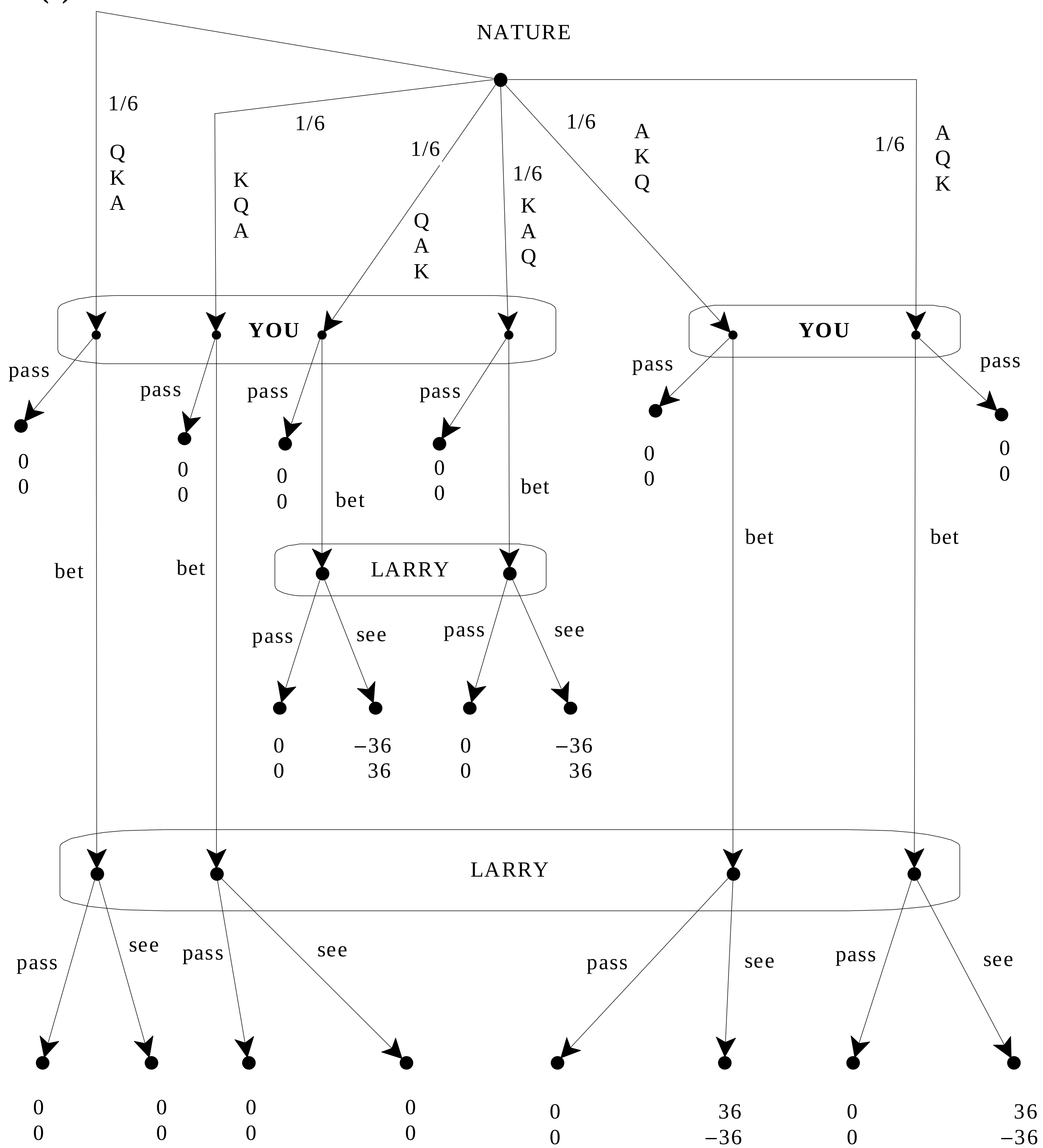
PRACTICE SECOND MIDTERM: ANSWERS

1. (a)



(b) Four strategies: (1) bet with ace, bet with not ace, (2) bet with ace, pass with not ace, (3) pass with ace, bet with not ace, (4) pass with ace, pass with not ace.

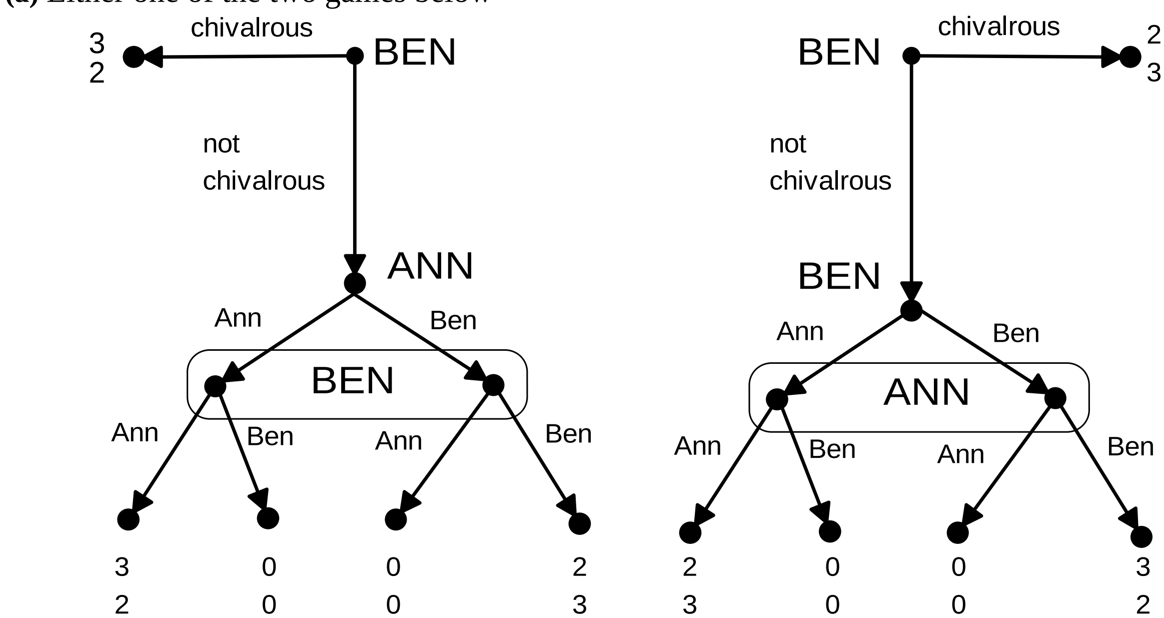
(c) Four strategies: (1) see with ace, see with not ace, (2) see with ace, pass with not ace, (3) pass with ace, see with not ace, (4) pass with ace, pass with not ace.

(d) the strategic form is as follows:

		Larry A see, not A see	A see, not A pass	A pass, not A see	A pass, not A pass
You	A bet, not A bet	0 , 0	− 12 , 12	12 , − 12	0 , 0
	A bet, not A pass	12 , − 12	**0 , 0**	12 , − 12	**0 , 0**
	A pass, not A bet	− 12 , 12	− 12 , 12	0 , 0	0 , 0
	A pass, not A pass	0 , 0	**0 , 0**	0 , 0	**0 , 0**

(e) There are four Nash equilibria: (A bet, not A pass; A see, not A pass), (A bet, not A pass; A pass, not A pass), (A pass, not A pass; A see, not A pass), (A pass, not A pass; A pass, not A pass).

2. **(a)** Either one of the two games below



The top number is Ann's payoff
the bottom number is Ann's payoff

The top number is Ben's payoff
the bottom number is Ann's payoff

(b)

		BEN chiv., Ann	chiv., Ben	not ch., Ann	not ch., Ben
ANN	Ann	3, 2	3, 2	3, 2	0 , 0
	Ben	3, 2	3, 2	0 , 0	2 , 3

(c) There are four pure-strategy Nash equilibria: [Ann, (chiv., Ann)] , [Ann, (chiv., Ben)] , [Ann, (not chiv., Ann)] , [Ben, (not chiv., Ben)].

(d) The only pure-strategy subgame-perfect equilibria are: [Ann, (chiv., Ann)] , [Ann, (not chiv., Ann)] , [Ben, (not chiv., Ben)]. In the subgame there is also a mixed-strategy equilibrium given by $\left(\underbrace{\begin{matrix} A & B \\ \frac{3}{5} & \frac{2}{5} \end{matrix}}_{\text{Ann's strategy}} , \underbrace{\begin{matrix} A & B \\ \frac{2}{5} & \frac{3}{5} \end{matrix}}_{\text{Ben's strategy}} \right)$ at which Ben gets an expected payoff of $\frac{6}{5} = 1.2$. Hence a third subgame-perfect equilibrium is $\left(\begin{matrix} Chiv & Not\,chiv \\ 1 & 0 \end{matrix} \;\vdots\; \begin{matrix} A & B \\ \frac{3}{5} & \frac{2}{5} \end{matrix} \;\middle|\; \begin{matrix} A & B \\ \frac{2}{5} & \frac{3}{5} \end{matrix} \right)$

3. The mixed-strategy equilibrium is given by:

$$\left(\begin{matrix} Inspect & Trust \\ \dfrac{1}{3-\beta} & \dfrac{2-\beta}{3-\beta} \end{matrix} \;\middle|\; \begin{matrix} Honest & Cheat \\ \frac{1}{2} & \frac{1}{2} \end{matrix} \right)$$

Thus the probability of cheating is independent of β. The reason for this is that the probabilities for the Seller must be such that the Buyer is indifferent between his two strategies. Thus they depend not on the Seller's payoff, but on the Buyer's payoffs. On the other hand, an increase in β will lead to a reduction in the probability of inspecting. The expected payoffs are:

Buyer: 2.5 independent of β.

Seller : $\dfrac{8-3\beta}{3-\beta}$ decreasing in β!

Thus the higher the fine, the better off the seller. The reason is that, the higher the fine, the lower the probability of being inspected and caught!