

Final Exam: 5016 Principles of Economics I

Examiner: Prof. Dr. Schwödiauer

Term: Summer 2005

No aids permitted except for language dictionaries without any marking and non-programmable pocket calculators without communicating and/or data processing functions.

There are 40 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 40 problems. Do not mark more than one possible solution, otherwise the problem is considered to be incorrectly solved. For every correct solution you obtain two points. For every incorrect solution one point is subtracted. If no solution is marked you neither obtain nor lose a point. If no solution is marked you neither obtain nor lose a point. In order to pass this exam you need at least 20 points.

1. Suppose that two lawyers want to end a partnership that is worth 1,500,000€. Moreover, lawyer 1 used to work 40 hours per week for the partnership and lawyer 2 used to work 40 hours per week for the partnership. Both lawyers have to agree on how to split the value of the partnership. Which of the following statements is true?
 - a) In the unique Pareto-efficient allocation, each lawyer gets 750,000€.
 - b) There is no Pareto-efficient bargaining outcome.
 - c) There are infinitely many Pareto-efficient allocations since any distribution is Pareto-efficient.

2. An economic model that explains price setting behavior in some single industry is typically part of
 - a) Econometrics.
 - b) Microeconomics.
 - c) Macroeconomics.

3. It follows from data generated in Dictator Game and Ultimatum Game experiments that
 - a) subjects behave completely selfish.
 - b) subjects typically fear offer rejections.
 - c) subjects behave not altruistic at all.

4. A typical example of economic experimental data is data
 - a) on bidding behavior gathered in an economic laboratory (e.g. in MaXLab).
 - b) on bidding behavior at eBay as a result from uncontrolled auctions.
 - c) on sales prices determined in auctions of Sotheby's or Christies (which happen to be the world's most famous art auction houses).

5. Suppose the profit of newspaper publishing company C decreases as some other publishing company D begins to publish a new newspaper. It follows that publisher D

- a) imposes a negative externality on company C.
- b) imposes a positive externality on company C.
- c) imposes no externality on company C.

6. What is a typical example for a capital good in the economic sense:

- a) workers in car manufacturing.
- b) aluminum in car manufacturing.
- c) robotic arms in car manufacturing.

7. Suppose the market for mathematical textbooks in Micromania can be described by $D(P) = 300 - 5P$ and $S(P) = 20P$ where P denotes the price level. Mark the correct market equilibrium quantity:

- a) $Q^* = 160$
- b) $Q^* = 200$
- c) $Q^* = 240$

8. Consider the market for mathematical textbooks in Micromania with $D(P) = 300 - 5P$ and $S(P) = 20P$ where P denotes the price level. Total gains from trade accruing to households in equilibrium (measured by consumer surplus) equal:

- a) 360.
- b) 5,760.
- c) 76,600.

9. If the government requires buyers of mathematical textbooks in Micromania to pay a tax of $t = 5$ for each textbook sold where $D(P^B) = 300 - 5P^B$ and $S(P^S) = 20P^S$ and P^B denotes the price paid by buyers and P^S the price received by sellers (net of tax), then the price sellers receive net of tax

- a) equals the price received by buyers.
- b) in equilibrium is 11.
- c) in equilibrium is 12.

10. Consider the mentioned market for mathematical textbooks in Micromania with $D(P^B) = 300 - 5P^B$ and $S(P^S) = 20P^S$ where P^B is the price paid by buyers and P^S is the price received by sellers (net of buyers). The equilibrium tax revenue of quantity tax $t = 5$ is:

- a) 2,200.
- b) 3,300.
- c) 1,100.

11. Consider the market for apartments in M. If the population of M. rises over time, ceteris paribus, it is most likely that the market equilibrium price for apartments will tend to

- a) increase.
- b) decrease.
- c) remain unchanged.

12. Since the quantity of supplied oil in market equilibrium decreased while the demand curve remained constant, the market price must have

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

13. Suppose that goods X and Y are complements and that both markets are in equilibrium. If demanders for both goods suddenly come to expect that consumption of good X decreases the probability of being viewed as handsome and therefore adjust their demand downwards, it is most likely that the market price of good Y

- a) increases.
- b) decreases.
- c) remains constant.

14. In the short run the existence of a price cap lower than the equilibrium price generates

- a) always a market equilibrium where demand equals supply.
- b) always some form of rationing.
- c) sometimes some form of rationing.

15. Two estimated points of the supply function in the labor market for yoga teachers in Magdeburg are $(P=16 \text{ €}, Q=15,000 \text{ hours})$ and $(P=6 \text{ €}, Q=10,000 \text{ hours})$ where P denotes the hourly wage level and Q the corresponding supply of yoga hours. Use the average method to calculate the price elasticity of supply and mark the correct solution:

- a) Supply responds to the price change elastically.
- b) Supply responds to the price change inelastically.
- c) $E_S = 1$.

16. The average product of an artist is always constant at two pictures per week (independently of the number weeks worked.) It follows that the marginal product with one week worked is given by

- a) 2 pictures.
- b) $1/2$ pictures.
- c) Impossible to say with the given information.

17. Suppose that electricity can be produced either by burning coal or by combining labor with power generators. In particular, the marginal product of coal in electricity production is constant and equals 2.5 kWh per ton of coal while 1 labor hour always generates 0.1 kWh. The technical rate of substitution of labor for coal, $TRS_{L,C}$ [labor hours/ton of coal], is given by:

- a) 25.
- b) 2500.
- c) depends on the given input mix of coal and labor.

18. Joey can substitute away ten hours of manual washing by one washing machine hour while maintaining the same number of cleaned shirts. A labor hour is priced at \$10. What is the price of a washing machine hour that makes Joey indifferent between every input mix?

- a) \$50
- b) \$100
- c) \$150

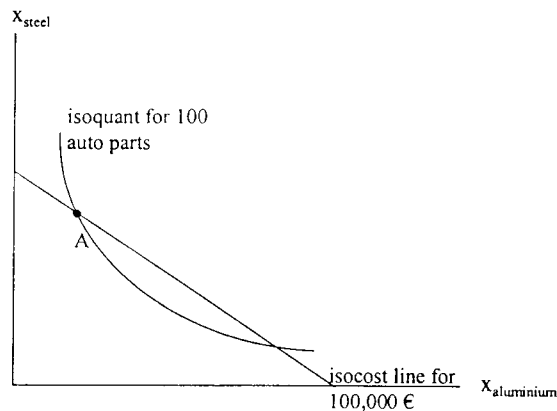
19. If average cost remains constant as more output is produced, then

- a) marginal costs are smaller than variable costs.
- b) average costs are smaller than marginal costs.
- c) average costs equal marginal costs.

20. From the cost function $C(Q) = 40Q$ it can be inferred that average costs are

- a) U-shaped.
- b) constant.
- c) strictly decreasing.

21. The following figure depicts an isoquant and an isocost line of a firm that uses steel and aluminium in its production process of auto parts. If the firm wants to produce a quantity of 100, then



- a) input mix A minimizes its cost of production.
- b) input mix A does not minimize its cost of production.
- c) it is impossible to say if input mix A minimizes cost.

22. Firm X produces 2,000,000 units per year of some widget at a total cost of 30,000,000€. It is known that its production technology is characterized by constant returns to scale. The firm hired consultant Norbert to forecast how its average cost changes as it expands its yearly production volume by 10%. Since his microeconomic knowledge is a bit dated, he asks three colleagues for advice and receives a variety of suggestions. Mark the correct one:

- a) A: "Average cost will remain constant at 15€."
- b) B: "Average cost will increase to some level above 15€."
- c) C: "Average cost will decrease to some level below 15€."

23. The next table reports market shares in the German shaving business in 2003.

Firm	Gillette	Wilkinson Sword	Others
Market share	50.1%	42.5%	7.4%

The 2-firm-concentration ration for this market is

- a) 50.1
- b) 92.6.
- c) 100.0

24. The next table reports market shares for the CPU market in the first quarter of 2005.

Firm	Intel	AMD	Others
Market share	81.7%	16.9%	1.4%

The Herfindahl-Hirschman-Index ranges

- a) between 6,957 and 6,960.
 b) between 6,960 and 6963.
 c) cannot be estimated with the given information.

25. Monopolist M supplies 10 units, each priced at 10€ in a market where the downward-sloped demand curve is $P = 20 - 0.1Q$. If the monopolist expands its supply by one unit, then the resulting change in revenue is

- a) much larger than 18€.
 b) much smaller than 18€.
 c) roughly equal to 18€.

26. In the bankrupt city of Berlin, the city's senate decides to sell some of its museums' fine art. The sale of a Stradivarius involved four interested buyers whose valuations are given below. The city sold the Stradivarius using a first-price sealed-bid auction without minimum bid. The following table summarizes the valuation of potential buyers. Suppose each potential buyer bids for the Stradivarius according to the auction design's symmetric equilibrium bidding strategy.

buyer	A	B	C	D
valuation	300,000 €	200,000 €	250,000 €	800,000 €

Mark the correct statement:

- a) The Stradivarius goes to bidder D for 300,000 €.
 b) The Stradivarius goes to bidder D for 800,000 €.
 c) It is Pareto-efficient if the Stradivarius goes to bidder D.

27. Consider a cost-minimizing firm that is described by a production function with two inputs where both inputs are substitutes. As a cost-minimizing response to a 5%-increase in the price of both inputs, the firm that wants to leave its output unchanged should

- a) increase its use of input 1 and decrease its use of input 2.
 b) not change its use of inputs 1 and 2 if that was minimizing costs before.
 c) change its input mix in a way that is impossible to predict without additional information.

28. A monopolist with the cost function $C(Q) = 5 + 20Q$ faces the inverse demand curve $P(Q) = 200 - Q$. If the firm wants to maximize its profits, then it should charge a unit price of

- a) 70 €.
 b) 90 €.
 c) 110 €.

29. Consider again the monopolistic setting as outlined in the preceding problem. If the firm implements its profit-maximizing choice then the resulting deadweight loss is equal to

- a) 2000 €.
- b) 3000 €.
- c) an amount different from 2000€ and 3000 €.

30. Consider the following strategic form in detail:

		Player 2		Utility of Player 2
		L	R	
Player 1	U	3	0	Utility of Player 1
	D	0	2	
		6	0	
		5	3	

Mark the correct statement:

- a) There exists no Nash-equilibrium (in pure strategies).
- b) There exists a unique Nash-equilibrium (in pure strategies).
- c) There exist two Nash-equilibria (in pure strategies).

31. Consider the following strategic form in detail:

		Player 2		Utility of Player 2
		L	R	
Player 1	U	600	300	Utility of Player 1
	D	600	400	
		500	200	
		700	600	

Mark the correct statement:

- a) There exists no Nash-equilibrium (in pure strategies).
- b) There exists a unique Nash-equilibrium (in pure strategies).
- c) There exist two Nash-equilibria (in pure strategies).

32. In the Prisoner's dilemma, there exists

- a) no dominant strategy equilibrium.
- b) one dominant strategy equilibrium.
- c) two dominant strategy equilibria.

33. There are two large firms without capacity constraints in the market for diving eyeglasses in Atlantis that set prices independently of one another (à la Bertrand). Since eyeglasses are expensive, most citizens dive without them and, as a result, the public health cost from treating eye afflictions is very large. If the government approves another firm to enter the eyeglass market, then it is most likely that

- a) the public health cost due to eye afflictions decreases since the number of eyeglasses produced and sold by the industry is likely to increase.
- b) the market entry of the firm does not influence the public health cost due to stable eyeglass prices equaling marginal costs.
- c) the response of the public health cost can only be uncovered if it is known whether firms set prices or quantities.

34. Consider the Cournot model with two firms where firm 1's profit maximizing supply decision depends on the output supplied by firm 2 and vice versa. In particular, assume that the problem of profit maximization is solved and that the resulting optimal response functions are given by $q_1^o = 97.5 - 0.5q_2$ and $q_2^o = 97.5 - 0.5q_1$. Mark the correct statement.

- a) There is a dominant strategy equilibrium such that firm 1 supplies 65 and firm 2 supplies 65.
- b) There is a Nash equilibrium (but not in dominant strategies) such that firm 1 supplies 65 and firm 2 supplies 65.
- c) There is no Nash equilibrium such that firm 1 supplies 65 and firm 2 supplies 65.

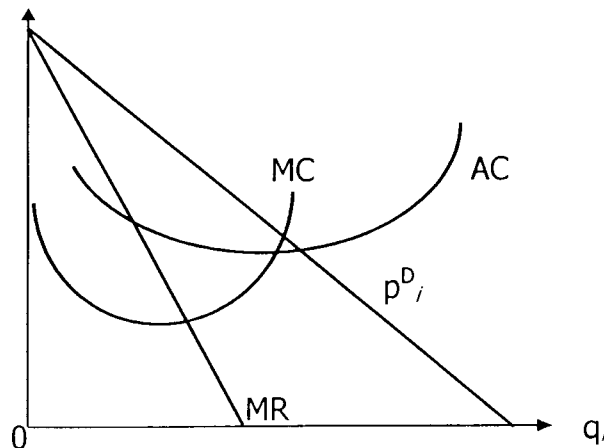
35. Consider some industry with a single supplier that sets a price which is the same for all buyers. Suppose that a second supplier enters the market. Mark the correct statement:

- a) The welfare loss in the industry is not completely eliminated if the resulting duopoly operates under Cournot competition.
- b) The welfare loss in the industry is not completely eliminated if the resulting duopoly operates under Bertrand competition.
- c) There is never any welfare loss with a single supplier.

36. A key feature of monopolistic competition is

- a) the inefficiency of the long-run equilibrium.
- b) output homogeneity across competitors.
- c) the absence of market power.

37. Consider the next figure that illustrates a representative firm's cost structure and its inverse demand curve under monopolistic competition.



According to the figure, the industry is

- a) is not in its long-run equilibrium.
- b) in a long-run equilibrium since new firms have no incentive to enter and firms in the market no incentive to exit the industry
- c) in a long-run equilibrium although new firms have an incentive to enter the industry.

38. The firm Webdesign.biz produces websites and is a price-taker. The following information about the company's cost structure is available: $MC(q) = 40q$, $AVC(q) = 20q$, $AC(q) = 500/q + 20q$. The going market price is $P = 1000$. Which level of website production, q^{SR} , maximizes Webdesign.biz' profit in the short run?

- a) $q^{SR} = 0$.
- b) $q^{SR} = 25$.
- c) $q^{SR} = 50$.

39. Consider the utility function $U(x_1, x_2, x_3) = x_1 \cdot x_2 \cdot x_3$ and consumption bundles $A = (4, 2, 2)$ and $B = (2, 1, 8)$ 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 A lies on a higher indifference curve than bundle B.
- c) Bundle B lies on a higher indifference curve than bundle A.

40. Suppose John's preferences are described by the utility function $U(x_1, x_2) = x_1 + x_2$ and consider consumption bundles $A = (2, 2)$ and $B = (4, 2)$ where the i -th entry gives the quantity of the i -th commodity.

Mark the correct statement:

- a) John prefers bundle A to bundle B.
- b) John prefers bundle B to bundle A.
- c) John is indifferent between both bundles.