Design and Analysis of Algorithms

2009 May

Science Information Technology

FYBSc-IT

Semester 2

University Exam

University of Mumbai

F.Y.B.Sc. (I.T.)
SEM-II

25th may 2009

86-09. Design & Analysis of Algorithms DM-5326

(3 Hours) [Total Marks : 100

(1) Question No. 1 is **compulsory.**
(2) **All** questions carry **equal** marks.
(3) Attempt any **four** from the remaining **six** questions.

) What do you mean by the term "data structure" ? What different examples of data structures you have come across ? Explain each in a statement or two. 10
) Derive the condition for an empty queue, and a queue with no element. 10

) Write a program in C, that reads elements of an array, find min and max of the array. Print them with a suitable message. Use pointer notation to access the elements. 10
) Discuss the advantage and disadvantage of stack over queue. 10

) Define minimal spanning tree. Explain with example and diagram the corresponding algorithm that finds and checks / traverses the tree. 10
) Write and explain the depth first search algorithm. 10

) Explain Merge Sort Algorithms with suitable examples. 10
) Define and explain each with diagram and example : Graph, Weighted graph, Directed graph and cyclic graph. 10

) Explain Divide and Conquer General Method. 10
) Explain hashing. What is hash function and hash key ? Give an example to explain the process of hashing. 10

) Explain double - headed (two - way) linked list, with syntax and example. Explain how to insert and delete an element in this linked list. 10
) Explain Back Tracking General method of 8 queens problems. 10

) Draw a binary tree after reading the following string in pre – order traversal :— 123456789abcdef. 10
) State and explain the quick sort algorithm with example. 10

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