

**Exam. Code : 105703**

**Subject Code : 1461**

**B.Sc. Information Technology 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) What is data-structure ? Explain some common operations. 8
- (b) What is algorithm complexity ? How is it measured ? Explain. 7
2. (a) Differentiate between single and multidimensional arrays through their operations and implementation. 8
- (b) How linked lists are represented in memory ? What are the various advantages of using linked lists over arrays ? 7
3. (a) Explain various types of linked lists with examples. 8
- (b) Write a pseudo code to insert and delete a node in a linked list. 7
4. (a) How stacks are implemented using arrays and linked lists ? Explain. 8
- (b) Write a procedure and demonstrate it through example to convert infix to Polish notation and solving it. 7

5. (a) What is queue structure ? Also describe “priorities of queues” and “dequeues” with examples. 2+3+3

- (b) What is Tree ? How are they represented ? Explain various operations on them. 7

6. (a) What are Binary Trees and Binary Search Trees ? Explain their memory representation with examples. 4+4

- (b) Define graph structure. Explain various ways to represent them in memory. 7

7. (a) What is sorting ? Explain the way to sort a list through bubble sort. 2+6

- (b) Explain quick sort technique to sort an array. 7

8. Write notes on (with examples) :

- (a) Binary Searching

- (b) Time-space Trade off. 7.5×2=15