

Exam. Code : 105703
Subject Code : 1435

B.Sc. Information Technology 3rd Semester
(Batch 2020-23)

DATA STRUCTURE

Paper—II

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The **fifth** question may be attempted from any section. All questions carry equal marks.

SECTION—A

- (a) Define data-structure. Explain various operations for it. 8
- (b) Draw difference between linear and multidimensional arrays. 7
- (a) What do you understand by Time-space trade-off between algorithms ? Explain. 8
- (b) How various operations are performed on linear-arrays ? Also explain their memory representation. 7

SECTION—B

- (a) What is linked-list ? What are the advantages of using linked-lists over arrays ? 8
- (b) Solve any polish notation expression after specifying the procedure of its evaluation. 7

- (a) What is stack ? Implement stack using arrays and linked lists. 8
- (b) How an array is sorted ? Explain quicksort as an example. 7

SECTION—C

- (a) How the structure of queue is defined ? Implement it using linked lists. 8
- (b) Draw difference between binary trees and binary search trees. 7
- (a) What is dequeue and how is it different from queue ? Implement queue using arrays. 8
- (b) Explain various properties of trees along with its memory representation. 7

SECTION—D

- (a) What is graph ? What is path-matrix ? Explain the association between graphs and path-matrix. 5
- (b) Draw difference between linear and binary search. 10
- (a) How graphs are represented in memory ? Explain adjacency matrix as an example. 5
- (b) What is sorting ? How is it performed ? Explain Bubble-sort as an example. 10