Assignment 7

The due date for submitting this assignment has passed.

Due on 2021-03-10, 23:59 IST.

As per our records you have not submitted this assignment.

1) Assume that BPP = NP. What can we conclude from this? ***2 points***

- P = NP
- P = BPP
- PH=Σ_2^p
- NP = coNP

No, the answer is incorrect.
Score: 0

Accepted Answers:
PH=Σ_2^p
NP = coNP

2) Let M be a PTM. The expected running time of M on an input x, E[T_M,x], is the average running time of M on x taken over all possible sequence of choices. M has expected running time T(n) if for all x $\in \{0,1\}^*$, E[T_M,x] $\leq$ T(|x|). ***5 points***
Let ETIME(f(n)) be the class of languages L accepted by a PTM M having expected running time O(f(n)), such that for all x $\in \{0,1\}^*$,
$x \in L \Rightarrow Pr[M(x) = 1] = 1$
$x \notin L \Rightarrow Pr[M(x) = 0] = 1$
Let EPT = $\bigcup_{c>0}$ ETIME(n^c). Which of the following is/are known to be true?

- EPT is a strict subset of ZPP
- ZPP is a strict subset of EPT
- ZPP = EPT
- ZPP and EPT are incomparale.

No, the answer is incorrect.
Score: 0

Accepted Answers:
ZPP = EPT

3) Consider the following language, ***2 points***
$DSAT = \{\phi \mid \phi \text{ has exactly two satisfying assignments}\}$
suppose we have a polynomial time algorithm for DSAT. What can we conclude from this?

- NP is not equals to RP.
- NP = RP
- NP = coRP
- We cannot conclude anything new about NP and RP.

No, the answer is incorrect.
Score: 0

Accepted Answers:
NP = RP

4) Assume that P = NP. What can we conclude from this? ***2 points***

- BPP = P
- BPP is a strict subset of P
- P is a strict subset of BPP
- We can not conclude anything new for P and BPP.

No, the answer is incorrect.
Score: 0

Accepted Answers:
BPP = P

5) Which of the following is/are known to be true? ***2 points***

- BPP is not equals to PSPACE.
- BPP is a subset of PSPACE
- BPL is not equals to PSPACE
- BPL is a subset of PSPACE

No, the answer is incorrect.
Score: 0

Accepted Answers:
BPP is a subset of PSPACE
BPL is not equals to PSPACE
BPL is a subset of PSPACE

6) Which of the following is/are know to be true? ***2 points***

- RL is a subset of BPL
- coRL is a subset of BPL
- RL is a subset of NL
- coRL is a subset of NL

No, the answer is incorrect.
Score: 0

Accepted Answers:
RL is a subset of BPL
coRL is a subset of BPL
RL is a subset of NL
coRL is a subset of NL

7) Assume that BPL = NL. What can we conclude about L and NL? ***3 points***

- L = NL
- NL = L^2
- NL $\subsetneq$ L^2
- L $\neq$ NL

No, the answer is incorrect.
Score: 0

Accepted Answers:
NL $\subsetneq$ L^2

8) Which of the following two statements are known to be true? ***2 points***
1. BPP $\subsetneq$ EXP
2. BPP $\subsetneq$ NEXP

- Only 1
- Only 2
- Both 1 and 2
- Neither 1 nor 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
Neither 1 nor 2