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 is the need of data structure?
2. Big O notation
3. Applications of stacks
4. Why binary search cannot be performed on linked list? Justify your answer.
5. B trees.
6. Hashing.
7. AVL tree.
8. Insertion sort
9. What are the objectives of sorting?
10. Write any two applications of graph.

SECTION-B

11. Explain the differences between linear and non-linear data structure. Give one example of each.

12. Explain the mechanisms of deleting an element from stack and queue by showing suitable example.

13. Write an algorithm for searching a node from a link list.

14. Discuss merge sort with suitable example.

15. Construct a binary search tree using the following numbers.

    49, 23, 37, 23, 66, 39, 59, 50

SECTION-C

16. Convert the given infix expression into postfix expression using stack and show the details of stack at each step of conversion.

    Expression : (a + b ^ c * d) * (e + f/g)

17. Discuss Heap sort with suitable example.

18. Write short note on the following :

    a) Quick sort

    b) Graph traversal algorithm

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.