



Course name: Economic Strategic Thinking
Course code: EC2109
Type of exam: Re-take exam
Examiner: Adam Jacobsson
Number of credits: 7.5 ECTS
Date of exam: May 3, 2020
Examination time: 9:00-12:00
Aids: You may use your book, notes, calculator.

Write your personal identity number on each answer sheet.

Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked.

The exam consists of 6 questions. Each question is worth 10 to 30 points, 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

Your results will be made available on your Ladok account (www.student.ladok.se) within 15 working days from the date of the examination.

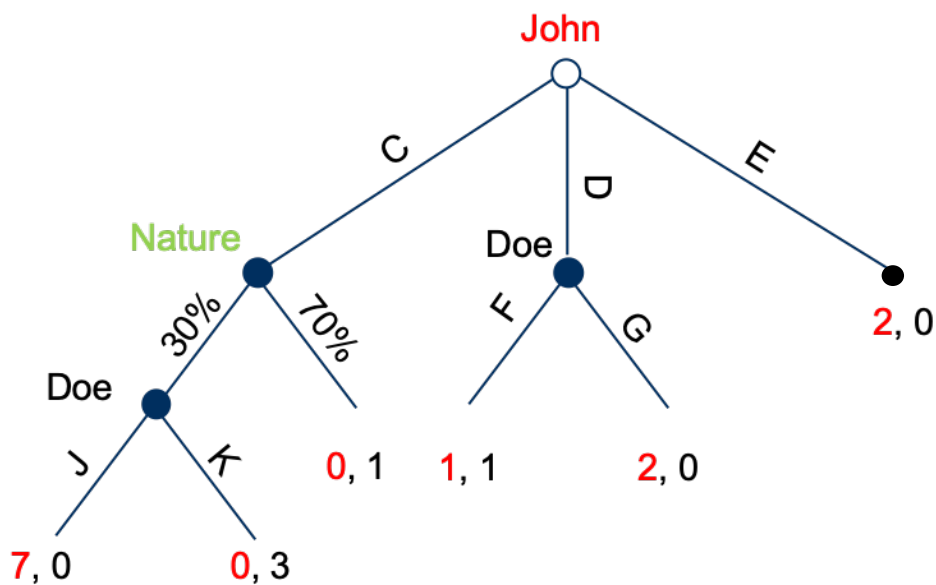
Good luck and

Keep calm and carry on!

PART A: shorter questions

QUESTION 1 (10 POINTS)

a) Consider the extensive form game below with players John, Doe and Nature. How many strategies does Doe have? (5 points)



b) What is/are the subgame perfect Nash equilibrium/s of the game? You must specify your answer with one or more strategy profile(s) that say(s) what John and Doe would do! (5 points)

QUESTION 2 (10 points)

Explain using your own words why you should shade your bid in a first-price sealed bid auction. What are the consequences of increasing or lowering your bid? Why does this not work in a Vickrey auction?

QUESTION 3 (10 POINTS)

Consider the following game in which Anne, Bob and Francisco face the choice whether to come on time or to arrive late for a meeting. The payoffs of the players are represented by the payoff tables below, and payoffs are denoted as usual, i.e. “X,Y,Z” means X to Anne, Y to Bob and Z to Francisco. What is the pure-strategy Nash equilibrium (NE) prediction for what will happen?

		Bob	
		On time	Late
Anne	On time	7,7,7	0,5,0
	Late	5,0,0	5,5,0

		Bob	
		On time	Late
Anne	On time	0,0,5	0,5,5
	Late	5,0,5	4,4,4

QUESTION 4 (10 POINTS)

Suppose there are two firms A and B that compete in a market by setting quantities. Firm A first sets its quantity a . Firm B then observes Firm A's choice and sets its quantity b . The market price is then determined so that the profit of Firm A is $(24 - a - b) \cdot a$ and the profit of Firm B is $(24 - a - b) \cdot b$. What quantities do the two firms choose in the subgame perfect Nash equilibrium of this game? We assume that both firms maximize profits.

PART B: Longer questions

QUESTION 5 (30 POINTS)

Two pharmaceutical firms, ACME and VIRUS, are considering whether to invest in the market for ventilators or not. If neither firm invests, the payoff to both firms will be zero. If only one firm invests, it becomes the monopolist. The payoff to the firm that does not invest is zero. If both firms invest, they become competitors in the market. If a firm has invested it then has to decide whether to set a high or a low price. If the firm is a monopolist it earns a payoff of 12 if it sets the high price and 2 for the low price. If both firms have invested the payoffs are the following: If both firms set the high price they both get a payoff of 6 and if they both set a low price they both get a payoff of 1. If one firm sets a high price and the other a low price, the high-price firm gets a payoff of 2 and the low-price firm a payoff of 4.



(A) (8 POINTS) This is a two-stage game. Draw the payoff matrix of the second stage game in the case where both firms have invested. What is/are the Nash equilibrium/s in that subgame?

(B) (8 POINTS) Draw the payoff matrix of the first-stage game where the two firms decide on investing in the market for ventilators or not. Make sure you can specify all the payoffs!

(C) (8 POINTS) What is the Nash equilibrium of the first-stage game? What is subgame perfect Nash equilibrium of the whole game?

(D) (6 POINTS) Draw the entire extensive form game.

QUESTION 6 (30 POINTS)

President Trump was asked a few years ago in an interview with the news agency Bloomberg whether he would rule out using tactical nuclear weapons to combat ISIS. His response was the following:

“I'm never going to rule anything out. Even if I felt it wasn't good, I wouldn't want to tell you that because at a minimum, I want them [ISIS] to think maybe we would use them [nuclear weapons]. [...] The fact is, we need unpredictability and when you ask a question like that, it's a very sad thing to have to answer it because the enemy is watching and I have a very good chance of winning and I frankly don't want the enemy to know how I'm thinking. But with that being said, I don't rule out anything.”

Discuss in relation to what you have learnt in this course the following questions:

- A) Do you think President Trump's discussion about the importance of unpredictability makes sense? (10 points)
- B) What risks are involved here? (10 points)

A Washington Post article two years ago questioned President Trump's commitment to NATO's article 5 (the principle of collective defense). This introduces unpredictability into foreign policy analysis.

- C) What are the possible consequences of this unpredictability for the credibility of NATO? (10 points)