Roll No. | | | | | | | | | | | | 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.