CS & IT ENGINEERING



Undecidability & Decidability - 1

DPP 01 Discussion Notes



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TOPICS TO BE COVERED

01 Question

02 Discussion



1. Consider the following statements?



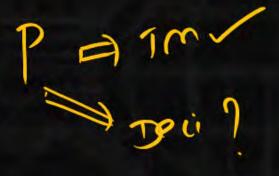
 S_1 : For any problem if TM exist then problem may be decidable.

So: For any problem if TM not exit then problem may be decidable.

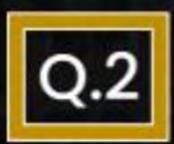
Which of the following is correct?

[MCQ]

- S_1 only
- B. S₂ Only
- C. Both S_1 and S_2
- D. None of these

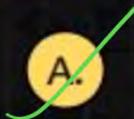






Which of the following is / are true about CYK algorithm?





CYK is a bottom up parsing algorithm



CYK algorithm will take O(n³) time to verify n - length string.



CYK is a dynamic programing algorithm.



CYK algorithm is used to whether given string is a member of the language or not?

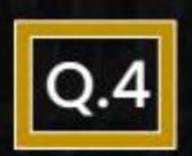


In which of the following machine, halting problem is not W decidable?

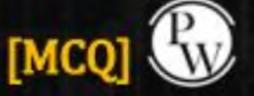


[MCQ]

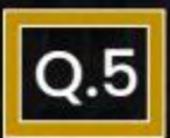
- Finite automata. > 9
- Linear bound automata. В.
- Deterministic push down automata.
- None of these



Consider the following Statements:



- (i) Non disjointness problem is decidable for regular expression.
- (iii) Totality problem for DPDA is decidable.
- (iii) Every decidable problem is also semidecidable.
 Which of the following is correct?
- A. (ii) and (iii) only.
- B. (i) and (ii) only.
- c. (iii) only.
- D. All are correct.



Which of the following is decidable to turing machine?



- A. Halting problem.
- B. Blank tape halting problem.
- c. membership problem.
- None of these.



Consider the following statement:



Si: In turing machine every final state is dead.

[MSQ]

S₂: In turing machine every non – final state may be dead. Which of the following is correct?

- A. S_1 only
- B. S₂ Only
- C. Both S_1 and S_2
- D. None of these



Which of the following is not correct?



- A. Every semidecidable language is RE.
- B. If language is NOT even semidecidable, then it must be NOT RE.
- If language is undecidable then it may be RE. TRUE
- If a language is semidecidable but not decidable then it may be Recursive.



- A. A language 'L' is <u>semidecidable</u> iff there exist a turing machine which accept 'L'.
- A language 'L' is decidable iff there exist a turing machine which accept L and which halts $\forall_w \in \Sigma^*$.
- C. A language is decidable iff there exist an algorithm.
- D. None of these.

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