CPSC 421/501 101 2020W Midterm 9:30am

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TOTAL POINTS

25 / 25

QUESTION 1

1 Question 1 5 / 5

✓ - **0 pts** Correct

- **0.5 pts** Minor error in NFA.

- **0.3 pts** Minor error in NFA: this does not accept "a".

- **0.2 pts** Minor error in NFA: this does not accept the empty string.

- **0.3 pts** Part of your NFA recognizes $$(ab)^*$$, not $$ab^*$$.

- **0.15 pts** $$(ab)^*$$ is not the same as $$ab^*$$.

- **0.001 pts** You do not need a reject state in an NFA.

- **0 pts** Next time omit unnecessary states.

- **0.1 pts** Very minor error

- **1.5 pts** epsilon arrows misplaced, making the NFA accept many strings not in the language

- **2 pts** Your NFA does not accept anything in $$(b^2)^*$$.

QUESTION 2

2 Question 2 10 / 10

✓ - **0 pts** Correct

- **0.5 pts** Incorrect conclusion about minimum number of states.

- **0.25 pts** Correct DFA with more than minimum number of states

- **0.25 pts** Incorrect DFA

- **0.25 pts** Incorrect AccFut values.

- **0.75 pts** Misconception about the definition of AccFut

QUESTION 3

3 Question 3 10 / 10

✓ - **0 pts** Correct Turing machine.

✓ - **0 pts** Lists tape language.

✓ - **0 pts** Lists states and identifies the initial, accepting, and rejecting states.

✓ - **0 pts** Explanation of how Turing machine works. Justification should include an argument about the correctness of the Turning machine, for instance arguing that each state corresponds to a value of "a mod 4" and stating that the Turing machine keeps track of this value.

- **2 pts** Turing machine incorrectly makes the state corresponding to "a mod 4 = 2" an accepting state. Otherwise, the remainder of the Turing machine is correct.

- **0.5 pts** Minor issues.

- **1 pts** Does not identify initial, accepting, and rejecting states.

- **3 pts** Explanation is missing or does not give a high level intuition as to how the Turing machine works.

- **1 pts** Incorrect or missing tape language.

- **5 pts** Incorrect Turing machine.

- **1 pts** Explanation is not sufficient. Or is not sufficiently clear.

- **1 pts** Almost correct Turing machine. Non-trivial mistake.

- **10 pts** No submission for question 3.

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