

ANALYSIS & DESIGN OF ALGORITHMS 2020-21 Odd Semester

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Started on	Friday, 11 September 2020, 11:01 AM
State	Finished
Completed on	Friday, 11 September 2020, 11:10 AM
Time taken	8 mins 12 secs
Grade	9.00 out of 10.00 (90%)

Question **1**

Correct

Mark 1.00 out of 1.00

Find the optimal solution for the 0/1 knapsack problem making use of dynamic programming approach. Consider $n = 4$, $w = 5$ kg, $(w_1, w_2, w_3, w_4) = (2, 3, 4, 5)$ $(v_1, v_2, v_3, v_4) = (3, 4, 5, 6)$

- ☐ a. 11
- ☐ b. 6
- ☐ c. 8
- ☒ d. 7



The correct answer is: 7

Question **2**

Correct

Mark 1.00 out of 1.00

The result of the fractional knapsack is greater than or equal to 0 / 1 knapsack.

- ☐ a. False
- ☒ b. True



The correct answer is: True

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following methods can be used to solve the 0/1 Knapsack problem?

- ☐ a. Dynamic programming
- ☐ b. Recursion
- ☐ c. Brute force algorithm
- ☒ d. Brute force, Recursion and Dynamic Programming



The correct answer is: Brute force, Recursion and Dynamic Programming

Question **4**

Correct

Mark 1.00 out of 1.00

The knapsack problem is in ____ optimization problem

- ☐ a. Minimization
- ☐ b. Maximization
- ☐ c. Complex
- ☒ d. Combinatorial



The correct answer is: Combinatorial

Question **5**

Correct

Mark 1.00 out of 1.00

The traveling salesman problem involves visiting each city how many times?

- ☐ a. 2
- ☐ b. 3
- ☐ c. 0
- ☒ d. 1



The correct answer is: 1

Question **6**

Incorrect

Mark 0.00 out of 1.00

What is the time complexity of 0 / 1 knapsack problem?

- ☐ a. $\theta(w^2)$
- ☐ b. $\theta(n^2)$
- ☒ c. $\theta(nw)$
- ☐ d. $\theta(n^2 w)$



Question **7**

Correct

Mark 1.00 out of 1.00

You are given a knapsack that can carry a maximum weight of 60. There are 4 items with weights {20, 30, 40, 70} and values {70, 80, 90, 200}. What is the maximum value of the items you can carry using the knapsack?

- ☒ a. 160
- ☐ b. 170
- ☐ c. 90
- ☐ d. 200



The correct answer is: 160

Question **8**

Correct

Mark 1.00 out of 1.00

What is the traveling salesman problem equivalent to in graph theory?

- ☐ a. A Hamilton circuit in a non-weighted graph
- ☐ b. A connect the dots game
- ☒ c. A Hamilton circuit in a weighted graph
- ☐ d. Any circuit



The correct answer is: A Hamilton circuit in a weighted graph

Question **9**

Correct

Mark 1.00 out of 1.00

The 0 / 1 Knapsack problem is an example of _____

- ☐ a. Greedy algorithm
- ☒ b. 2D dynamic programming
- ☐ c. Divide and conquer
- ☐ d. 1D dynamic programming



The correct answer is: 2D dynamic programming

Question **10**

Correct

Mark 1.00 out of 1.00

Tour is ---path

- ☐ a. Straight
- ☐ b. Acyclic
- ☒ c. Cyclic
- ☐ d. None



The correct answer is: Cyclic

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