

6. Write and explain bubble sort algorithm for sorting a list. 10
7. Discuss about the different types of file organisation used in computer. Give suitable examples of each. 10

DATA STRUCTURE

(Theory — 1)

Full Marks : 80

Time : 3 hours

Answer any five questions including Q. Nos. 1 & 2

Figures in the right-hand margin indicate marks

1. Answer the following questions in *one/two* sentences : 2x10
- (i) Differentiate between data and information.
 - (ii) Differentiate between time complexity and space complexity of an algorithm.
 - (iii) Define data types used in program logic.
 - (iv) Why array is known as a linear data structure?
 - (v) Define a pointer.
 - (vi) Define push and pop operation in stack.

- (vii) Define a priority queue.
- (viii) Define a binary search tree.
- (ix) Define a graph used in data structure.
- (x) Differentiate between linear search and binary search procedure?

2. Answer any *six* questions : 5×6

- (a) What is ADT? Explain with a suitable example.
- (b) Discuss about the various string operation with suitable example.
- (c) Differentiate between single dimensional and multidimensional array with examples from each.
- (d) What is polish notation of an expression? Explain through an example.
- (e) Define garbage collection. Explain how a linked list is used for this?

- (f) Define a binary tree. Explain how it is represented in computer.
- (g) Define adjacency matrix. Explain through an example.
- (h) Explain the technique of binary search by giving an example.

- 3. Discuss how a linked list is represented in computer? Illustrate your answer with a suitable example. 10
- 4. Discuss how an array (2D) is represented in row major or column major order, in a computer? Explain through example. 10
- 5. What is binary tree traversal? Discuss about the different tree traversal techniques. 10