

AT-435

BCA (Part-II) Semester—III Examination

DATA STRUCTURE

Paper—3 ST 1

Time : Three Hours]

[Maximum Marks : 60

Note :- (1) All questions carry equal marks.

(2) All questions are compulsory.

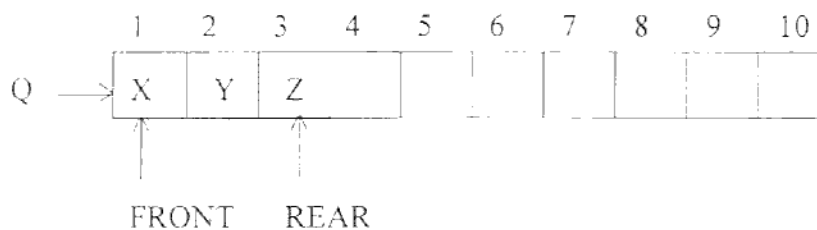
1. (a) Explain memory representation of array in computer memory. 6
- (b) Write an algorithm to push the element into the stack with suitable example. 6

OR

2. (a) What is Data Structure ? Explain the different operations performed on it. 6
- (b) Explain implementation of infix, postfix and prefix notations in detail with examples. 6
3. (a) Define recursion. Explain its different types with suitable example. 6
- (b) Write an algorithm for converting infix expression to postfix form with example. 6

OR

4. (a) Explain Tower of Hanoi with the help of suitable example. 6
- (b) Explain the recursion procedure for factorial of n. 6
5. (a) What is linked list ? Explain its memory representation with suitable example. 6
- (b) Consider following queue and perform the given operations on it.



- | | |
|----------------|------------------|
| (i) INSERT A | (ii) INSERT B |
| (iii) INSERT C | (iv) DELETE |
| (v) DELETE | (vi) INSERT D. 6 |

OR

6. (a) Write an algorithm to insert node at the beginning of linked list. 6
 (b) Explain the following terms :
 (i) Circular Queue
 (ii) Priority Queue
 (iii) Deque. 6
7. (a) Explain following terms :
 (i) Level of Tree
 (ii) Depth of Tree
 (iii) Root. 6
 (b) Draw Binary Tree for the following algebraic expression :

$$E = (a - b) / ((p * d) + g).$$
 6

OR

8. (a) Explain the different types of tree traversing with suitable example. 6
 (b) What is Tree ? Explain the linked list representation of Binary Tree. 6
9. (a) Explain Insertion Sort algorithm with suitable example. 6
 (b) Explain linear search algorithm with example. 6

OR

10. (a) Explain Binary Search algorithm with suitable example. 6
 (b) What is sorting ? Explain Bubble sort algorithm with example. 6