Directions: Answer all questions, and be neat. If you discuss the questions in study groups, list the members of your study group, and make sure that the writeup is your own work. In particular, do not look at the O-R solutions manual.


2. O-R, exercise 217.3. You can formulate the game as defined in O-R, or as a carefully labelled game tree. Find all mixed-strategy Nash equilibria.

3. Player 1 is involved in an accident with player 2 with damages of $12,000. Player 1 knows whether or not she is negligent. Player 2 does not know player 1’s type, but instead assigns prior probability $\frac{1}{2}$ to each of the two types (negligent or not negligent). Player 1 must send player 2 a pre-trial take-it-or-leave-it offer, which must be either $4000 or $8000, after which player 2 decides either to accept or reject. If he accepts the offer, $m \in \{4000, 8000\}$, then player 1’s payoff is $-m$ and player 2’s payoff is $m$. If he rejects the offer, the case goes to trial, which player 1 wins if she is not negligent, and player 2 wins if player 1 is negligent. The loser pays the court costs of $2000$. Therefore, if the case goes to trial and player 1 is negligent, payoffs are $(-14000, 12000)$. If the case goes to trial and player 1 is not negligent, payoffs are $(0, -2000)$.

Formulate this as a signalling game and find all perfect Bayesian equilibria.