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Calificación recibida 100 % Para Aprobar 70 % o más

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## Final Exam

Calificación de la entrega más reciente: 100 %



1. Of the following dynamic programming algorithms covered in lecture, which ones always perform  $O(1)$  work per subproblem? [Check all that apply.]

1 / 1 punto

✓ Correcto

2. Assume that  $P \neq NP$ . Which of the following problems can be solved in polynomial time? [Check all that apply.]

1 / 1 punto

✓ Correcto



3. Recall the all-pairs shortest-paths problem. Which of the following algorithms are guaranteed to be correct on instances with negative edge lengths that don't have any negative-cost cycles? [Check all that apply.]

1 / 1 punto

✓ Correcto

4. Suppose a computational problem  $\Pi$  that you care about is NP-complete. Which of the following are true? [Check all that apply.]

1 / 1 punto

✓ Correcto



5. Which of the following statements are logically consistent with our current state of knowledge (i.e., with the mathematical statements that have been formally proved)? [Check all that apply.]

1 / 1 punto

✓ Correcto

6. Of the following problems, which can be solved in polynomial time by directly applying algorithmic ideas that were discussed in lecture and/or the homeworks? [Check all that apply.]

1 / 1 punto

✓ Correcto



7. In lecture we gave a dynamic programming algorithm for the traveling salesman problem. Does this algorithm imply that  $P=NP$ ? [Check all that apply.]

1 / 1 punto

✓ Correcto

8. Consider the Knapsack problem and the following greedy algorithm: (1) sort the items in nonincreasing order of value over size (i.e., the ratio  $v_i/w_i$ ); (2) return the maximal prefix of items that fits in the Knapsack (i.e., the  $k$  items with the largest ratios, where  $k$  is as large as possible subject to the sum of the item sizes being at most the knapsack capacity  $W$ ). Which of the following are true? [Check all that apply.]

1 / 1 punto

✓ Correcto

✓ Correcto



9. Which of the following statements are true about the generic local search algorithm? [Check all that apply.]

1 / 1 punto



✓ Correcto

10. Which of the following statements are true about the tractability of the Knapsack problem? [Check all that apply.]

1 / 1 punto

✓ Correcto