

**i** Department of Economics

Examination paper for SØK2012 – Behavioral economics

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Examination date: 2018-12-15

Examination time (from-to): 09:00-13:00

Permitted examination support material: Support code C.

- *Matematisk formelsamling for økonomer*, Gyldendal, by Sydsæter, Strøm & Berck.
- *Economists' mathematical manual*, Berlin, 2005, by Sydsæter, Strøm & Berck.
- Calculator: Casio fx-82ES PLUS, Casio fx-82EX, Citizen SR-270X, Citizen SR-270X College or Hewlett Packard HP30S.

Other information:

Students will find the examination results in Studentweb. Please contact the department if you have questions about your results. The Examinations Office will not be able to answer this.

**1** Alicia and Benice have value function  $v(x)=x/2$  for gains and  $v(x)=2x$  for losses. For all the following questions, imagine that Alicia and Benice own stock in the same company. When they bought the stock, it was worth \$10. It later rose to \$17, but then dropped to \$12.

- a. Alicia uses the original price (\$10) as her reference point. If you ask her, how much would she say that she lost when the price dropped from \$17 to \$12? (8 points). Insert your answer here:
- b. Benice uses the peak price (\$17) as her reference point. If you ask her, how much would she say that she lost when the price dropped from \$17 to \$12? (8 points). Insert your answer here:
- c. Who is more disappointed when the price drops? (4 points)

Fill in your answer here:

**Select one alternative**

- Alicia
- Benice

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Maximum marks: 20

- 2 Let us say that you are facing a choice between A (3 utiles today), B (4 utiles next period), and C (7 utiles in two periods). You must choose one and only one of the three alternatives.
- a. If you are an exponential discounter with  $\delta=1/2$ , what do you choose? (5 points)

Select one alternative

- A
- B
- C

- b. If you are a naive hyperbolic discounter with  $\beta=1/2$  and  $\delta=1$ , what do you choose? (5 points)

Select one alternative

- A
- B
- C

- c. If you are a sophisticated hyperbolic discounter, with  $\beta=1/2$  and  $\delta=1$ , what do you choose? (5 points)

Select one alternative

- A
- B
- C

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Maximum marks: 15

- 3 Suppose that the following is true. Brain tumors in children are rare: the base rate is 1/10000. A child with a tumor is very likely to have occasional headaches: 9 out of 10 do. But there are many other reasons a child can have occasional headaches: of those who don't have a tumor, 1 in 10 have an occasional headache.

- a. What is the probability that a randomly selected child will have a tumor and an occasional headache? (5 points). Enter your answer here, using decimals:
- b. What is the probability that a randomly selected child will have no tumor and an occasional headache? (5 points). Enter your answer here, using decimals: .
- c. What is the probability that a randomly selected child will have an occasional headache? (5 points). Enter your answer here, using decimals: .
- d. What is the probability that a randomly selected child will have a tumor given that he or she has an occasional headache? (5 points). Enter your answer here, using decimals: .
- e. If a parent or medical provider is surprised that the answer to (d) is so low, what fallacy may he or she have committed? (5 points). Fill in your answer here: .

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Maximum marks: 25

4 Consider the following game:

	L	R
U	3, 2	0, 1
D	1, 0	2, 1

where Player 1 plays U or D and Player 2 plays L or R.

a. Suppose, first, that this game is played by two egoists, for whom  $u(x,y)=x$ .

i. Find all Nash equilibria in pure strategies. (5 points):

**Select one or more alternatives**

(U,L)

(U,R)

(D,L)

(D,R)

ii. There is also an equilibrium in mixed strategies.

Compute the probability  $p$  with which Player 1 plays  $U$ . (5 points). Answer with a fraction:  $p =$

Compute the probability  $q$  with which Player 2 plays  $L$ . (5 points). Answer with a fraction:  $q =$

Compute the expected payoff for Player 1. (5 points). Insert your answer here:

Compute the expected payoff for Player 2. (5 points). Insert your answer here:

b. Suppose, next, that this game is played by two utilitarians, for whom  $u(x,y)=x+y$ .

i. Find all Nash equilibria in pure strategies. (5 points).

**Select one or more alternatives**

(U,L)

(U,R)

(D,L)

(D,R)

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Maximum marks: 30

5 Give a description of Libertarian paternalism and the nudge agenda (max 10 points) .

**Fill in your answer here**

Format | **B** | *I* | U |  $x_2$  |  $x^2$  |  $I_x$  |  |  |  |  |  |  |  |  |  |  $\Sigma$  | ABC | 

Words: 0

Maximum marks: 10