Due	For	Available from	Until
24 Oct	1 student	22 Oct at 15:30	24 Oct at 23:59

Preview

Score for this quiz: **20** out of 20
Submitted 13 Nov at 7:44
This attempt took 2 minutes.

Question 1

1 / 1 pts

There is an algorithm that decides whether a given C++ problem returns 100.

- True
- False

Correct!

Question 2

4 / 4 pts

Select all languages for which there is a deterministic Turing machine M that decides whether a given input x is in the language.

- Diagonalization Language
- Language that contains all binary strings having exactly 3 1-bits.

Correct!

Correct!

- [x] $\{0^n 1^n \mid n \geq 1\}$

Correct!

- [x] $\{a^n b^n c^n d^n \mid n \geq 1\}$

Question 3

1 / 1 pts

The problem to decide whether a given undirected graph G=(V,E) with positive edge weights has a minimum spanning tree of cost at most C is in PSPACE.

Correct!

- (•) True
- ( ) False

Question 4

1 / 1 pts

If L is a problem in NP then any NP-complete problem is polynomial-time reducible to L.

- ( ) True

Correct!

- (•) False

Question 5

1 / 1 pts

Assuming $P \neq NP$, the decision variant of the traveling salesperson problem is in P.

- True
- Correct! False

Question 6

4 / 4 pts

Consider the problem of deciding whether a given undirected graph G=(V,E) with positive edge weights has a minimum spanning tree of cost at most C.

Select all complexity classes that this problem belongs to.

- Correct! RP
- Correct! BPP
- Correct! P
- Correct! NP
- Correct! co-NP

Question 7

4 / 4 pts

Select all correct statements.

Correct!

- [x] $P \subseteq NP$

Correct!

- [x] $NP \subseteq PSPACE$
- [ ] $NP \subset P$

Correct!

- [x] $P \subseteq RP$
- [ ] $BPP \subset RP$

Question 8

4 / 4 pts

Let G=(V,E) be an undirected graph. Select all correct statements.

- [ ] The problem to compute a clique with a maximal number of nodes is in P (assuming $P \neq NP$).
- [ ] The problem to decide whether G contains a Hamiltonian cycle is in P. (assuming $P \neq NP$)
- [ ] The problem to compute a clique with a maximal number of nodes is in NP (assuming $P \neq NP$).

Correct!

- [x] The problem to decide whether G contains a clique of k nodes is in NP.

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