END TERM EXAMINATION

Second sem[MCA] MAY-2008

Q1. (a) What is subscripted variable, why it is needed?
(b) Difference between TRAVERSING, SEARCHING AND SORTING.
(c) How local variable differ from GLOBAL VARIABLES.
(d) Determine minimum number of bits required to store a character in the memory of the computer assuming the programming language require atleast 48 characters.
(e) Explain the formula required to determine the address of the element of n subscripts.
(f) For searching operation which is better ARRAY OR LINKED LIST.
(g) Define DEQUEUES. What is their need?
(h) What is the advantage of INORDER THREADING IN TREES?
(i) Why Data files are needed?
(j) Draw an undirected graph with 5 nodes and 7 edges. (2x10=20)

Q2. (a) Input a two dimensional array of order mxn. Write an algorithm which should output this array and another two dimensional array (m+1)x(n+1), in which the elements of (m+1) row should be the sum of elements of m rows of (n+1) column should be the sum of n columns.
(b) Translate the infix expression Ax(B+C)/D-Ex(F+G/H-K) into Postfix expression in showing the position of stack after each operation. (10)

OR

(a) Consider a sorted list defined by FIRST. Write an algorithm to insert the Content of ITEM in it.
(b) Given the function:-

$A(m,n) = n+1$ if $m=0$
$= A(m-1,1)$ if $m\neq0$ but $n\neq0$
$= A(m-1,A(m,n-1))$ $m\neq0, n\neq0$

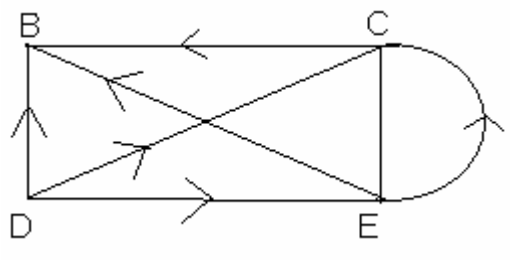
Obtain the value of A(1,3) showing each steps. (10)

Q3. (a) E denotes the following algebric expression

[a+(b-c)]x[(d-e)/(f+g-h)]

Draw Binary tree. Change it in to prefix expression using TRAVERSAL method.

(b) Define Adjoint Matrix. Obtain the matrix A for the graph.



Also compute A^2. (10)

OR

(a) Given a binary search tree. Write an algorithm to add the contents of ITEM.

(b) Define Path Matrix. Obtain the path matrix for the above graph. (10)

Q4. (a) Describe the algorithm of Bubble Sort. Trace it using following Numbers 25, 57, 48, 37, 12.

(b) Define HASHING. Find the digit hash address of each number 9614, 2885, 3176, 9044, 5281 using method with m=79. (10)

OR

(a) Using the algorithm of QUICKSORT determine the position of P in PLEASURE showing the contents after each iteration.

(b) Given a sorted of n elements. Show by taking an example of at least six elements that BINARY SEARCH is better than Linear search. (10)

Q5. Mention different types of file organization. Explain in details RANDOM File organization. (10)

OR

What is indexing? What are its different ways? Explain in details TREE indexing. (10)