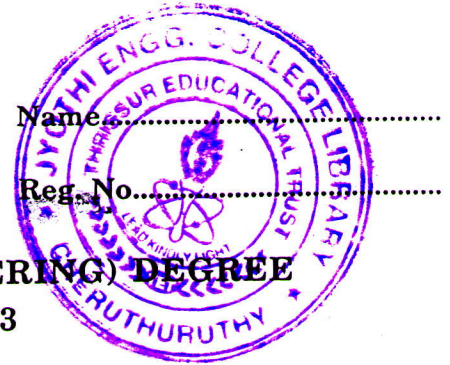


C 27085

(2 Pages)



**FOURTH SEMESTER B,TECH. (ENGINEERING) DEGREE  
EXAMINATION, JUNE 2003**

CSE 405 — DATA STRUCTURES  
PTCSE 404

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

**Part A**

1. (a) What are the different methods of storing arrays in the memory of a computer ? How is the address of an element computed in each method ?
- (b) Write an algorithm to perform an insertion of an element X into a circular queue of size N.
- (c) What is a storage pool ? What are the different operations performed on this pool ?
- (d) Write short notes on Garbage collection.
- (e) What do you mean by traversing a tree ? Explain the inorder traversal of a tree with an example.
- (f) Define the following terms related to a graph :—
  - (i) Path matrix ; (ii) Degree.
- (g) Analyze the time complexity of two way Merge sort algorithm.
- (h) Compare linear search with binary search.

(8 × 5 = 40 marks)

**Part B**

2. (a) State and explain the algorithm to convert an infix expression to a prefix expression.

*Or*

(b) (i) List few applications of queues. (5 marks)  
(ii) Formulate an algorithm to perform insertion of an element X into a circular queue of size N. (10 marks)
3. (a) Write separate algorithms to :
  - (i) Perform insertion of an element with info B into the middle position of a doubly linked list. (8 marks)
  - (ii) Perform deletion of an element with address XYZ from a doubly linked list. (7 marks)

*Or*

**Turn over**

- (b) Write an algorithm to delete all occurrences of each character contained in one string S1 from another given string S1.
4. (a) With appropriate examples, state and explain the algorithm to delete a node from a lexically ordered tree, whose root node is pointed to by the pointer variable, T.

Or

- (b) Formulate an algorithm to compute the nyst of a graph.
5. (a) (i) State and explain the algorithm to perform binary search. Analyse its time complexity. (7 marks)
- (ii) Explain how sorting on several keys is done. (8 marks)

Or

- (b) Discuss in brief about :

- (i) Insertion sort.  
(ii) Polyphase merge.

(7 + 8 = 15 marks)