Unit 14 - Week 12

Assignment 12

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-22, 23:59 IST.

1) If f be any flow, (S,T) be any cut, C be capacity of a flow network $G=(V,E)$ tean which of the following relation does not hold? *1 point*

(a) $|f| = f(S,T)$
(b) $|f| > C(S,T)$
(c) $|f| = f(V,t)$ where t is the *sink* of network flow
(d) $f(X \cup Y, Z) = f(X,Z) + f(Y,Z)$ if $X \cap Y = \phi$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

2) Which of the following statement is true? *1 point*
Statement 1: The value of any flow is bounded below by the capacity of any cut.
Statement 2: In a flow network, the maximum amount of flow passing from the source to the sink is equal to the total weight of the edges in the minimum cut.

(a) Only statement 1
(b) Only Statement 2
(c) Neither Statement 1 nor Statement 2
(d) Both of these

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

3) If f be a flow on $G=(V,E)$, the residual network $G_f(V,E_f)$ is the graph with strictly possitive residual capacities if *1 point*

(a) $C_f(u,v) = C(u,v) - f(u,v) > 0$
(b) $C_f(u,v) = f(u,v) - C(u,v) > 0$
(c) $C_f(u,v) = C(u,v) - f(u,v) < 0$
(d) $C_f(u,v) = f(u,v) - C(u,v) < 0$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

4) Halting problem is an example for? *1 point*

(a) decidable problem
(b) undecidable problem
(c) complete problem
(d) trackable problem

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

5) Consider the following statements: *1 point*
Statement 1: The basic idea of dynamic programming is drawn from the intuition behind divide-and-conquer and is essentially the opposite of greedy strategy.
Statement 2: When dynamic programming is applied to a problem, it takes far less time as compared to other methods that don't take advantage of overlapping subproblems.
Then

(a) Only statement 1 is true.
(b) Only statement 2 is true.
(c) Both statements are true.
(d) Both statements are false.

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

6) Assuming P $\neq$ NP, which of the following is true ? *1 point*

(a) NP-complete = NP
(b) NP-complete $\cap$ P = Φ
(c) NP-hard = NP
(d) P = NP-complete

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

7) In computational complexity, which ofthe following subsets inclusion is true, where $\mathcal{P}, \mathcal{E}, \mathcal{R}$ is the set of problems solvable in polynomial, exponential and finite time respectively. ? *1 point*

(a) $\mathcal{P} \subsetneq \mathcal{E} \subsetneq \mathcal{R}$
(b) $\mathcal{P} \subseteq \mathcal{R} \subseteq \mathcal{E}$
(c) $\mathcal{P} \supsetneq \mathcal{E} \supsetneq \mathcal{R}$
(d) None of these.

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

8) Which of the following is **NOT** a example of NP complete problem? *1 point*

(a) 3 colouring of a given graph
(b) Travelling salesman problem
(c) Knapsack
(d) Halting Problem

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

9) Let X be a problem that belongs to the class NP. Then which one of the following is TRUE? *1 point*

(a) There is no polynomial time algorithm for X.
(b) If X can be solved deterministically in polynomial time, then P = NP.
(c) If X is NP-hard, then it is NP-complete.
(d) X may be undecidable.

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

10) "If X is NP complete, then X is solvable in polynimial time *iff* P=NP" The above statement is *1 point*

(a) True
(b) False

a.
b.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.