

Economics 644 – Final

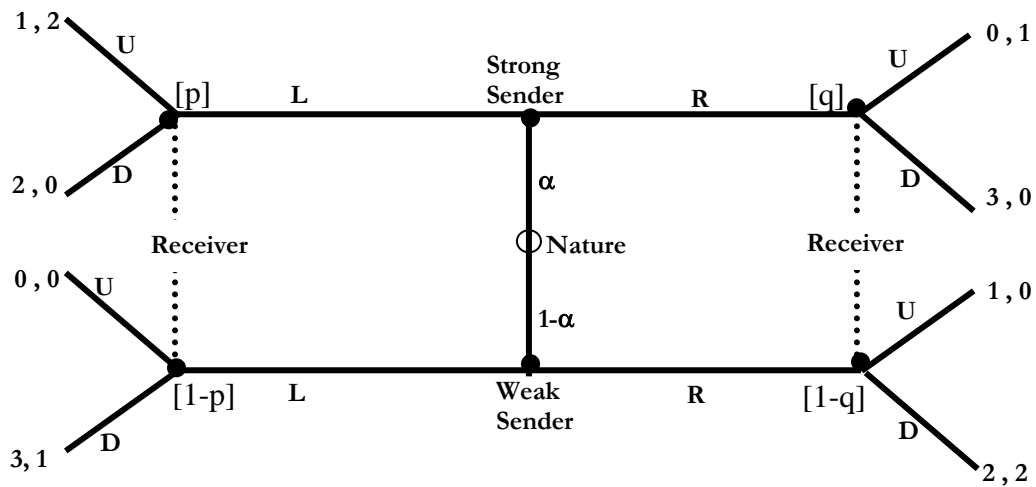
Please answer ALL questions on this examination. Be sure to explain any non-standard notation that you use and JUSTIFY your answers. Each question's weight is shown in parentheses. Good Luck!

1. *Simultaneous-Move Game (30%)*. Consider the following static game:

		Player 2		
		L	C	R
Player 1	T	(10 , 10)	(0 , 10)	(30 , 20)
	B	(30 , 20)	(0 , 10)	(10 , 10)

- a. Find all pure-strategy Nash Equilibria of the game.
- b. Eliminate any strictly dominated strategies for each player if they exist. Be sure to fully explain your answer.
- c. Find all mixed-strategy Nash Equilibria of the game. Include a plot of each player's best response correspondence showing all your Nash Equilibria.

2. Signaling (30%).



- Find the range of α such that there exists a Perfect Bayesian Equilibrium (PBE) involving the strategies (R,R) and (U,D) for the sender and receiver respectively.
- Now suppose $\alpha = 0.2$. Solve for a pooling PBE involving both types of sender playing L.
- How many subgames are in the game?

3. *Repeated Games (40%)*. Consider the following stage game, G:

		Player 2		
		X	Y	Z
Player 1	A	(1, 1)	(0, -2)	(10, -3)
	B	(-2, 0)	(0, 0)	(-1, 0)
	C	(-3, 10)	(1, -1)	(5, 5)

- Find the pure-strategy Nash Equilibrium of the game.
- Write down Grim-Trigger strategies for each player to sustain (5,5) as the average per-period payoff of $G(\infty, \delta)$. Solve for the critical discount factor, δ^* , such that cooperation is optimal in all periods for both players.
- Assume $\delta = 0.6$ and both players play Limited-Punishment Trigger strategies with a punishment phase of T periods. If possible, determine the length of the punishment period that is required to support (5, 5) as the payoff in every stage of a sub-game perfect equilibrium. (I.e., how small can we make T , such that no player finds it optimal to deviate in any period?).
- Repeat part (c) but now assume $\delta = 0.5$. Explain your reasoning carefully.
- Explain the Folk Theorem and sketch the feasible payoff region and “folk region” for the game G.