

Exam. Code : 105703

Subject Code : 1554

B.Sc. (IT) Semester—III

DATA STRUCTURE

Paper—II

Time Allowed—3 Hours]

[Maximum Marks—75

**Note** :— Attempt any **FIVE** questions. All questions carry equal marks.

1. What is a Data Structure ? What are the various types of data structures ? Explain common operations that can be performed on data structures.
2. Define algorithm complexity. What is time and space tradeoff ? What is Big O notation ?
3. Write an algorithm for matching all types of parenthesis ((, {, []) in an expression using stacks.
4. What are Queues ? Write algorithm for performing operations on a queue using linked representation.
5. Write an algorithm or a program to create a linked list and perform insertion and deletion in it.
6. What are Binary search trees ? How are they different from binary trees ? Explain insertion of a node in binary search tree with an example.

7. What is sorting ? Discuss the various sorting algorithms with an example.
8. Write short notes on the following :
  - (a) D-queues
  - (b) Adjacency matrix
  - (c) Binary search technique.