

Roll No.

E-3906

B. C. A. (Part II)
EXAMINATION, 2021

(Old Course)

Paper Third

DATA STRUCTURE

(201)

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt any *two* Parts from each Unit. All questions carry equal marks.

Unit—I

1. (a) What is data structure ? List out the differences between linear and non-linear data structure.
- (b) Explain various operations that can be performed on different data structures.
- (c) What do you mean by algorithm ? Write the criteria of an algorithm and its characteristics.

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Unit—II

2. (a) Explain binary search with example. Write algorithm for binary search.
- (b) What is bubble sort ? Explain with the help of example. Write algorithm for bubble sort.
- (c) Explain in detail array and pointer array.

Unit—III

3. (a) Describe in detail Queue. Explain operations on circular queue.
- (b) What is Stack ? How are stacks represented using array ? Also explain operations on stack.
- (c) Explain linked list with the help of suitable example. Write algorithm to search an element in a linked list.

Unit—IV

4. (a) Define with the help of examples :
 - (i) Tree
 - (ii) Depth of tree
 - (iii) Height of tree
 - (iv) Leaf node

[3]

- (b) What is binary tree ? Construct a binary tree for the following :

Inorder	Preorder
B	A
C	B
E	C
D	D
F	E
A	F
G	G
H	H

- (c) Explain binary search tree with suitable example.
Construct binary search tree for following data :
10, 12, 5, 4, 20, 8, 7, 15, 13

Unit—V

5. (a) Define sorting. Write and explain algorithm for insertion sort.
- (b) Explain merge sort with example. Write algorithm for merge sort.
- (c) Write an algorithm to sort a list of elements using selection sort technique.