CS/IT - 404 B.E. IV Semester Examination, June 2015

Analysis And Design of Algorithm

Time: Three Hours www.rgpvonline.com 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 questions are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max.50 words) cany 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.
iv) Except numerical, Derivation, Design and Drawing etc.

Unit -1

1. a) Define O Notation.
b) What is the use of Asymptotic Notations?
c) Define Binary Tree.
d) How Divide and conquer technique can be applied to binary trees? Also write Algorithm for Divide and conquer,

OR

Define and explain merge sort algorithm.

Unit -II

2. a) Explain about greedy technique.
b) Define the external path length,
c) Define minimum spanning tree,
d) Define Kruskals algorithm. Also write down the steps for Kruskals algorithm in detail

OR

Define preorder, inorder and postorder traversal Also explain in detail all the traversal.

Unit- III

3. a) Explain principle of optimal ity.
b) Define Dynamic programming.
c) Define Binomial coefficient.
d) Explain Warshalls algorithm.

OR

Find an optimal solution to the following Knapsack problem Number of objects n = 3 Knapsack capacity m=20 Profits (Pr, P2, P3) - (25, 24, 15) Weight (W1? W2, W3) - (18,15,10)

Unit IV

4. a) Explain state space tree.
b) Explain-n queens problem,
c) Explain "Graph coloring" problem.
d) How can traveling salesperson problem be solved?

OR

Explain Backtracking in detail Algorithm write algorithm for recursive backtracking algorithm.

Unit - V

5. a) Explain Class P problem,
b) Explain undecidable problem,
c) Explain NP Hard problems
d)List out the techniques for traversals in Graph. Also explain each in detail with its procedure.

OR

Discuss the relationship between P, NP, NP complete and NP hard problems.