

EI-55

B.E. (IInd Sem.) (CGPA) CSE Exam.-2015

DATA STRUCTURE

Paper - CS - 305

Time Allowed : Three Hours

Maximum Marks : 60

Note : Attempt all questions.

- Q.I Write short answers of the following- 2x5
- (a) Define complete binary tree?
  - (b) What is the advantage of using link list in place of any array?
  - (c) What is doubly link list? What are its advantages over single link list?
  - (d) List out the areas in which data structures are applied extensively?
  - (e) What is the difference between a queue and a stack?

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P.T.O.

(2)

Unit-I

- Q.II
- (a) Explain circularly linked lists. 5
  - (b) Write an algorithm to traverse a linked list. 5

Or

- (a) Explain in detail about Arrays? 6
- (b) What is a linear data structure - Explain any two linear data structures. 5

Unit-II

- Q.III
- (a) Write the algorithm for converting infix expression to postfix expression. 5
  - (b) Convert the following Infix Expression to postfix using stack. 5
- A \* B (C + D) + E

Or

- (a) What is a Stack? Explain its operations with example. 5
- (b) Write an algorithm for insertion and deletion operation in a circular queue. 5

Unit-III

- Q.IV
- (a) What is traversal in a binary tree. Explain with an example. 5

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Contd...

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(b) Construct the binary tree for the following :

Inorder : 3 5 6 8 12 15 18 19

Preorder : 12 5 3 6 8 18 15 19

Or

- (a) Write and explain weighted and unweighted shortest path algorithm. 5
- (b) Explain an application of graph. 5

Unit-IV

- Q.V
- (a) Write an algorithm for initializing the hash table. 5
  - (b) Briefly explain the various Hashing techniques. 5

Or

- (a) Explain the following :
  - I. Static tree table 5
  - II. Dynamic tree table 5
- (b) Explain the uses of symbol table. 5

Unit-V

- Q.VI
- (a) What is sorting? List some popular sorting methods. 5
  - (b) What are the different kinds of search techniques? 5

(4)

Or

- (a) Explain the various asymptotic notation used for calculating time and space complexities. 5
- (b) Sort 20, 35, 40, 100, 3, 10, 15 using bubble sorts. 5

1) Big Oh  $O$   
 ~~$f(n)$~~   $f(n) \leq C * g(n) \forall n_0$   
 worst case

2) Omega NOT  $\Omega$   
 $f(n) > C * g(n)$   
 Avg case