You have three hours. You should do all four questions. Each question has equal weight. It is recommended that you read the entire exam before doing any questions.

1. Static Concepts of Equilibrium

In the game with payoff matrix

2,1	0,0
0,0	1,2

- Find all Nash equilibria pure and mixed.
- If player one can precommit what is the optimal pure and mixed precommitment and corresponding payoffs?

2. Dynamic Concepts of Equilibrium

Consider a three person centipede game in which player 1 can drop or pass, player 2 can drop or pass, and player 3 can drop or pass. If player 1 drops, the payoffs are (0,0,0); if player 2 drops the payoffs are (-1,0,0), if player 3 drops the payoffs are (0,-1,0) and if player 3 passes the payoffs are (2,2,2).
- Sketch the extensive form and write down the normal form.
- Find all pure strategy Nash equilibria.
- Find all pure strategy subgame perfect equilibria.
- Find all pure strategy self-confirming equilibria.

3. Risk Aversion in the Lab

An experimental economist reports to you that individuals in the laboratory are indifferent between getting nothing for sure, and a gamble which pays: $9.00, 0, −$6.00 each with probability 1/3. Assume the standard approximation for the absolute risk premium p using a fixed coefficient of relative risk aversion ρ

$$p = \frac{\rho}{x} \frac{\sigma^2}{2}.$$

- If wealth is $300,000, what is the coefficient of relative risk aversion?
- If the coefficient of relative risk aversion is 30, what is wealth?
- Briefly indicate in words (no calculations, just intuition) what these results would imply for the equity premium.

4. Courtroom Drama

A plaintiff and defendant are engaged in a civil suit. The plaintiff knows whether or not she will win the case if it goes to trial, but the defendant does not. It is common knowledge that the defendant beliefs the plaintiff has a 1/2 chance of winning the trial.

If there is a trial **both** pay a cost of 2. If the plaintiff wins the trial, then the defendant also has to pay the plaintiff 6. If the plaintiff loses the defendant pays nothing.

The plaintiff moves first and has two actions: ask for a low settlement, $m = 1$, or ask for a high settlement, $m = 3$. The defendant may pay the settlement and the games ends, or reject and a trial occurs.
- Draw the game tree.
- Find all pure Bayes-Nash equilibria.