NP-hard problems and NP-complete problems are the subsets of NP problems.

○ T ◉ F

答案正确：2 分 创建提问

If P = NP then the Shortest-Path (finding the shortest path between a pair of given vertices in a given graph) problem is NP-complete.

◉ T ○ F

答案正确：5 分 创建提问

bout Vertex Cover problem, which of the following statements is FALSE?

○ A. It is an NP problem.

○ B. The time complexity of its verification algorithm is $O(N^3)$, where N refers to the number of nodes.

◉ C. It is polynomial-time reducible to Clique problem, but not vice versa.

○ D. It is an NP-complete problem.

答案正确：3 分 创建提问

Which of the following statements is FALSE?

○ A. All the P problems are NP problems.

◉ B. There exists an NP-complete problem such that not all the NP problems can be polynomially reduced to it.

○ C. For a problem, if we can find an algorithm which can solve it in polynomial time, then the problem is a P proble

○ D. Not all decidable problems are in NP.

If P and NP are different, which of the following statements is true?

◉ A. There is no polynomial time algorithm to solve the vertex cover problem.

○ B. P ∩ NP-Complete ≠ ∅.

○ C. We can find polynomial time solution for Hamilton cycle problem.

○ D. P = NP-Complete.

答案正确：2 分 创建提问

2-4 分数 2

If X is a problem in class NP, then how many of the following statements is/are TRUE?

- There is no polynomial time algorithm for X.
- There is a polynomial time algorithm for X.
- If X can be solved deterministically in polynomial time, then P = NP.

A. 0

B. 1

C. 2

D. 3

答案正确：2 分 创建提问

2-5 分数 3 作者 叶德仕 单位 浙江

Which one of the following statements is FALSE?

A. SAT, Vertex Cover, Hamiltonian Cycle, Clique, Knapsack, Bin Packing, and Domination Set problems are all NP-completeness problems.

B. If there is a polynomial time $(1+\frac{1}{2n})$-approximation algorithm for Vertex Cover with n being the total number of vertices in the graph, then P=NP.

C. If there is a polynomial time 3/2-approximation algorithm for K-Center, then P=NP.

D. Given a weighted directed acyclic graph (DAG) G and a source vertex s in G, it is NP-hard to find the longest distances from s to all other vertices in G.

答案正确：3 分 创建提问

2-6 分数 3 作者 叶德仕 单位

Which one of the following statements is FALSE?

A. A language L_1 is polynomial time transformable to L_2 if there exists a polynomial time function f such that $w \in L_1$ if $f(w) \in L_2$.

B. $L_1 \leq_p L_2$ and $L_2 \leq_p L_3$ then $L_1 \leq_p L_3$.

C. If $L_1 \in P$ then $L_1 \subseteq NP \cap$ co-NP.

D. If language L_1 has a polynomial reduction to language L_2, then the complement of L_1 has a polynomial reduction to the complement of L_2.

答案正确：3 分 创建提问