LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

Corporate Investment Appraisal

Masters in Finance

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Fall Semester

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Problem Set Nº 1:
Basic Concepts of Game Theory (Definition of Equilibrium)

HAND IN SOLUTIONS - CLASS OF OCTOBER 3rd, 2016

Problem 1: What are the Nash equilibria of the following game, after elimination of dominated strategies? Explain the steps followed in order to reach your results.

		Player B		
		Left	Center	Right
Player A	Top	4,0	1,2	1,2
	Middle	4,3	0,4	0,1
	Bottom	0,1	2,0	2,1

Problem 2: Two Californian teenagers, Bill and Ted, are playing a game with the following pay-offs matrix:

		Ted	
		Left	Right
Bill	Top	-2,-2	2,1
	Bottom	1,2	-1,-1

(a) Determine all equilibria in pure strategies. Explain.
(b) Determine all equilibria in mixed strategies. Explain.
(c) What's the probability of both players having positive pay-offs? Explain.

Problem 3: Consider the following coordination game:

		Player B	
		Left	Right
Player A	Top	2,2	0,0
	Bottom	0,0	1,1

(a) Compute all pure strategy equilibria of this game. Explain.
(b) Do any of these strategies dominate any of the others? Explain.
(c) Now suppose that Player A plays first, committing to choose either Top or Bottom. Are the strategies of question (a) still Nash equilibria?
(d) What are the "subgame perfect" equilibria of this game?

Problem 4: Consider the previous question's game, in which the players choose their strategies simultaneously.

(a) Represent the game in extensive form.

(b) Describe the NE / perfect Bayesian equilibria (PBE) of this game.