Bogazici University Department of Economics
EC 306
Homework 5

1- Provide (if possible) the complete characterization of a separating PBE for the beer-quiche game discussed in class (player 1 chooses a different action when he is of weak type vs. when he is of strong type).

2- Assume that the parameter values are as follows for the signalling model discussed in class.

\[ f(\theta_H) = 200 \quad \text{and} \quad f(\theta_L) = 50 \]
\[ c(e|\theta_H) = e^2 \quad \text{and} \quad c(e|\theta_L) = 2e^2 \]
\[ \pi_H = 0.5 \quad \text{and} \quad \pi_L = 0.5 \]

a- Provide (if possible) the complete characterization of a separating PBE.
b- Provide (if possible) the complete characterization of a pooling PBE.

3- Consider a market where sellers have perfect information about their valuations for their products and these valuations are uniformly distributed between 0 and 10,000. Buyers’ valuation for a particular product is exactly 50% above the sellers’ valuation for that item. However, buyers can not know their valuation prior to purchase. Assume that there’s a technology that allows sellers to costlessly and truthfully reveal their valuation for their product. Is it possible that in equilibrium sellers with valuations between 4000 and 6000 will not reveal their valuation and all other sellers will? Prove you answer.

4- Suppose that there are 4 bidders in a first price sealed-bid auction where a single good is being sold. The valuations of these bidders are uniformly distributed between 0 and 1. We know that the symmetric equilibrium involves each bidder using the bidding function \( \beta(v) = \alpha v \), where \( v \in [0, 1] \) is the valuation of the bidder and \( \alpha \) is a constant. Find the value of \( \alpha \).