

Information Economics, Spring 2018 (106-2)

Pre-lecture Problems 2

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Note 1. The deadline of submitting the pre-lecture problem is **9:30 am, March 9, 2018**. Please submit a hard copy of your work to the instructor in class. Alternatively, you may submit a hard copy into the instructor's mailbox on the first floor of Management Building 2 by **9:10 am** of the same day. Late submissions will not be accepted. Each student must submit her/his individual work. Submit **ONLY** the problem that counts for grades.

Note 2. Please make your answer as clear (i.e., easy to read) as possible. We reserve the right to take away points when the correctness cannot be easily determined (e.g., when the writing is messy and cannot be easily understood).

1. (0 points) Find all the pure-strategy Nash equilibria in the following static game:

		Player 2		
		L C R		
		<hr/>		
	T	2, 4 3, 7 5, 3		
Player 1	M	4, 5 2, 0 2, 5		
	B	3, 5 2, 4 6, 6		

2. (0 points) Consider the following dynamic game between two players. In stage 1, player 1 chooses a number $y \in \{-2, -1, 0, 1, 2\}$. If player 1 chooses an odd number, player 2 chooses a number $x \in [\frac{1}{2}, 1]$; otherwise, player 2 chooses a number $x \in [-1, -\frac{1}{2}]$. In any case, player 2's payoff is xy , and player 1's payoff is $2 - xy$. Find the equilibrium behaviors and payoffs of the two players.
3. (10 points) Recall the supply chain pricing problem discussed in the videos. Suppose there are three firms in the supply chain, a manufacturer, a wholesaler, and a retailer. The manufacturer first charges the wholesaler a unit price w_1 , the wholesaler then charges the retailer a unit price w_2 , and lastly the retailer charges consumers a unit retail price r . Find the equilibrium outcome. Prove or disprove that $w_1^* < w_2^* < r^*$, where w_1^* , w_2^* , and r^* are the equilibrium prices charged by the manufacturer, wholesaler, and retailer. Give economic interpretations to support your mathematical conclusions.

Your equilibrium outcome should be functions of A , B , and C . If you need any assumption on these exogenous parameters, please state them.