

Roll No.

Total No. of Pages : 02

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**B.Tech. (AI & ML / AI & DS / CSE / DS / Internet of Things and Cyber Security including Block Chain Technology) (Sem.-3)**

**DATA STRUCTURE & ALGORITHMS**

Subject Code : BTCS-301-18

M.Code : 76436

Date of Examination: 13-06-2024

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**

1. Write briefly :

- a) Define Analysis of Algorithm.
- b) Write about binary search.
- c) Discuss applications of Linked Lists.
- d) Distinguish between stack and queue.
- e) Write applications of stack.
- f) What is garbage collection in Data Structure.
- g) Give the working of AVL tree.
- h) What is the main use of heap sort?
- i) Define a cycle in a graph.
- j) Write the importance of hashing.

## SECTION-B

2. What are the types of queues? Explain the operation on queues?
3. Write the applications of Binary tree by taking examples.
4. Write an algorithm to convert infix expression to postfix expression.
5. Show the algorithm of Bubble sort.
6. What are the different ways of representing a graph?

## SECTION-C

7. What is complexity? How it can be performed on different algorithms?
8. What is Circular Linked List? State the advantages and disadvantages of Circular Link List over Doubly Linked List and Singly Linked List.
9. How the search and traversing is done on Graphs? Illustrate by taking 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.**