the applications of linked lists.
  - (c) Distinguish FIFO and LIFO of a queue.
  - (d) Define PUSH and POP operations in a stack.
  - (e) What is binary search tree?
  - (f) What is the minimum spanning tree?
  - (g) What are the factors to be considered in deciding a sorting algorithm?
  - (h) If you have to sort IGB of data with only 100 MB of available main memory. Which sorting technique will be most appropriate? Explain.
  - (i) Distinguish between linear search Vs binary search.
  - (j) Define the following:
    - (i) Linear probing.
    - (ii) Rehashing.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 What are the different types of arrays? Give example of each array type and how are two-dimensional arrays represented in memory.

**OR**

- 3 Explain a detailed comparison of linked list and array.

**UNIT – II**

- 4 List the applications of stack? Explain recursion for finding a factorial of a number in brief.

**OR**

- 5 Write an algorithm to insert and delete a node in doubly linked list.

**UNIT – III**

- 6 Explain inorder, preorder and postorder traversal operation on binary tree with example.

**OR**

- 7 Write an algorithm to traverse a graph in depth first search with proper example.

**UNIT – IV**

- 8 Explain in detail about sorting and different types of sorting techniques using examples.

**OR**

- 9 Explain the algorithm for merge sort and give a suitable example.

**UNIT – V**

- 10 What do you mean by searching? Explain sequential and binary searching with suitable example.

**OR**

- 11 Explain collision – resolution hashing techniques in detail.

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