

Roll No.

Total Pages : 03

BCA/D-20

1197

DATA STRUCTURES

BCA-232

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit in addition to compulsory Question No.1. All questions carry equal marks.

(Compulsory Question)

1. (a) Define Data Structure. Write a short note on complexity of algorithm. 4
- (b) How array and linked list differ from each other ? Explain. 4
- (c) Write a short note on applications of stack and queue. 4
- (d) Differentiate between tree and graph. 4

Unit I

2. (a) Give classification of data structures with suitable examples. 10

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- (b) Elaborate on various data structure operations. 6
- 3. (a) Elaborate on various applications of data structures. 8
- (b) Write a short note on string operations. 8

Unit II

- 4. Define arrays and its types. Explain representation of one-dimensional and two-dimensional arrays in memory. Which operations can be performed on one-dimensional arrays ? 16
- 5. How linked list is represented in the memory of computer ? Explain traversing a linked list with suitable example. 16

Unit III

- 6. Define Stack. Which operations can be performed on Stack ? Explain in detail with suitable examples. 16
- 7. How the queue can be implemented using array ? Explain with suitable examples. Also elaborate on the type of operations that can be performed on queues. 16

Unit IV

- 8.** What is the difference between general tree and binary tree ? Explain the concept of tree traversal with suitable examples. **16**
- 9.** How can we represent graphs in memory ? Explain the concept of traversing a graph with suitable examples. **16**