

Matr.-Nr. \_\_\_\_\_

Name: \_\_\_\_\_

Final Exam: Principles of Economics I (5004)

Examiner: Prof. Dr. Schwödiauer/Prof. Dr. Wolff

Term: Winter 2002/03

**No aids permitted except for English language dictionaries without any marking.**

*There are 25 different problems on this exam. Make sure that this copy of the exam is complete and write your matriculation number and your name into the appropriate fields on top of this page. Work on all 25 questions. Do not mark more than one answer to any of the questions, otherwise the question is considered to be answered incorrectly. For every correct answer you obtain two points. For every false answer one point is subtracted. If no answer is marked you neither obtain nor lose a point. In order to pass this exam you need at least 25 points.*

1. Which of the following statements is true?

- a) If an allocation is Pareto-efficient it is always productive-efficient.
- b) If an allocation is productive-efficient it is always Pareto-efficient.
- c) There is no difference between Pareto-efficiency and productive-efficiency.

2. The company Webdesign.biz is limited to choose a single contract out of four options denoted by A-D. Profits are given as follows: { A: 700€; B: 1,500€; C: 500€; D: 200€}. What are the opportunity costs of the company's profit-maximizing choice?

- a) 800 €
- b) 700 €
- c) 1,500 €

3. The two consumption goods A and B are substitutes. If the price of good B increases significantly it is most likely that the equilibrium market price of good A in the short run

- a) increases
- b) falls
- c) remains constant

4. Since the equilibrium market price of notebooks decreased the demand for notebooks must have

- a) increased
- b) decreased
- c) responded in a way which cannot be predicted from the price movement alone

5. Suppose the market for cereals in Macromania can be described by  $D(P) = 400 - 3P$  and  $S(P) = 200 + P$  where  $P$  denotes the price level.  
Mark the correct market equilibrium price:

- a)  $P^* = 150$   
 b)  $P^* = 100$   
 c)  $P^* = 50$

6. Suppose the market for mathematical textbooks in Micromania can be described by  $D(P) = 110 - 4P$  and  $S(P) = 10 + P$  where  $P$  denotes the price level.  
Mark the correct market equilibrium quantity:

- a)  $Q^* = 10$   
 b)  $Q^* = 20$   
 c)  $Q^* = 30$

7. The price-elasticity in a market is given by  $E_D = 0.01$ . This indicates that a price increase of 2% leads to a decrease in demand by

- a) 2%  
 b) 0.2%  
 c) 0.02%

8. An artist worked for four hours already. In the fourth hour of work he completed one picture. His average product of working four hours equals 0.75 pictures per hour. In the fifth hour he expects to complete half a picture. It follows that his average product of working five hours

- a) exceeds 0.75  
 b) equals 0.75  
 c) is lower than 0.75

9. Suppose that there are 11 firms in the industry where a single firm has a market share of 90% and all its competitors have a market share of 1%. Mark the correct statement:

- a) The HHI equals 8110.  
 b) The HHI equals 8111.  
 c) The 4-firm-concentration ratio is 93%.

10. What completes a correct statement? If the 10-firm concentration ratios of two different industries coincide then

- a) the corresponding HHIs must coincide, too.  
 b) the summations of the ten largest market shares in these industries must coincide, too.  
 c) both industries must exhibit the same degree of market imperfection.

11. The private enterprise Macrosoft Inc. is the single producer of lecture slide-sets in Micromania. The controlling department of Macrosoft found that the firm's price level exceeds marginal cost. In order to boost its profits, the enterprise should

- a) respond in a way that cannot be predicted from the given information.
- b) increase its level of production.
- c) decrease its level of production.

12. In the bankrupt city of Berlin, the city's senate decides to auction off some of its museums' fine art. In one of these auctions a Stradivarius is sold to one of four rational bidders. The employed auction format is second-price sealed-bid with a minimum price of 220,000 €. The next table summarizes the bidders' private valuations:

bidder	A	B	C	D
valuation	500,000 €	200,000 €	250,000 €	700,000 €

Mark the correct statement:

- a) Bidder D wins the auction and pays 500,000 €.
- b) Bidder D wins the auction and pays his bid.
- c) Bidder D wins the auction and pays 220,000 €.

13. Which statement of the following ones is true?

- a) If buyers have a common valuation of some object to be auctioned off, the Winner's Curse always occurs.
- b) If the Winner's Curse occurs in a pure common-value auction, the resulting allocation of the object is Pareto-inefficient.
- c) In a private-value English auction with identical bidders, the allocation is always Pareto-efficient.

14. The two softdrink producers ExcellentTaste and Bubble-Factory simultaneously decide on its annual marketing budgets in 2003. The strategic form for this situation is given as follows:

		ExcellentTaste		Utility of ET
		low budget	high budget	
Bubble-Factory	low budget	80 / 120	20 / 180	Utility of B-F
	high budget	160 / 40	40 / 60	

Mark the correct statement:

- a) The only Nash-equilibrium in this game is (high budget, high budget).
- b) The only Nash-equilibrium in this game is (low budget, low budget).
- c) There is no (pure-strategy) Nash-equilibrium.

15. Three Bachelor students of Economics argue about the Bertrand model of oligopoly with two identical firms. Each firm produces at constant unit costs of 5 € and no firm faces capacity constraints. Consumers only buy from that firm charging the lowest price. In case of identical prices, revenue splits equally between both firms. Who is right?

- a) A: "Believe it or not, charging 5 € per unit is a dominant strategy!"
- b) B: "As long as both firms charge the same price exceeding 5 €, a Nash-equilibrium is played."
- c) C: "There is only one Nash-equilibrium in this game: Each firm charges 5 € per unit."

16. In a perfectly competitive industry, all firms sell any level of production immediately at the going market price. Mark the correct statement:

- a) The condition  $P = MC(q_i)$  always leads to a profit-maximizing supply-decision. ( $P$  is the market price and  $q_i$  denotes firm  $i$ 's production level)
- b) It is impossible to observe positive economic profits in this industry.
- c) In the long run, each firm in the industry produces at its efficient scale.

17. The firm Webdesign.biz produces websites and operates under perfect competition. The unreliable consultancy McClever claims to have identified the firm's supply curve as:

$$s(q) = \begin{cases} 0 & \text{f. } P \leq AVC_{\min} \\ P/25 & \text{f. } P > AVC_{\min} \end{cases}$$

The following information about the company's cost structure is available and verified:

$MC(q) = 50q$ ,  $AVC(q) = 20q$ ,  $AC(q) = 1,225/q + 25q$ . The going market price is  $P = 250$ .

Which level of website production,  $q^{SR}$ , maximizes Webdesign.biz' profit in the short run?

- a)  $q^{SR} = 5$
- b)  $q^{SR} = 0$
- c)  $q^{SR} = 10$

18. Suppose that some perfectly competitive industry is populated with two types of enterprises which differ in cost structures: Firms of enterprise-type A have an efficient scale given by 200 with corresponding minimum average costs equal to 80. The efficient scale of type B-firms is 100 with  $AC_{\min} = 50$ .

Mark the correct statement:

- a) In the long run, there will be firms of both types in the industry.
- b) In the long run, there will be only firms of type A in the industry.
- c) In the long run, there will be only firms of type B in the industry.

19. Karl's sister Emily is a bachelor student of Economics and recently tried to extract her brother's preference ordering of consumption bundles A-E. It turned out that Karl's ordering is reflexive and complete. In addition, in some pairwise comparisons of bundles he revealed  $A > B$ ,  $B > C$ ,  $A > C$ ,  $C > D$ ,  $E > C$ ,  $D > E$ ,  $B > E$  where " $X > Y$ " means that Karl strictly prefers bundle X to bundle Y.

Mark the correct statement:

- a) Emily is correct in concluding that there exists a utility function describing Karl's choice behavior regarding bundles A-E.
- b) Emily is correct in concluding that there cannot exist a utility function describing Karl's choice behavior regarding bundles A-E.
- c) It is impossible to say from the given information if a utility function exists.

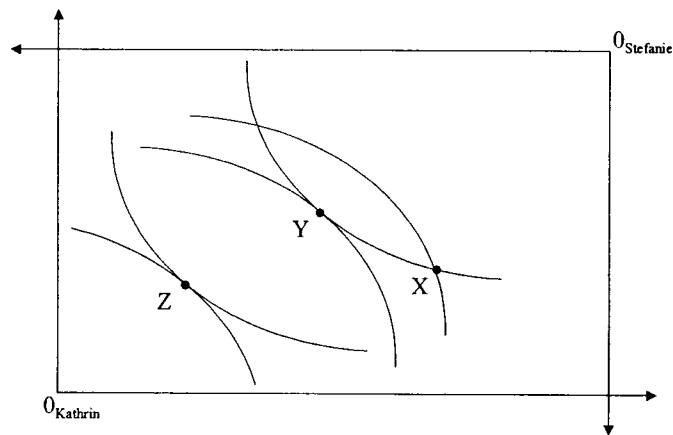
20. Consider the utility function  $U(x_1, x_2, x_3) = x_1^2 + x_2 \cdot x_3$  and consumption bundles  $A = (4, 2, 2)$  and  $B = (2, 8, 2)$  where the  $i$ -th entry gives the quantity of the  $i$ -th commodity. Mark the correct statement:

- a) Both bundles lie on the same indifference curve.
- b) Bundle B lies on a higher indifference curve than bundle A.
- c) Either bundle A or B lies on a higher indifference curve than the other one.

21. Britney consumes two different cereals: fruit cereal F and muesli cereal M. The fruit cereal is priced at 3 € per bag while a single bag of cereal M costs 1.50 €. Britney is willing to exchange six bags of cereal M for three bags of cereal F and vice versa while her utility remains unchanged. If she wants to maximize her well-being subject to her budget for cereals fixed at 20 € then she should

- a) buy only the fruit cereal.
- b) buy only the muesli cereal.
- c) buy any mix of cereals since any consumption pattern maximizes her utility.

22. The following figure depicts a typical Edgeworth-box.



Mark the correct statement:

- a) Allocation Z is Pareto-inefficient.
- b) Allocation Z is Pareto-efficient and Stefanie receives more than Kathrin of either good.
- c) Allocation Z is Pareto-efficient and Kathrin receives more than Stefanie of either good.

23. In an exchange economy, there are two individuals, A and B, and two consumption goods, 1 and 2. Individual A is endowed with 10 units of good 1 and 0 units of good 2. In contrast, individual B is endowed with 0 units of good 1 and 10 units of good 2. Moreover, the marginal rates of substitution for both individuals are constants and given as follows:

$$\text{Individual A : } \quad \text{MRS}_{2,1}^A = 2 \left[ \frac{\text{units of good 2}}{\text{unit of good 1}} \right]$$

$$\text{Individual B : } \quad \text{MRS}_{1,2}^B = 2 \left[ \frac{\text{units of good 1}}{\text{unit of good 2}} \right]$$

Mark the correct statement:

- a) The original distribution of goods is Pareto-efficient, because marginal rates of substitution are equalized.
- b) The original distribution of goods is Pareto-efficient, although marginal rates of substitution cannot be equalized.
- c) The original distribution is Pareto-inefficient and both individuals are better off if A gets all units of good 2 and B all units of good 1.

24. Suppose that the economies Potterville and Fantasia are both closed, i.e. there is no trade between those economies (or with any other one). In Potterville and Fantasia the two goods brooms and crystal balls are produced with labor being the only factor of production. The following table summarizes the available production technology in each economy:

	Necessary Labor for Production [labor hours]	
	In Potterville	In Fantasia
1 broom	7	3
1 crystal ball	8	6

If both economies engage in trade in the absence of any transaction costs (such as costs of transportation), the principle of comparative advantage predicts that

- a) Fantasia specializes in the production of crystal balls and imports brooms from Potterville.
- b) Fantasia specializes in the production of brooms and imports crystal balls from Potterville.
- c) there is no trade because it is not beneficial to Fantasia.

25. Again, consider the Ricardian trade-example given in question 24. If there is trade between both economies, the relative price of crystal balls in Fantasia will be

- a) equal to 2 [brooms/crystal ball].
- b) lower than 2 [brooms/crystal ball].
- c) greater than 2 [brooms/crystal ball].

### Question 3: Financials

- Describe the differences between private and public issues of equity.
- Describe the stages of venture capital financing.

### Question 4: Personell

- Describe the main ideas of and the influences on the three problem areas of personnel planning!
- As a production manager in joinery it is your task to ensure the production of 2100 chairs a day. You know that one employee is able to build a chair in 20 minutes. All employees work 7 hours a day. How many employees do you have to assign to succeed in producing 2100 chairs?

### Question 5: Product Life Cycle Concept

Describe the different phases of a product life cycle and discuss the changing focus of production strategy with respect to these phases.

### Question 6: Financial Planning and Financial Performance

- At the beginning of April 2003 there are 2000 units of a raw material in stock. They are valued at \$20 per unit. In April another 6000 units are purchased at a price of \$22 per unit and 1750 units are used for production. In May 2003 further 2500 units are purchased at a price of \$18 per unit. Nothing has been taken out of the stock in May.

Determine

- the value of the material per unit according to the weighted average method at the end of April
  - the value per unit of material used for production in April 2003.
  - the total \$ value of the stock at hand beginning May 2003
  - the total \$ value and the value per unit of the stock at hand at the end of May 2003.
- A company plans to sell 60 000 units of a product over the year 2003, 20% in the first, 20% in the second, 50% in the third and the rest in the fourth quarter of the year.

The inventory of finished products at the beginning of the year is 5 000 units. The safety stock policy of the company requires that at the end of each quarter at least 50% of next quarter's sales should be on hand. The required stock at the end of the year is 6 000 units.

Determine the production volumes for each of the four quarters of the year so that required stock sizes are met but not exceeded.

**Good Luck!**



### Final Exam

You will be able to make a maximum of 50 points. There are a few pieces of advice we can offer at this stage:

- Use the theoretical tools and terminology you have learned in class and from the textbook.
- Make sure there is a clear structure in your argument. (Use some time to sort your ideas before you start writing the version you want to submit.)
- Use the time you have! If you are really much earlier than we planned you should wonder if you forgot something.
- Remember people have to be able to decipher what you write.
- Leave a margin for our comments, so we can give you a more detailed feed-back than just the number of points.

Here is the set of problems

Examiners: Prof. Dr. Erichson, Prof. Inderlürth, Prof. Luhmer, Prof. Dr. Raith, Prof. Dr. Reichling, Prof. Dr. Spengler, Prof. Dr. Wellisch, Prof. Dr. Wolff

Please solve four (4) of the following six (6) problems (maximum of 12,5 points per problem):

You are welcome to use a dictionary and a calculator.

### Question 1: Terms

Define the following terms. Feel free to illustrate your definitions by examples

- Bounded Rationality
- Factoring
- Marketing Mix
- Partnership under Civil Law
- Property Rights

### Question 2: Marketing

The Bronco Company is a manufacturer of jeans. By market research it could derive the following demand function for its product

$$q = a + b \text{ price} + c \text{ promotion}$$

with

$$a = 20, b = -10, c = 0,9$$

$$\text{promotion} = 2000$$

- Calculate the revenue-maximizing price
- Calculate the maximum revenue
- Give the value of the price elasticity of demand for the revenue maximum.