TCS-503   **1225**   Printed Pages : 4

Paper Code & Roll No. to be filled in your Answer Book

Roll No. ☐☐☐☐☐☐☐☐☐☐☐

B. Tech. III Year (V Sem.)
Odd Semester Examination-2015
DESIGN & ANALYSIS OF ALGORITHM

Time : 3 Hours]   [Maximum Marks :100

Unit - I

Attempt any Four   (4X5=20)

1. What do you mean by algorithm? Write the characteristics of algorithm.

2. What do you understand by asymptotic notations? Describe important types of asymptotic notations.

3. Discuss any one sorting algorithm having linear time complexity.

4. What do you mean by recursion ? Explain your answer with an example.

5. Illustrate the functioning of Heap sort on the following array

    A=(25,57,48,37,12,92,86,33)

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Unit II

Attempt any Four (4X5=20)

1. Show the steps of inserting the key 41,38,31,12,19,8 into initially empty red - black tree.

2. Prove that maximum degree of any node in a n node binomial tree is log n.

3. Create B tree of order 5 from the following bits of data items:

   20,30,35,85,10,55,60,25,5,65,70,75,15,40,50,80,45

4. Explain searching operation in B-tree.

5. What is a disjoint data structure? How running time of disjoint set data structure is analysed?

Unit III

Attempt any Two (2X10=20)

1. What steps are used in dynamic programming approach? Discuss the 0/1 knapsack problem with respect to dynamic programming. is greedy method equally applicable for above problem.

2. Discuss backtracking problem solving approach with the help of an example.

3. What is greedy algorithm? Explain activity selection problem and give its solution by using greedy approach with its analysis and correctness.

Unit IV

Attempt any Two   (2X10=20)

1. Discuss Travelling salesman Problem with complexity analysis of each.

2. Explain Ford- Fulkerson algorithm to find maximum flow in the network and find its complexity. Support Your answer with a suitable example.

3. Given a graph G=(V,E) and let V1 and V be two distinct vertices. Explain how to modify Dijekstra'sshortest path algorithm to determine the number of distinct shortest path algorithm from U toV. Also, comment on whether Dijekstra's shortest path algorithm work correctly if weight are negative.

Unit V

Attempt any Two   (2X10=20)

1. What are the approximation algorithms? What is meant by a P(n) approximation algorithm? Give an approximation algorithm for travelling sales problem.

2. Explain Rabin-Korp algorithm for strict matching working module q=11, how many spurious bits does Rabin-Korp matcher encounter in the text T=3141592653598793 when looping for pattern p=26?

3. Explain NP hard and NP complete problems and also define the polynomial time problem and write the procedure to solve NP Problems.

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