PC-4705/MK

Q-1/2051

DATA STRUCTURES–124
(Semester–II)

Time : Three Hours]   [Maximum Marks : 60

Note : Attempt *two* questions each from Section A and B carrying 9 marks each. Section C is compulsory consisting of 12 short answer type questions carrying 2 marks each.

SECTION – A

I.   Define term Big 'O' notation? What is its importance in data structures?

II. Differentiate between row-major order and column-major order matrix. Also write an algorithm to delete an array.

III. How stacks are represented in memory? Write an algorithm to create a stack.

IV. Write algorithms to insert and delete elements from a queue.

SECTION – B

V.   What are different ways of representing linked in memory? Explain any *one* method in detail.

VI. What is a binary tree? How it is traversed?

VII. Write the steps of binary search algorithm.

VIII. Explain in detail quick sort algorithm.

SECTION – C

(Compulsory Question)

IX. Attempt all parts :

    (a)   What are linear data structures?

    (b)   What is a sparse matrix?

    (c)   What is parenthesis matching? What is its importance?

    (d)   What is the complexity of linear search algorithm?

    (e)   Which sorting algorithm has the least complexity?

    (f)   What is pre-order traversal in a tree?

    (g)   Define term 'time space trade off'.

    (h)   What are different data structure operations?

    (i)   How a linked list is different from an array?

    (j)   What are static data structures?

    (k)   What is the logic of bubble sort algorithm?

    (l)   What is a binary search tree?

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