

D 51487

(Pages : 2)

Name.....

Reg. No.....



**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2008**

CS/IT 04 302 – DATA STRUCTURES AND ALGORITHMS

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. (a) Explain abstraction.
- (b) Explain various scalar data types.
- (c) Explain the Doubly linked list structure and its advantages.
- (d) Explain the operations on Stack.
- (e) List the applications of trees.
- (f) How a set is represented by a bit vector?
- (g) Give the algorithm for sequential search in an array.
- (h) Explain closed hashing.

(8 × 5 = 40 marks)

Part B

2. (a) Explain the principles of good Programming practices.
- (b) Write short notes on character strings, arrays and records

(8 + 7 = 15 marks)

Or

- (c) Explain the enumerated data type with example.
- (d) Calculate the worst case running times of the following procedure as a functions of n .

```
Procedure      matmpy (n : integer) ;
Var            i, j, k : integer ;
begin
  for i = 1 to n do
    for j = 1 n do
      begin
        c [ i, j ] := 0;
        For k := 1 to n do
          c [ i, j ] = c [ i, j ] + A [ i, k ] * B [ k, j ]
        end
      end
    end
  end
```

end

(7 + 8 = 15 marks)

Turn over



3. (a) Explain the list implementation listing pointers. Write the algorithm for insert and delete operations.

Or

(b) Explain the applications of stack in the implementation of recursive procedures in programming languages.

(15 marks)

4. (a) Explain the representation of binary tree and its construction using Huffman algorithms.

Or

(b) Explain the methods for traversing the directed graph with example.

(15 marks)

5. (a) What is a binary search tree? Give an example. Write the algorithm for insertion and deletion in a binary search tree.

(15 marks)

Or

(b) Explain the insertion and selection sort algorithms.

(c) Explain searching linked list with an example.

(8 + 7 = 15 marks)

[4 × 15 = 60 marks]