Owen Graduate School of Management
Vanderbilt University
Sample Exam

Game Theory & Business Strategy

MGT 425

FINAL EXAMINATION

WRITE YOUR NAME ON THE **BACK** OF THIS EXAM ONLY

This final exam is worth 60 points.

There are 6 questions, each worth 10 points.
On the last page, you may answer any of the questions for a little extra credit.

Please identify any assumptions you are using in your analysis and show all work for partial credit. You may use the back of a page if necessary, but clearly indicate if you do so I will know to look there.

Most Importantly, Have Fun!

QUESTION 1.

Find all pure-strategy Nash equilibria for the following game.

		Mindy		
		X	Y	Z
Mork	A	10 , 30	0 , 20	20 , 30
	B	15 , 35	10 , 40	10 , 40
	C	25 , 25	5 , 25	5 , 25

QUESTION 2.

Consider the game below between Vizzini and Roberts. Each has two strategies. Vizzini's payoffs are given first (in italics). The game has a unique equilibrium.

		Roberts	
		Drink	Pass
Vizzini	*Safe*	*-3* , 3	*3* , -3
	Risky	*3* , -3	*-3* , 3

A. In equilibrium, what is Vizzini's expected payoff?

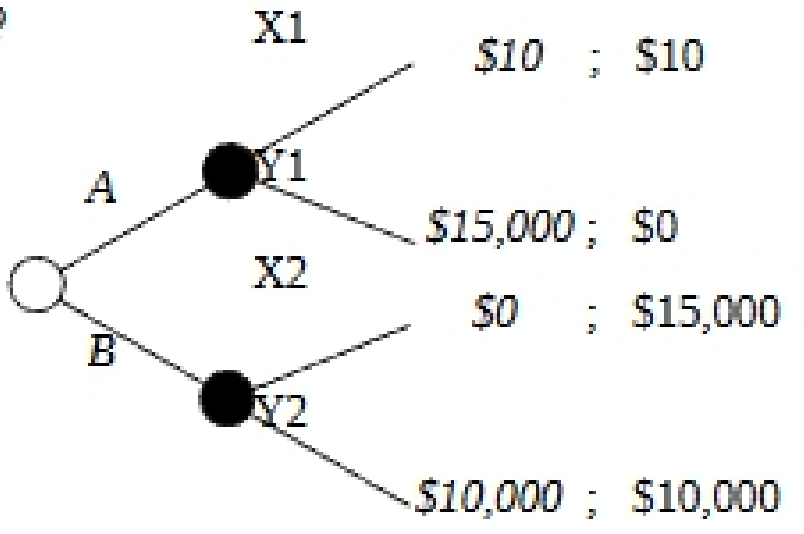
Recently, the rules of the game have changed. If Vizzini selects "Safe" and Roberts selects "Pass," the payoffs become (6,-6) instead of (3,-3). All other payoffs remain the same.

B. In equilibrium, is Vizzini *more or less likely to use "Safe"* now with (6,-6) than before with (3,-3)? Explain.

C. In equilibrium, is Roberts *more or less likely to use "Pass"* than before? Explain.

QUESTION 3.

What is the rollback equilibrium of this game?
Player 1 is indicated by a hollow circle
and player 2 by a solid circle.
Player 1's payoffs are listed first.



QUESTION 4.

You have invented SnoreMore, a new pill which increases both the frequency and volume of snoring. If your product launch is successful, you can take over the $600,000 market currently controlled by Date-Be-Gone-Spray. An unsuccessful launch results in profits of $0. You consider hiring an advertising agency. The agency can either work hard or "soft" on your account. Hard work requires the agency to invest $400,000 in resources, and soft work requires an investment of $200,000. Hard work results in a ¾ chance of success and soft work results in a ½ chance. You can only observe the success or failure of the project. The advertising agency is risk-neutral. What is the optimal combination of base salary and bonus to offer the agency?
Assume that the base salary cannot be negative.

Summary:	Value = $600K if successful and $0 if not		
	Hard work:	costs $400K	¾ chance of success
	Soft work:	costs $200K	½ chance of success