Eco 311/511: Game Theory
Quiz 2

November 8, 2023

Instructions: (i) Answer all questions. (ii) Copying answers/discussing with other student(s) during the quiz will result in a score of 0 in the assignment. Time: 1 hour.

1. What is Pairwise Stability? Explain in a network with $N = 4$. (3) [See slide 183]

2. Consider a 2-player game G where Player 1's set of actions is $A_1 = \{A, B, C\}$ and player 2's set of actions is $A_2 = \{a, b, c\}$. The payoffs are as follows:

	a	b	c
A	$(4, 4)$	$(-1, 5)$	$(2, 2)$
B	$(5, -1)$	$(1, 1)$	$(2, 2)$
C	$(2, 2)$	$(2, 2)$	$(3.5, 3.5)$

   (a) Find all pure strategy Nash equilibria for the above game. (2) Ans. (C,c)

   (b) Consider G^2: the finitely repeated game, where G is repeated for two periods. Is there a subgame perfect equilibrium of G_2 where (A, a) is played in the first period? Explain your answer. (3) Ans. No. By backward induction only (CC,cc) will be SPNE

   (c) Consider the infinitely repeated game G^∞. Describe a "carrot and stick" strategy profile where punishment is carried out for just ONE period and (A, a) is played otherwise. Show that it is a subgame perfect equilibrium strategy profile and find the corresponding discount factor. (5) Indicative solution is separately shared

3. "If a pair of pure strategies are strictly dominated then a mixed strategy involving these two strategies is also strictly dominated." Is this statement True or False? Support your answer with the help of an argument and an example. (2) True. Expected utility by re-assigning probabilities to the dominant action will be higher. (show formally)

4. A monetary authority (such as RBI) privately observes the government's commitment to maintaining low inflation levels. After knowing its type (either Strong or Weak), the monetary authority decides whether to announce that the expectation for inflation is either High or Low. A labor union, observing the message sent by the monetary authority, decides whether to ask for high or low salary raises (denoted as H or L, respectively). The game is represented as follows: Indicative solution is separately shared

Find a separating equilibrium (and the associated beliefs) for the above game. Write down your calculations/arguments clearly. (5)