

**Exam. Code : 105703****Subject Code : 1563****B.Sc. IT 3<sup>rd</sup> Semester****DATA STRUCTURE****Paper-II**

Time Allowed—3 Hours] [Maximum Marks—75

**Note :-** Attempt **five** questions in all. All questions carry equal marks.

1. (a) Define Data-Structure. Explain various operations on data-structures along with examples. 2+6=8  
(b) What do you mean by time-space trade off? Explain with suitable examples. 7
2. (a) How arrays are stored and represented in memory? Explain various operations on linear arrays. 2+6  
(b) Write a pseudo code to demonstrate how multidimensional arrays are used. 7
3. (a) What is linked list? Explain its various types along with their importance. 2+6  
(b) How quicksort technique is implemented to sort an array? 7
4. (a) How linked lists are different from arrays? Explain the advantages of using linked lists over arrays through examples. 8  
(b) Write pseudo code to convert infix arithmetic expression to polish notation and then its evaluation through example. 7

5. (a) Describe queue structure. How are they implemented using arrays and linked lists? Explain with examples.

2+3+3

- (b) Describe :

(i) Priorities of queues

(ii) Dequeues in detail.

7

6. (a) What is Tree? Explain various terminologies along with their usage in solving problems using tree structure.

8

- (b) What are Binary trees and Binary Search trees? How are they represented in memory? Explain.

7

7. (a) Define graph. Demonstrate its implementation in memory with example.

2+6

- (b) Write what is sorting and perform that through Bubble Sort.

2+5

8. Write notes on :

(a) Algorithm complexity

(b) Linear and Binary search.

7.5×2=15