Stockholm University
Department of Economics

Course name:	Intermediate microeconomics
Course code:	EC2101
Type of exam:	Retake
Examiner:	Adam Jacobsson
Number of credits:	7,5
Date of exam:	190330
Examination time:	09.00-14.00
Aids:	No aids are allowed.

Write your identification number on each answer sheet (the number stated in the upper right hand corner on your exam cover).

Start each new question on a new 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 5 questions. Questions 1-3 are worth 25 points each, question 4 is worth15 points and question 5 is worth 10 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. If you have the course credit you do not answer question 5.

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!

When in doubt, follow your nose!

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Question 1

Bilbo can consume two goods, good 1 and good 2 where x_1 and x_2 denote the quantity consumed of each good. These goods sell at prices p_1 and p_2, respectively. Bilbo's preferences are represented by the following utility function: $u(x_1, x_2) = \sqrt{x_1 x_2}$. Bilbo has an income of m.

a) Derive Bilbo's Marshallian demand functions for the two goods.
(10 points)

b) Assume that $p_1 = 5, p_2 = 5$ and $m = 100$. What are Bilbo's demands for good 1 and good 2? What share of his income is spent on good 1?
(5 points)

c) Are the goods i) normal? ii) ordinary? Explain your answer!
(5 points)

d) Suddenly, p_1 increases to 10. What are the income and substitution effects? How much does Bilbo consume of goods 1 and 2 after the price increase? What share of income is spent on good 1?
(5 points)

Question 2

Frodo has stolen Gollum's precious, precious ring. Understandably, Gollum is quite upset about this and wants to steal back his ring. Gollum has to decide whether to attack Frodo or not and Frodo has to decide whether to wear the ring or keep it in his pocket. If Gollum attacks and Frodo has the ring in his pocket, Gollum will be able to steal the ring. Should Frodo wear the ring when Gollum attacks he will be invisible and will keep the ring. Attacking Frodo is costly for Gollum. Frodo has, however, noticed that wearing the ring is costly (and scary) and would rather not wear it if possible. Gollum and Frodo do not know their opponent's choice when making their decisions (they are in different parts of a cave system). The payoffs are illustrated in the payoff matrix below where Gollum's payoff is listed before Frodo's in each square.

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		Frodo	
		Wear ring	Ring in pocket
Gollum	Attack	-1, -1	1, -2
	No attack	0, -1	0, 1

a) Can you find any pure strategy Nash equilibrium/a in this game? (5 points)
b) Assume we allow Frodo and Gollum to play mixed strategies, find their best response functions/correspondences and draw them in a diagram. (10 points)
c) Can you find any Nash equilibria in this game (including mixed strategy equilibria)? If so, illustrate it/them in the diagram from b). (5 points)
d) Assume now that Gollum can observe Frodo's choice before he decides whether to attack (he is so sneaky) and that Frodo knows this. Will Frodo then wear the ring or not? Explain! (5 points)

Question 3

In Middle-Earth there are three different assets. There are no other assets in the economy. The price of one unit is the same for all assets. There is an equal probability of either "Gandalf wins" or "Sauron wins" in this economy and the return of each asset varies over these states of the world according to the following table:

	"Gandalf wins"	"Sauron wins"
Dragon slush inc.	-2	10
Samwise beer inc.	6	2
Eagle seed inc.	10	-2

a) What is the expected return of each asset? (5 points)

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b) What is the variance of the return of each asset? (5 points)
c) Bilbo Baggins is risk averse and can buy only one asset. Which one should he buy and why? (5 points)
d) Frodo is also risk averse but can buy two assets. Which two assets should he buy and why? (5 points)
e) Given the asset prices, is the Middle-Earth asset market in equilibrium according to the CAPM-model? Explain your answer. (5 points)

Question 4

The Elf shield manufacturer, "Weakest link", uses capital, K, and labour, L, to produce shields according to the following production function: $f(K,L) = K^{\frac{1}{4}}L^{\frac{2}{4}}$. Let r and w be the prices of capital and labour respectively. P is the price of shields. The markets for shields, capital and labour are all perfectly competitive.

a) Does Weakest link's production technology exhibit increasing, decreasing or constant returns to scale? Explain your answer using mathematics. (5 points)
b) Derive the long run (that is, both capital and labour are variable inputs) conditional factor demand equation for labour (hint: set up the cost minimization problem for producing the quantity $\bar{y}$). (10points)

Question 5

If you have the course credit, do not answer this question.

Assume that firms who want to hire workers do not know the productivity of their new employees. The workers, on the other hand, know their productivity. Describe what sort of problems a situation like this can lead to and suggest a possible solution. Similar problems can occur in the market for used cars (or, carts as they were called in Middle-Earth) where buyers do not know the quality of the cars while the sellers do. Relate the problems in the labor and cart markets and discuss their respective possible solutions. (10 points)