Data Structures & Programming Methodology
(CS- 207, Dec.2005)

Note: Section A is compulsory. Attempt any four questions from Section B and any two from Section C.

Section-A

(a) What is a record?
(b) What is subroutine?
(c) Discus whether a stack or queue is appropriate structure when a batch of computer programs are submitted to a computer.
(d) What are the limitations of binary search algorithm?
(e) When is the sequential representation of binary tree suitable?
(f) What is a primary key?
(g) What is time space trade off?
(h) Which searching technique will apply when data is stored in a linked list?
(i) What are local and global variables?
(j) If base address of mxn array is base (A) then what will be address of A[s,k], what it is stored in a major order?

Section-B

2. What are advantages and disadvantages of using linked storage for storing strings?
3. How are two-dimensional arrays stored in memory?
4. Write an algorithm to search for a particular element in a stored array. Also insert a new element at the location.
5. Consider the following in fix expression
   p: ((A + B)*B)↑(E-F))
   Write the procedure and convert into post-fix expression.
6. What are binary trees? How are binary trees represented by using linked list?

Section C

6. (a)Explain the procedure of deletion of first node of a linked list.
   (b) Write an algorithm for inserting a new element into a queue.
7. (a) Suppose the following list of elements are to be inserted into an empty binary search tree: 14,40,17,12,10,41,26,13,18,25,20,8,22,11,23
   Find the final tree.
   (b) Explain the Path Matrix, in the sequential representation of graphs.
8. (a) Sort the data of following 9 elements using selection sort : 44,33,11,99,77,55,66,88,22

(a)Write a subroutine MID (KEY,HASH) which uses midsquare method to find 2-digit hash address HASH of a 4-digit employee number key.