

CS 350 Theory of Computation

Assignment 5 (8 marks)

Question 1 (1 marks)

Let $\text{CONNECTED} = \{ \langle G \rangle \mid G \text{ is a connected undirected graph} \}$. Analyze the algorithm given on page 145-146 (for those using the 1st edition of the textbook) OR page 157-158 (for those using the 2nd edition of the textbook) to show that this language is in P .

Question 2 (1 marks)

Show that ALL_{DFA} is in P .

Question 3 (2 marks)

Let $\text{DOUBLE-SAT} = \{ \langle \phi \rangle \mid \phi \text{ has at least two satisfying assignments} \}$. Show that DOUBLE-SAT is NP-complete.

Question 4 (2 marks)

Problem 7.22, page 273 — for those using the 1st edition of the textbook.

OR

Problem 7.24, page 296 — for those using the 2nd edition of the textbook.

Question 5 (2 marks)

Problem 7.23, page 273 — for those using the 1st edition of the textbook.

OR

Problem 7.25, page 296 — for those using the 2nd edition of the textbook.

Date Due: before the end of class on **Friday, April 21, 2006**. Late assignment will lose 2 marks for each overdue day.