BACHELOR IN COMPUTER APPLICATIONS
Term - End Examination
December, 2006
CS - 62: 'C' PROGRAMMING AND DATA STRUCTURE

Time: 2 hours Maximum Marks: 60

Note: Question number 1 is three questions from compulsory. Answer any three rest. All algorithms should be written nearer to 'C' language.

1. (a) Write the following Infix expressions into Prefix notation (5)

(i) $x * y * z - j / k * i$

(ii) $A / B ** C + D * E - A * C$

(b) Write an algorithm to traverse a graph through Breadth first search (BFS) with the help of an example. (7)

(c) Write a program in,'C' language to accept a paragraph of text as input. Make a list of words and number of occurrences of each word in a program as an output. (8)

(d) Write an algorithm to evaluate an arithmetic expression using stack. Explain the logic with the help of an appropriate example. (6)

(e) Write a function to insert a node at the front of a linked list and return a pointer to the new node. (4)

2. (a) Mention the important features of indexed sequential file organization and random file organization (4)

(b) Write an algorithm to implement Heap Sort and explain its logic with the help of an example. (6)

3. (a) Write an algorithm to delete a node from a doubly linked circular list.(5)

(b) Write a C program to test if a string entered from the keyboard is a palindrome, that is it reads the same backwards and forwards e.g.(5)
"Able was I ere I saw Elba"

4. Write algorithms to perform the following operations in circular queues (10)

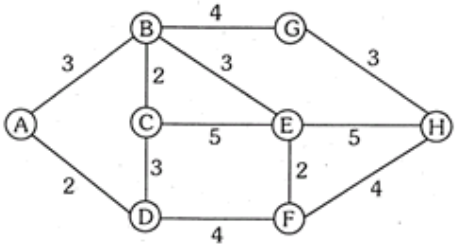
(i) Create a circular queue

(ii) Check whether a queue is empty
(iii) Check whether a queue is full
(iv) Insert an element in a queue
(v) Delete an element from a queue

5. (a) Define the following (5)

(i) Sparse Array
(ii) Digraph
(iii) AVL Tree
(iv) "Structure" in C
(v) Union

(b) Consider the following Graph (5)



Find the shortest path between the nodes Ⓐ and Ⓗ Also, show all the intermediate stages of the graph. (5)