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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE) (2018 Batch) (Sem.-3)
DATA STRUCTURE & ALGORITHMS
Subject Code : BTCS-301-18
M.Code : 76436

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 are Front and Rear pointers of a queue?
- 2) What are Asymptotic notations? Explain.
- 3) How are expressions evaluated using Binary trees?
- 4) What is the top pointer of a stack?
- 5) What are the various non-linear data structures?
- 6) What is degree of a graph?
- 7) What is the working principle of Quick sort?
- 8) What are the graph traversal techniques?
- 9) What is the advantage of hash search?
- 10) What are AVL trees? Explain.

SECTION-B

- 11) Perform the array base implementation of a circular queue. Perform Enqueue and dequeue operations.
- 12) Design an AVL tree from the following sequence of nodes.
K J G F C B A D E H I L M
- 13) Compare linear and binary search with suitable examples.
- 14) What are the ways the graphs may be represented in the memory of a computer system? Explain in detail.
- 15) Write an algorithm for quick sort and apply the same on the following sequence.

8 5 7 3 2 1 6 4 9

SECTION-C

- 16) What is hashing? What are the various techniques used in hashing? How are the collisions handled in hashing? Explain.
- 17) a) Define the following terminologies :
 - i) Node
 - ii) Root
 - iii) Siblings
 - iv) Level
 - v) Leaf node

b) Write a recursive algorithm for Preorder and Post order traversals of a binary tree.
- 18) Write and explain an algorithm to search a list of numbers using the sequential search method with 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.