Exam. Code : 105703
Subject Code : 1563

B.Sc. IT 3rd 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