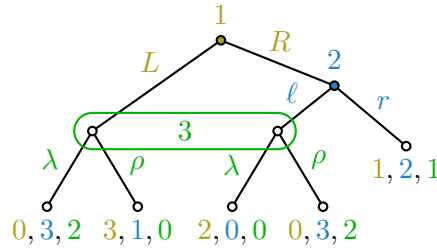# ECON 7011, Semester 110.1, Assignment 6

Please hand in your solutions via NTU Cool before 11:59pm on Tuesday, December 28

1. Consider the following three-player extensive-form game:

   (a) Find all perfect Bayesian equilibria.

   (b) Find all sequential equilibria.

2. Consider a model of insurance, in which the Client offers to pay a (H)igh or (L)ow premium for standardized coverage and—after observing the Client's offer—the Insurance Company decides to (A)ccept or (R)eject to insure the Client. The Client is either a high-risk or a low-risk individual, denoted by his/her type ϑ_H and ϑ_L, respectively. Insuring any individual in exchange for a high premium is profitable, but insuring individuals in exchange for a low premium is profitable only if it is a low-risk individual. Having no insurance is costly for the high-risk individual. Conditional expected payoffs for the two types are:

	A	R
H	$1, 1$	$-4, 0$
L	$3, -1$	$-4, 0$

ϑ_H

	A	R
H	$-1, 4$	$0, 0$
L	$1, 2$	$0, 0$

ϑ_L

   (a) Find all perfect Bayesian equilibria of this game, given the prior beliefs $\mu_0 \in [0, 1]$ of the Insurance Company that they are dealing with a high-risk Client.

   (b) Which perfect Bayesian equilibria in (a) satisfy the intuitive criterion?

3. Consider the job-market signaling game between a Job Seeker of unknown ability θ, uniformly distributed on $[0, \bar{\vartheta}]$ for some $\bar{\vartheta} > 0$, and an Employer. The Job Seeker chooses an education level e among two education levels $e_H > e_L$. After observing e, the Employer will offer a wage $w(e)$. Utilities are $u_1(\vartheta, e, w) = w - \frac{e}{\vartheta}$ and $u_2(\vartheta, w) = -(w - \vartheta)^2$. Recall that the Employer's best response to beliefs $\mu(e)$ is $w = \mathbb{E}_{\mu(e)}[\theta]$. You don't need to show this again.

   (a) For which values of $\bar{\vartheta}$, e_H, and e_L does there exists a perfect Bayesian equilibrium in cut-off strategies? Find the equilibrium.

   (b) Is the equilibrium you found in (a) a separating equilibrium? Explain.

   (c) Does the equilibrium you found in (a) satisfy the intuitive criterion? Explain.