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10MCA23

Second Semester MCA Degree Examination, December 2011
Data Structures using C

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Define data structure. Explain any two linear data structures, with examples. (10 Marks)
b. Explain the dynamic memory allocations in C (06 Marks)
c. Write short notes on:
i) Performance analysis ii) Performance measurement (04 Marks)
- 2 a. Define array. Explain dynamically allocated arrays, with examples. (08 Marks)
b. Explain the difference between structure and union (08 Marks)
c. Write short notes on:
i) Polynomials ii) Sparse matrix. (04 Marks)
- 3 a. Define stack. Explain the operation of PUSH and POP operation. (08 Marks)
b. Explain the algorithm of circular queue, with an example. (08 Marks)
c. Write a note on multiple stacks and queues. (04 Marks)
- 4 a. Write a C function to convert an infix expression to postfix form. Give examples. (10 Marks)
b. Write a C function using recursion to solve towers of Hanoi problem for three disks. (10 Marks)
- 5 a. Explain the implementation of singly linked list, with examples. (10 Marks)
b. Write short notes on:
i) Linked stacks ii) Linked queues (10 Marks)
- 6 a. Explain the implementation of doubly linked list, with an example. (10 Marks)
b. Explain the algorithm of circular linked list, with an example. (10 Marks)
- 7 a. Explain the implementation of binary search tree, with an example. (10 Marks)
b. Write short notes on:
i) Binary tree ii) Threaded binary tree. (10 Marks)
- 8 a. Explain the double ended binary queues, with examples. (08 Marks)
b. Explain the optimal binary search tree, with examples. (08 Marks)
c. Write short notes on:
i) AVL trees ii) Red black tree. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.