



K18U 1936

Reg. No. :

Name :

III Semester B.C.A. Degree (CBCSS – Reg./Sup./Imp.) Examination,
November 2018

(2014 Admn. Onwards)

General Course

3A12BCA – DATA STRUCTURE

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One** word answer :

- The efficiency measure of an algorithm mainly depends on _____ and _____.
 - _____ is an example for a non-linear data structure.
 - The complexity of the bubble sort algorithm is _____.
 - The postfix form of $(A+B) \times C$ is _____.
 - In a queue the elements are removed from _____.
 - To insert an element into a circular queue with size n , the location of the element is calculated using the expression _____.
 - The maximum number of nodes on level i of a binary tree is _____.
 - A binary tree which is dominated solely by the left child nodes or right child nodes is called _____.
- (8×½=4)**

SECTION – B

Write short notes on **any seven** of the following questions.

- What is the importance of Big-Oh notation ?
- Define a sparse matrix.
- Define two-dimensional array. How two dimensional arrays can be represented in computer's memory ?
- Write the recursive algorithm to perform Merge sort.
- Write the postfix form of the expression $(A+B) \times (C \times D - E) \times F / G$.

P.T.O.



7. What do you mean by a priority queue ?
8. Show the linked representation of the following polynomial :
 $7x^{80} + 5x^{50} + 30x^{30} + 1.$
9. Write a program to insert a node at the end of a singly linked list.
10. Distinguish between a binary tree and a binary search tree.
11. How will you represent a binary tree in computer's memory using a one dimensional array ? (7×2=14)

SECTION – C

Answer **any four** of the following questions.

12. Write an algorithm to add two sparse matrices.
13. Using recursion, write a program to find the factorial of a number.
14. Write an algorithm to perform binary search.
15. Explain how stacks can be used to convert an infix expression to postfix form.
16. Write a program to merge two singly linked lists.
17. Write a brief description about Huffman algorithm. (4×3=12)

SECTION – D

Write an essay on **any two** of the following questions.

18. Describe how the limitations of a queue are handled in a circular queue.
19. Write an algorithm to implement quick sort.
20. Write an algorithm to insert an element into a circular queue.
21. Write a C++ program to implement inorder traversal of a binary tree non recursively. (2×5=10)