



Final Exam

Version B

First name:

Last name:

Matr.-No.:

- **Available time:** 120 minutes
- **Achievable points (max.):** 120 points
- **Permitted aid:** Pocket calculator (non-programmable)
- **General information:**

1. You have 30 questions all together. Answer all questions. In all questions *one out of three* answers is correct.
2. In each question points are given as follows:

points	You mark ...		
	... (only) correct	... (only) wrong	... correct and wrong/nothing
	+4	-2	0

3. Feel free to use the empty space on the present exam for your personal calculations or notes. But note that **whatever you write on these pages will be ignored during correction!** Only the answer sheet will be evaluated.
4. Return *all* the paper you received (without exception).

GOOD LUCK!

1. Consumer Theory

1. Terry buys 10 pounds of cheese and 12 boxes of crackers each month. A pound of cheese costs €5 and a box of crackers costs €3. If she is maximizing her utility, what is her monthly income?
 - (a) €86
 - (b) €90
 - (c) There is not enough information to determine her monthly income.
2. Consider the utility-function $u(x_1, x_2) = x_1^a x_2^b$, prices p_1 and p_2 and income m , where $x_1, x_2 \geq 0$ and $p_1, p_2, m > 0$. What is the corresponding Marshall demand?
 - (a) $x_1^* = \frac{m}{p_2(1+\frac{a}{b})}, x_2^* = \frac{m}{p_1(1+\frac{b}{a})}$
 - (b) $x_1^* = \frac{m}{p_2(1+\frac{b}{a})}, x_2^* = \frac{m}{p_1(1+\frac{a}{b})}$
 - (c) $x_1^* = \frac{m}{p_1(1+\frac{b}{a})}, x_2^* = \frac{m}{p_2(1+\frac{a}{b})}$
3. What is the indifference curve given the utility function in Problem 2 at a utility level of 1?
 - (a) $x_2(x_1) = \sqrt[3]{x_1^{-b}}$
 - (b) $x_2(x_1) = \sqrt[3]{1 + x_1^{-a}}$
 - (c) $x_2(x_1) = \sqrt[3]{x_1^{-a}}$
4. Assume that, for the consumer in Problem 2, good 2 is inferior. Is this compatible with given informations?
 - (a) Yes, if $\frac{a}{b} \in (-\infty, -1)$.
 - (b) No, this contradicts given informations.
 - (c) Yes, if $\frac{b}{a} = 0$.
5. Based on his preferences, Bill is willing to trade 4 movie tickets for 1 ticket to a basketball game. If movie tickets cost €8 each and a ticket to the basketball game costs €40, what should Bill do?
 - (a) Bill should make the trade.
 - (b) Bill should not make the trade.
 - (c) Cannot be answered without further information.
6. If, at current levels of consumption, the marginal utility of an apple is 10 and the price of an apple is €5, and the marginal utility of diet coke is 20 and the price of a diet coke is €2.5, then ...
 - (a) ... the individual should consume more diet coke and fewer apples.
 - (b) ... the individual should consume more apples and less diet coke.
 - (c) ... the individual should not increase consumption of any of the goods.
7. Let a consumers utility function be $u(x_1, x_2) = x_1 + 2x_2$ and her budget "line" $4x_1^2 + 2x_2 = 6$. Then the Marshall demand will be ...
 - (a) $x^* = (0.1, 2.37)$
 - (b) $x^* = (0.125, 2.97)$
 - (c) $x^* = (0.13, 2.72)$

8. Jessica mainly derives utility from two activities, going on a holiday (x_1) to a warmer climate and going out for Italian dinners (x_2). Jessica's utility function can be stated as $u(x_1, x_2) = x_1^2 x_2$. The price of holidays was €400 last year and meals cost €20. This year the price of meals has risen to €30, while the price of holidays is constant. Jessica's income in both years was €2100. How many meals are demanded in both years?
 - (a) 35 in the first year and 23.33 in the second.
 - (b) 35.56 in the first year and 23 in the second.
 - (c) 36.65 in the first year and 23.23 in the second.
9. Reconsider Problem 8. What is the change in consumer surplus due to the price change?
 - (a) -238.38
 - (b) -283.83
 - (c) -328.28
10. How should Jessica in Problem 8 be compensated in order to restore her original utility level (Hicks)?
 - (a) $\Delta m = 303.90$ Euro
 - (b) $\Delta m = 964.80$ Euro
 - (c) $\Delta m = 350$ Euro

2. Production and profit maximization

11. Let a producer's production function be $f(x) = \frac{1}{x}$, then it is ...
 - (a) ... homogeneous of degree -1
 - (b) ... homogeneous of degree 1
 - (c) ... not homogeneous at all.
12. A producer's production function is $f(x_1, x_2) = \min\{3x_1, 2x_2\}$. The factor prices are $w_1 = 3$ and $w_2 = 4$ in situation 1 and $w_1' = 6$ and $w_2' = 8$ in situation 2. What is the cost-minimizing factor demand in both situations if 20 units should be produced?
 - (a) Cannot be quantified without cost function but in situation 1 they are twice as high as in situation 2.
 - (b) $x_1^* = 0.15, x_2^* = 0.1$ in situation 1 and $x_1^* = 0.3, x_2^* = 0.2$ in situation 2.
 - (c) $x_1^* = 6.67, x_2^* = 10$ in both situations.
13. Let the marginal revenue of a monopolist be $r'(y) = 200 - y$. Then the market price at supplied quantity $y = 30$ would be ...
 - (a) ... homogeneous of degree -1
 - (b) ... homogeneous of degree 1
 - (c) ... not homogeneous at all.

- (a) 185
- (b) 140
- (c) 115

14. Assume the monopolist's cost function $c(y) = y^3 + 3$ in Problem 13. What would be the difference between the actual market price and the efficient market price?

- (a) 4
- (b) 0.4
- (c) 0.04

15. Should the monopoly in Problem 14 be regulated to the efficient market price?

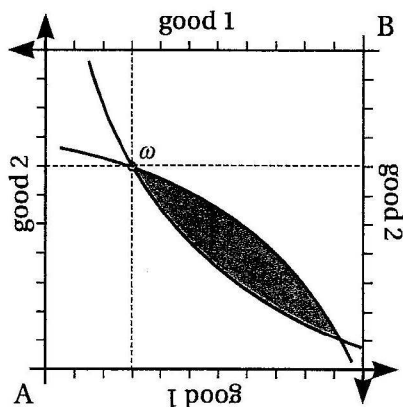
- (a) Yes, because this would increase welfare and monopolist would stay in the market.
- (b) No, because it is a natural monopoly and a regulation would make the market break down.
- (c) No, because efficiency is usually a bad thing.

16. Is there a condition under which the monopolist supplies the efficient quantity without regulation?

- (a) No.
- (b) Yes. If demand is perfectly elastic.
- (c) Yes. If demand is perfectly inelastic.

3. General Equilibrium Theory

17. In the following *Edgeworth Box* let ω be the initial endowment of two economic actors



Which statement is correct?

- (a) All allocations outside the greyed "lens" are blocked by both economic actors.
- (b) All allocations outside the greyed "lens" are blocked by at least one economic actor.
- (c) All allocations inside the greyed "lens" are blocked by both economic actors.

18. Which statement is correct?

- (a) All allocations on the contract curve are individually rational.
- (b) All allocations on the contract curve are pareto-efficient.
- (c) In all allocations on the contract curve both actors have incentives to trade.

4. Game Theory

19. Find all Nash-Equilibria in the following game:

Strat.		B	
		B ₁	B ₂
A	A ₁	3 1	2 4
	A ₂	2 1	1 2

- (a) (A_1, B_2)
- (b) $(A_1, B_2), (A_2, B_2)$
- (c) There are no Nash-Equilibria.

20. What is true?

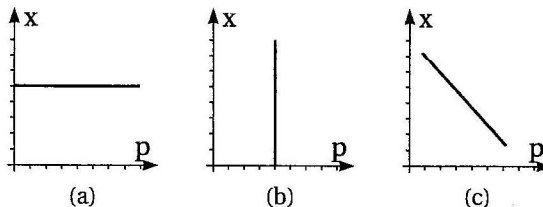
- (a) A Nash-Equilibrium is always an equilibrium in dominant strategies.
- (b) In every normal form game with two players there is at least one Nash-Equilibrium.
- (c) It can happen that there is no Nash-Equilibrium in pure strategies but, assuming risk-neutrality, there is one in mixed strategies.

5. Market and Endowment Economies

21. Consider the inverse market demand $p(x) = 8 - 2x$. What is the sum of the elasticities at $x = 2$ and $x = 3$?

- (a) $-\frac{4}{3}$
- (b) $-\frac{5}{4}$
- (c) $-\frac{6}{5}$

22. Let there be perfect competition in the market. How will the market demand look like from the viewpoint of a single supplier?



23. Let the market demand be $D(p) = ap + b$ and the market supply $S(p) = cp + d$, then the equilibrium is at ...

- (a) $p^* = \frac{d-c}{a-c}, x^* = \frac{bd-ac}{a-c}$
- (b) $p^* = \frac{c-b}{c-a}, x^* = \frac{ac-bd}{c-a}$
- (c) $p^* = \frac{d-b}{a-c}, x^* = \frac{ad-bc}{a-c}$

24. Consider the previous Problem 23. What are reasonable parameter restrictions?

- (a) $a < 0, b = 0, c > 0, d = 0$
- (b) $a > 0, b > 0, c < 0, d > 0$
- (c) $a < 0, b > 0, c > 0, d = 0$

25. Assume that a price floor at $\check{p} = -\frac{b}{a}$ in Problem 23. What is the total welfare in this market? (Hint: Draw the inverse functions)

- (a) $\frac{(b-d)(ad-bc)}{(a-c)^2}$
- (b) $\frac{(b-d)(a-c)}{2}$
- (c) There is no welfare.

26. Which statement is true?

- (a) If the supply is perfectly inelastic, then a quantity tax will be entirely paid by the producer.
- (b) The more elastic the supply the less of a quantity tax is paid by the consumer.
- (c) A quantity tax is always paid by both in equally large shares, no matter what the elasticity is.

27. Consider the inverse demand function $p(x) = \frac{a}{b} - \frac{1}{b}x$. What is the price at which a 1% price increase causes a 1% decrease in demand?

- (a) $p = \frac{a}{2}$
- (b) $p = \frac{a}{2b}$
- (c) $p = \frac{2a}{b}$

6. Preferences

28. Let the following bundles be given:

	good 1	good 2
A	100	80
B	110	75
C	120	70

A rational consumer having well-behaved preferences is indifferent between bundle A and C. Which bundle will he choose?

- (a) Either A or C
- (b) B
- (c) Cannot be determined without a utility function.

29. At prices $p = (2, 3)$ a consumer chooses bundle $x = (3, 4)$ and at prices $q = (5, 2)$ bundle $y = (2, 4)$. These choices

- (a) ... satisfy WARP.
- (b) ... violate WARP.
- (c) ... violate WARP but satisfy SARP.

30. Let $A = \{\text{coke}, \text{fries}, \text{sausage}\}$ be a set and $R = \{(\text{coke}, \text{fries}), (\text{coke}, \text{coke}), (\text{fries}, \text{sausage})\}$ be a binary relation on A. What is correct?

- (a) R is not complete and R is transitive.
- (b) R is reflexive but not transitive.
- (c) R is neither symmetric nor is it transitive.