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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(IT) (2018 Batch) (Sem.-3)
DATA STRUCTURE & ALGORITHMS
Subject Code : BTIT-301-18
M.Code : 76391

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Write briefly :

- 1) What is an ADT? Explain.
- 2) What are B+ trees?
- 3) What are the applications of B-trees?
- 4) What is the difference between a tree and a graph?
- 5) Compare the performance of Merge and bubble sorts.
- 6) What are threaded binary trees?
- 7) What is the main advantage of AVL trees?
- 8) What is the data structure that is used in expression evaluation?
- 9) What do you analyze in an algorithm?
- 10) What is a node?

SECTION-B

- 11) Write down the advantages and disadvantages of a circular queue over a simple queue.
- 12) Compare linear and non-linear data structures.
- 13) Write a program to perform various operations on binary search trees using linked list as data structure.
- 14) Write an algorithm for quick sort and apply the same on the following sequence.
8 5 7 3 2 1 6 4 9
- 15) What are the graph traversal techniques? Explain any one technique with example.

SECTION-C

- 16) Suppose a sequence of numbers is given like :
5, 10, 12, 18, 56, 68, 52, 85, 95
 - a) What are the various steps in which the number 52 will be found by the Binary search?
 - b) In how many steps the number 52 will be found in the linear search?
 - c) In how many steps it will be found in the binary search that the number 81 does not exist in this array.

Explain the algorithm involved in each of the problems a, b, c.

- 17) What are the methods for the selection of the hash function? What are collisions? How are they handled in open hashing?
- 18) Write the algorithm for pre-order tree traversal. Also, show the steps of this algorithm through an example.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.