

UG/2nd Sem/H/20(CBCS)

2020

## COMPUTER SCIENCE (Honours)

Paper : CMSH - DC - 3(a)  
(Data Structure & Algorithm)  
(CBCS)

Full Marks : 25

Time : Two Hours

*The figures in the margin indicate full marks.*

### Group - A

Answer any *five* questions : 2×5=10

1. (a) Define ADT.
- (b) What is array? Give one example.
- (c) Explain Prefix expression with one example.
- (d) Define Stack with an example.
- (e) What will be the worst case complexity for searching and inserting an element in a Binary Search Tree?
- (f) Write one advantage and one disadvantage of Linear search as compare to Binary search.
- (g) Explain recursion briefly with example.

### Group - B

Answer any *three* questions : 5×3=15

2. Write an algorithm that implements Quick sort.
3. Convert the following infix expression into equivalent postfix expression :

$a - b * c + ( d * e + f ) * g.$

4. Write an algorithm to insert an element in a Circular Queue.
  5. (a) Create a Binary Search Tree for the following data elements: 5, 8, 2, 1, 4, 9, 12, 7  
(b) Traverse the newly constructed tree in inorder, preorder and postorder technique. 2+3=5
  6. Write a short note on any *one* :
    - (a) Min-Heap
    - (b) Circular linked list
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