Faculty _____ Matr.-Nr. _____ Name: _____

3A

Final Exam: 5016 Principles of Economics I

Examiner: Prof. Dr. Schwödiauer

Term: Summer 2004

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. In order to pass this exam you need at least 27 points.

1. Suppose that a cake is to be split between two individuals who each prefer more cake to less. Which of the following statements is true?

   ☐ a) In the unique Pareto-efficient allocation, each individual gets half the cake.
   ☐ b) In the unique Productive-efficient allocation, each individual receives 50% of the cake.
   ☐ c) If one individual gets 100% of the cake and the other individual receives nothing, then this allocation is Pareto-efficient.

2. An economic model that studies the labor-leisure choice of some individual is typically a part of

   ☐ a) Econometrics.
   ☐ b) Microeconomics.
   ☐ c) Macroeconomics.

3. It follows from data generated in Ultimatum Game experiments that

   ☐ a) subjects are likely to be completely confused during these experiments.
   ☐ b) proposers typically do not fear offer rejections.
   ☐ c) responders typically reject extremely low amounts offered by proposers.

4. A typical example of economic happenstance data is data

   ☐ a) on inflation rates.
   ☐ b) from Ultimatum Game experiments.
   ☐ c) from Classroom Market experiments.

5. If Florian receives a car from his wealthy grandfather with the note that "he can do everything with it, selling inclusively", then on the day Florian receives the present, he

   ☐ a) misses control rights.
   ☐ b) misses cash-flow rights.
   ☐ c) does not miss alienability rights.

6. Emily thinks about visiting a Shania Twain Concert with public (i.e. free) access. Her best alternative to enjoying Shania Twain on stage is to earn 25€ with babysitting. If she visits the Concert, then her opportunity cost of the time she devotes to it is

- [ ] a) 125€.
- [ ] b) 0€.
- [ ] c) 25€.

7. Suppose a firm pollutes a river and is located upstream, close to the river's source. If the objective (utility or profit) of some economic agent is negatively affected by that pollution, then there is

- [ ] a) a negative externality but no inefficiency.
- [ ] b) no inefficiency although nature is damaged.
- [ ] c) a negative externality and an inefficiency.

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

- [ ] a) Intermediate inputs (e.g. radios to be built into cars.)
- [ ] b) High-skilled labor.
- [ ] c) Fishing nets.

9. Consider any market with downward-sloped demand function and upward-sloped supply function where the market equilibrium price is x € (per unit of the traded good). If demanders with a reservation price that exceed x € drop out of the market when it is in its equilibrium, then the quantity traded in the market most likely

- [ ] a) increases.
- [ ] b) remains unchanged.
- [ ] c) decreases.

10. Suppose that goods X and Y are substitutes and that both markets are in equilibrium. If demanders for both goods suddenly come to expect that consumption of good X increases the probability of becoming increasingly handsome and therefore adjust their demand upwards, it is most likely that the market price of good Y

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

11. Suppose the market for microeconomic textbooks in Macromania is described by $D(P) = 200 - 4P$ and $P^S(Q) = -20 + Q$. Mark the correct market equilibrium price:

- [ ] a) $P^*=36$
- [ ] b) $P^*=26$
- [ ] c) $P^*=16$

12. Suppose the market for macroeconomic textbooks in Macromania is described by $D(P) = 100$ and $P^S(Q) = 5 + Q$. Mark the correct market equilibrium quantity:

- [ ] a) $Q^*=95$
- [ ] b) $Q^*=100$
- [ ] c) $Q^*=105$

13. Since the market equilibrium price of pizza decreased while the market supply curve remained unchanged, the equilibrium demand for pizzas must have

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

14. Two estimated points of the supply function in the labor market for yoga teachers in Magdeburg are (P=16 €, Q=10,000 hours) and (P=20 €, Q=30,000 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:

- [ ] a) $E_S = 4/18$.
- [ ] b) $E_S = 18/4$.
- [ ] c) $E_S = 3$.

15. Data from simple market experiments such as the implementation of the "apple market" in class suggest that the simple model of "Demand and Supply" that can be used to predict changes of the market equilibrium price in response to changes in the supply conditions (ceteris paribus)

- [ ] a) is useful since observed average price changes coincide with the model's prediction.
- [ ] b) is useful since it exactly predicts prices at which individuals trade.
- [ ] c) is useless since observed total surplus measured by the efficiency rate is slightly lower than predicted by the model.

16. If an artist produces four pictures if working for only one hour and two pictures if working for another hour, then the artist's average product of working two hours is equal to

- [ ] a) two pictures per hour.
- [ ] b) three pictures per hour.
- [ ] c) four pictures per hour.

17. If the average product curve slopes upward, then the

- [ ] a) marginal product is smaller than the average product.
- [ ] b) marginal product is larger than the average product.
- [ ] c) marginal product is equal to the average product.

18. From the cost function $C(Q) = 30 + 20Q^2$ it can be inferred that average costs are

- [ ] a) U-shaped.
- [ ] b) constant.
- [ ] c) strictly increasing.

19. Company X incurs a large amount of fixed costs. Economic consultant Tomasz needs information on the relations of the company's cost curves. Since his microeconomic knowledge is somewhat dated, he asks three colleagues and receives a variety of suggestions. Mark the correct one:

- [ ] a) A: "Fixed costs imply that average costs are U-shaped."
- [ ] b) B: "Average costs and marginal costs coincide for company X".
- [ ] c) C: "Fixed costs imply that average costs are always larger than average variable costs."

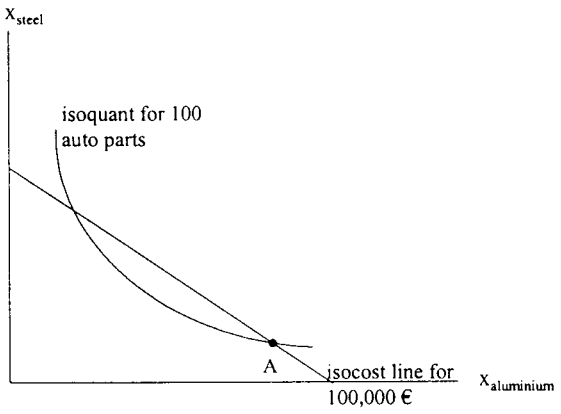
20. Consider a cost-minimizing firm that is described by a production function with two inputs where both inputs are perfect complements. As a cost-minimizing response to a 20%-decrease in the price of input 2, the firm that wants to leave its output unchanged should

- [ ] a) increase its use of input 2 and decrease its use of input 1.
- [ ] 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.

21. The company Adecco lost much information about its costs due to its ill-designed controlling system. Two inputs are type A-pencils and type B-pencils. Both pencil types are perfect substitutes and their technical rate of substitution is $TRS_{B,A} = 2$ [B-pencils/A-pencil]. If the price of type B-pencils is 20€ per pack with 100 pencils and the cost-minimizing company bought pencils of both types, what is the price of a single type A-pencil?

- [ ] a) 0.01 €.
- [ ] b) 0.02 €.
- [ ] c) 0.04 €.

22. 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. Input mix A can be the choice of a cost-minimizing firm if



- [ ] a) the price of aluminium increases ceteris paribus.
- [ ] b) the price of steel increases ceteris paribus.
- [ ] c) the prices of steel and aluminium remain unchanged.

23. If a profit-maximizing monopolist faces a demand curve with a constant price elasticity E_D=0.01, then

- [ ] a) higher prices lead to larger revenue than do lower prices.
- [ ] b) every positive price leads to the same revenue.
- [ ] c) lower prices lead to larger revenue than do higher prices.

24. The next table reports market shares of internet search engines (share of English-speaking users).

Firm	Google	Yahoo	MSN-Microsoft	Time-Warner Network	Ask Jeeves	Others
Market share	43.3%	30.8%	14.1%	7.1%	1.7%	3.0%

The Herfindahl-Hirschman-Index for this market must be

- ☐ a) between 3050 and 3060 (including 3050 and 3060).
- ☐ b) between 3061 and 3071 (including 3061 and 3071).
- ☐ c) larger then any concentration ratio.

25. A monopolist with the cost function $C(Q) = 20Q$ faces the inverse demand curve $P(Q) = 180 - 4Q$. If the firm wants to maximize its profits, then it should charge a unit price of

- ☐ a) 60 €.
- ☐ b) 80 €.
- ☐ c) 100 €.

26. 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) 800 €.
- ☐ b) 1600 €.
- ☐ c) an amount different from 800€ and 1,600 €.

27. Consider the market entry game described by the following strategic form where the cell entry (bottom, left) refers to firm 1's payoff and the cell entry (top, right) refers to firm 2's payoff:

		Firm 2		
		Low Price	**Medium Price**	**High Price**
Firm 1	**Entry**	**20** **-20**	**25** **-5**	**5** **20**
	Non-entry	**30** **0**	**70** **0**	**100** **0**

Mark the correct statement.

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

28. Consider the following strategic form in detail:

		Player 2 L	Player 2 R
Player 1	U	1 (Utility of Player 1), 2 (Utility of Player 2)	0, 0
	D	0, 0	2, 1

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).

29. If there is a unique Nash equilibrium in any well-defined game, then the individual rational outcome will

- [ ] a) sometimes be collectively efficient.
- [ ] b) always be collectively efficient.
- [ ] c) never be collectively efficient.

30. Suppose that Helmut Newton's art collection is auctioned off using a first-price sealed-bid auction where the private-values assumption holds. In this setting, rational bidders should bid

- [ ] a) their private value since this is a dominant strategy in this setting.
- [ ] b) a lower amount than their private values to allow for a positive payoff.
- [ ] c) a higher amount than their private value to maximize winning chances.

31. 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 without a minimum price. The city has no alternative use for the object such that its reservation price equals 0€. The next table summarizes the bidders' private valuations and bids:

bidder	A	B	C	D
valuation	500,000 €	200,000 €	250,000 €	400,000 €
bids	500,000 €	200,000 €	250,000 €	400,000 €

Mark the correct statement:

- [ ] a) There is a Pareto-inefficient sale.
- [ ] b) There is a Pareto-efficient sale.
- [ ] c) There is no sale, but this is Pareto-efficient.

32. The market for diving eyeglasses in Atlantis is perfectly competitive although the government has to give permission to firms to produce eyeglasses. Since these 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 price for diving eyeglasses decreases according to the model of monopolistic competition.

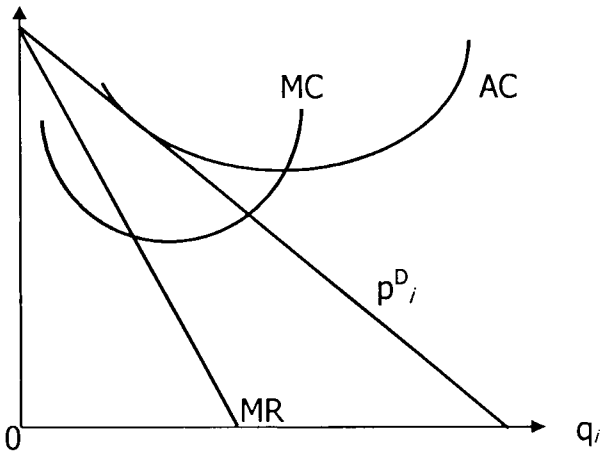
33. Consider the Bertrand model with three firms where the marginal cost of each firm is constant and equals 40€. If one firm charges a price of 40€ and two firms charge 70€ then

- ☐ a) this combination of prices constitutes a Nash-Equilibrium since no firm has an incentive to deviate.
- ☐ b) this combination of prices cannot be a Nash-Equilibrium since at least one firm has an incentive to deviate.
- ☐ c) this combination of prices is an equilibrium in dominant strategies.

34. A key feature of monopolistic competition is

- ☐ a) the inefficiency of the long-run equilibrium although firms make zero-profits.
- ☐ b) that individual demand-curves of monopolistic competitors' are independent from one another.
- ☐ c) the absence of market power.

35. 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) in its long-run equilibrium.
- ☐ b) not in a long-run equilibrium since new firms have a large incentive to enter the industry
- ☐ c) not in a long-run equilibrium since some firms in the industry are likely to exit due to large negative profits.

36. The firm Webdesign.biz produces websites and is a price-taker. The following information about the company's cost structure is available: $MC(q) = 50q$, $AVC(q) = 25q$, $AC(q) = 3{,}000/q + 25q$. The going market price is $P = 500$. Which level of website production, q^{LR}, maximizes Webdesign.biz' profit in the long run?

- ☐ a) $q^{LR} = 5$.
- ☐ b) $q^{LR} = 0$ (i.e. market exit)
- ☐ c) $q^{LR} = 10$.

37. A price-taking firm that seeks to maximize its profits in the long run where all costs are variable should increase its level of output if

- ☐ a) the market price equals its marginal cost.
- ☐ b) the market price is lower than marginal cost.
- ☐ c) the market price exceeds marginal costs.

38. Anke E. consumes 10 bars of chocolate priced at €1 per bar and 5 bags of peanuts priced at €2 per bag during 4 Late Night Shows per week. She is willing to exchange one bar of chocolate for one bag of peanuts and vice versa while her utility remains unchanged. If she wants to maximize her well-being subject to her budget for sweets fixed at €20 then she should

- ☐ a) buy only chocolate and no peanuts.
- ☐ b) buy no chocolate and only peanuts.
- ☐ c) buy any mix of chocolate and peanuts since she is indifferent between arbitrary consumption patterns as long as her total budget is spent.

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 $U(x_1,x_2) = x_1 \cdot x_2$ and consider consumption bundles $A = (1,1)$ and $B = (2,3)$ where the i-th entry gives the quantity of the i-th commodity.
Mark the correct statement:

- ☐ a) John likes bundle B more than he likes to have two bundles A.
- ☐ b) John likes bundle B less than he likes to have two bundles A.
- ☐ c) Comparisons of a single bundle to the doubled quantities of some other bundle in utility space are meaningless.