



## Third Semester B. Sc. Examination

## COMPUTER SCIENCE

## Paper - I

## (Data Structures)

Time : Three Hours ] [ Max. Marks : 50

- N. B. : (1) All questions are compulsory and carry equal marks.  
 (2) Draw neat and well labelled diagram wherever necessary.

## EITHER

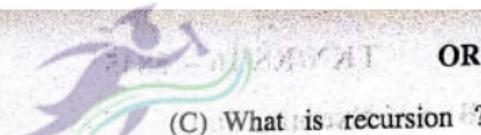
1. (A) Write an algorithm to insert a node at the end in single linked list. 5  
 (B) Explain the representation of a double linked list in memory. 5

## OR

2. (C) What is linked list ? Write an algorithm to count the number of nodes in linked list. 5  
 (D) Write an algorithm to delete an element from front of the double linked list. 5

## EITHER

2. (A) Write an algorithm to translate an infix expression to postfix expression. 5  
 (B) Explain quick sort method with suitable example. 5



**OR**

(C) What is recursion ? Explain tower of hanoi problem. 5

(D) Convert following expression to prefix and postfix form.

((A + B)  $\wedge$  C – (D \* E)/F) 5

**EITHER**

3. (A) What is Queue ? Write an algorithm for insertion operation on Queue. 5

(B) Explain Big-O Notations. 5

**OR**

(C) Explain collision resolution with its technique. 5

(D) Explain merge sort method with suitable example. 5

**EITHER**

4. (A) Explain BSF and DFS methods of traversal of graph. 5

(B) What is Binary tree ? Explain representation of Binary trees in memory. 5

**OR**

(C) Write an algorithm for preorder traversal of binary tree. 5

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Contd.



(D) Explain the representation of Graph as linked representation. 5

5. (A) What is underflow and overflow situation in linked list ?  $2\frac{1}{2}$
- (B) Convert infix to postfix and evaluate.  
$$A + (B * C) / D$$
  
where  $A = 2$ ,  $B = 3$ ,  $C = 4$  and  $D = 6$   $2\frac{1}{2}$
- (C) What is Hashing ? Explain.  $2\frac{1}{2}$
- (D) Explain Heap Sort Method.  $2\frac{1}{2}$