2002 SCHEME

USN | | | | | | | | | | |

CS35

Third Semester B.E. Degree Examination, June/July 2011

Data Structure with C

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

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.

1 a. Define and differentiate structure and union. **(06 Marks)**
b. Write a C program to demonstrate an array of structure. **(08 Marks)**
c. Explain bit fields, in detail. **(06 Marks)**

2 a. Explain with an example, a pointer variable declaration, initialization and use of * and & operators. **(06 Marks)**
b. What is the need for dynamic memory allocation? Explain different dynamic memory allocation functions. **(08 Marks)**
c. Explain an error handling function in files. **(06 Marks)**

3 a. Define data structure. Explain the operations performed on stack. **(06 Marks)**
b. Convert the following infix expression to equivalent post fix and pre fix expression :
i) $((A+B)*C-(D-E))\$(F+G)$
ii) $A-B/(C*D\$E)$
iii) $((6-(2+3))*(3+8/2))\$2+3$ **(06 Marks)**
c. Write an algorithm to convert an infix expression to postfix expression. **(08 Marks)**

4 a. Write an algorithm to evaluate a postfix expression. **(06 Marks)**
b. What is recursion? Write a recursive definition for multiplication of two natural numbers, with an example. **(06 Marks)**
c. Write a recursive program in C for tower of Hanoi. **(08 Marks)**

5 a. Write an algorithm to show insert, delete and display operations on linear queue. **(08 Marks)**
b. Explain priority queue, in detail. **(05 Marks)**
c. Show the different operations on a list, with a block diagram. **(07 Marks)**

6 a. Write a C program to implement a stack using linked list. **(08 Marks)**
b. What are the different list structures? Explain any one in detail. **(06 Marks)**
c. Explain how array is used in implementing a linked list. **(06 Marks)**

7 a. Define binary tree, complete binary tree, strictly binary tree and almost complete binary tree. **(08 Marks)**
b. What do you mean by traversal? Construct a binary tree and traverse the same in pre order in order and post order, for 25, 10, 13, 40, 9, 31, 5, 1, 100, 75. **(10 Marks)**
c. List the applications of binary tree. **(02 Marks)**

8 Write a short note on : **(20 Marks)**
a. Insertion sort
b. Sequential search
c. Interpolation search
d. Hash function.

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