Roll No.: _____

CS228M Surprise Quiz 2 (Spring 2026)

Max marks: 10 **Duration: 15 mins**

- *You are required to answer each question only in the sheet provided to you.*
- *Only material written in the sheet will be graded.*
- *The exam is open book and notes. However, you are not allowed to search on the internet or consult others over the internet for your answers.*
- *Be brief, complete and stick to what has been asked.*
- *Unless asked for explicitly, you may cite results/proofs covered in class without reproducing them.*
- ***If you need to make any assumptions, state them clearly.***
- ***Do not copy solutions from others. Penalty for offenders: FR grade.***

Consider the CNF formula $(\neg x_1 \vee \neg x_2 \vee x_3) \wedge (\neg x2 \vee \neg x_3 \vee x_4) \wedge (\neg x_1 \vee x_2) \wedge (\neg x_2 \vee x_1) \wedge (\neg x_4) \wedge (x_1)$

1. *[3 marks]* List the sequence of assignment of variables that results when you run the DPLL algorithm on this formula. Your assignment should lead to a conflict. (Please turn over for the next sub-question).

2. *[5+2 marks]* Draw the complete implication graph corresponding to your sequence of assignments, leading to the conflict. Identify a *minimal* conflict clause (i.e. with as few literals as possible) from a cut in the implication graph.