Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

EI - 302

B.E. III Semester

Examination, December 2015

Data Structure and Algorithms

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) What is data structure?
   b) How data is processed on data structure?
   c) What is an abstract data type?
   d) Write an C program to find the average of given 'n' numbers.

OR

Differentiate between an abstract data type specification and implementation.

Unit - II

2. a) What is stack?
   b) Write different operations which are applied on the stack.
   c) What is queue?

   d) Design PUSH and POP algorithms that manipulate a stack.

OR

Describe circular linked line.

Unit - III

3. a) What do you mean by a Tree?
   b) What is binary tree?
   c) What is extended binary tree?
   d) Write the algorithm of the following:
      i) Pre-order traversal ii) Post-order traversal

OR

Write an algorithm for inorder traversal of a binary tree.

Unit - IV

4. a) What do you mean by sorting?
   b) What is Internal sort?
   c) Differentiate between Internal sort and External sorting.
   d) Write down the procedure for the Insertion sort.

OR

Write an algorithm for bubble sort.

Unit - V

5. a) Define Graph.
   b) What is directed graph?
   c) Differentiate between connected graph and complete graph.
   d) Differentiate between a tree and a graph. Is it possible to connect a graph into tree? If yes, how?

OR

Prove that the number of edges in a n-vertex complete graph is n(n–1)/2.

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