

Code No: R05321904

R05**Set No. 2**

III B.Tech II Semester Examinations, December 2010
DESIGN AND ANALYSIS OF ALGORITHMS
Electronics And Computer Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Draw and explain the tree organization of the 4-queen solution space.
 (b) Compare and Contrast between Fixed and Variable tuple size formulation. [10+6]
2. (a) Define Theta notation. Explain the terms involved in it. Give an example.
 (b) Show that $f(n) + g(n) = O(n^2)$ where $f(n) = 3n^2 - n + 4$ and $g(n) = n \log n + 5$. [8+8]
3. (a) Write an algorithm to solve the Knapsack problem with the Branch and Bound
 (b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem. [10+6]
4. (a) Explain the applications of single source shortest path problem.
 (b) Prove that Kruskal's algorithm generates a minimum-cost spanning tree for every connected undirected graph G.
 (c) Write an algorithm of Greedy Knapsack. [5+6+5]
5. (a) Suppose a binary tree has leaves $\ell_1, \ell_2, \dots, \ell_m$ at depths d_1, d_2, \dots, d_m respectively prove that $\sum_{i=1}^m 2^{-d_i} \leq 1$ and determine when the equality is true.
 (b) Write and explain the control abstraction algorithm of divide and conquer. [8+8]
6. (a) Does either of the two traversals DFS or BFS always find a cycle faster than the other? If you answer "yes" indicate which of them is better and explain why it is the case if you answer "no" give two examples supporting your answer.
 (b) Prove that breadth first search visits all vertices in a reachable from v. [10+6]
7. (a) Write the Nondeterministic sorting algorithm. Also Analyze its complexity.
 (b) Distinguish between deterministic and non-deterministic algorithms. [10+6]
8. Write a pseudocode of the dynamic programming algorithm for solving Optimal Binary search tree and determine its time and space efficiencies. [16]

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R05**Set No. 4**

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Electronics And Computer Engineering

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 (b) Distinguish between deterministic and non-deterministic algorithms. [10+6]
2. (a) Write an algorithm to solve the Knapsack problem with the Branch and Bound
 (b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem. [10+6]
3. Write a pseudocode of the dynamic programming algorithm for solving Optimal Binary search tree and determine its time and space efficiencies. [16]
4. (a) Does either of the two traversals DFS or BFS always find a cycle faster than the other? If you answer "yes" indicate which of them is better and explain why it is the case if you answer "no" give two examples supporting your answer.
 (b) Prove that breadth first search visits all vertices in a reachable from v. [10+6]
5. (a) Suppose a binary tree has leaves $\ell_1 \ell_2 \dots \ell_m$ at depths d_1, d_2, \dots, d_m respectively prove that $\sum_{i=1}^m 2^{-d_i} \leq 1$ and determine when the equality is true.
 (b) Write and explain the control abstraction algorithm of divide and conquer. [8+8]
6. (a) Define Theta notation. Explain the terms involved in it. Give an example.
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7. (a) Explain the applications of single source shortest path problem.
 (b) Prove that Kruskal's algorithm generates a minimum-cost spanning tree for every connected undirected graph G.
 (c) Write an algorithm of Greedy Knapsack. [5+6+5]
8. (a) Draw and explain the tree organization of the 4-queen solution space.
 (b) Compare and Contrast between Fixed and Variable tuple size formulation. [10+6]

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R05**Set No. 1**

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Electronics And Computer Engineering

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 (b) Prove that breadth first search visits all vertices in a reachable from v. [10+6]
2. (a) Define Theta notation. Explain the terms involved in it. Give an example.
 (b) Show that $f(n) + g(n) = O(n^2)$ where $f(n) = 3n^2 - n + 4$ and $g(n) = n \log n + 5$. [8+8]
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4. (a) Write the Nondeterministic sorting algorithm. Also Analyze its complexity.
 (b) Distinguish between deterministic and non-deterministic algorithms. [10+6]
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 (b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem. [10+6]
6. (a) Draw and explain the tree organization of the 4-queen solution space.
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 (c) Write an algorithm of Greedy Knapsack. [5+6+5]
8. (a) Suppose a binary tree has leaves $\ell_1 \ell_2 \dots \ell_m$ at depths d_1, d_2, \dots, d_m respectively prove that $\sum_{i=1}^m 2^{-d_i} \leq 1$ and determine when the equality is true.
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R05**Set No. 3**

III B.Tech II Semester Examinations, December 2010
DESIGN AND ANALYSIS OF ALGORITHMS
Electronics And Computer Engineering

Time: 3 hours**Max Marks: 80**

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 (b) Prove that Kruskal's algorithm generates a minimum-cost spanning tree for every connected undirected graph G.
 (c) Write an algorithm of Greedy Knapsack. [5+6+5]
2. (a) Write the Nondeterministic sorting algorithm. Also Analyze its complexity.
 (b) Distinguish between deterministic and non-deterministic algorithms. [10+6]
3. (a) Define Theta notation. Explain the terms involved in it. Give an example.
 (b) Show that $f(n) + g(n) = O(n^2)$ where $f(n) = 3n^2 - n + 4$ and $g(n) = n \log n + 5$. [8+8]
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 (b) Prove that breadth first search visits all vertices in a reachable from v. [10+6]
