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Exam: Economics IV(Economic Policy/Public Economics)

Number: 5026, SS 2004

Examiner: Prof. Dr. Ronnie Schöb

Date: July 28th, 2004

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Name, First Name

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Student Number

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Study Program and Semester

Remarks

- The exam consists of two sections with multiple choice questions (one section for Economic Policy and one section for Public Economics). Both sections contain 15 question, all of which have to be solved. You have 120 minutes time for 30 questions (4 minutes per question).

- There are four possible answers to each question, only one of which is correct. For each correct answer, you are rewarded 3 points, for each false answer we subtract 1 point. No or more than one answer receive zero points.

- Please fill in your answers directly in the problem sheets by circling the (hopefully) correct letter.

- You may use dictionaries and non-programmable calculators without communication or word-processing capacities.

Section: Economic Policy

1	There are two firms, firm 1 and 2, who produce the quantities x_1 and x_2, respectively. The inverse demand function on this market is given by $p(X) = 100 - 2 \cdot X$, where $X = x_1 + x_2$. Firm 1's cost function is $K(x_1) = 2 \cdot x_1$, firm 2's cost function is $K(x_2) = 12 \cdot x_2$. Both firms are competitors in a Cournot-duopoly. What is firm 2's best-response function $x_2^{bA}(x_1)$ given the quantity supplied by firm 1?

A $\quad x_2^{bA}(x_1) = 22 - \frac{1}{2} \cdot x_1$

B $\quad x_2^{bA}(x_1) = \frac{49}{2} - \frac{1}{2} \cdot x_1$

C $\quad x_2^{bA}(x_1) = 20 - x_1$

D $\quad x_2^{bA}(x_1) = 22 - x_1$

2	What is the aggregate supply, X^*, in Question (1) in the Cournot-Nash-equilibrium?

A 31
B 29
C 20
D 15

3	Suppose, in a Stackelberg situation firm 1 is the leader and firm 2 the follower. In a sequential game, the leader first determines its quantity x_1, and then the follower decides on its quantity x_2. In Question (1), the follower's quantity is

A 17/2
B 15/2
C 7
D None of the above.

4	Two firms, $i = 1$ and 2, discharge chemical waste into a lake the water of which is needed by both firms. The net gain of firm i is $U_i(E_i) = 30 \cdot E_i - (E_i)^2$. The damage from emissions for firm i are $S_i(E_i, E_j) = 0.5 \cdot E_i \cdot E_j$, with $i \neq j$. How large are aggregate emissions in the Nash-equilibrium?

A 12
B 24
C 40
D None of the above.

5	How large is the welfare loss in case of individually rational behavior in Question (4)?

A 10
B 20
C 12
D None of the above.

6	In Question (4), what is the quantity tax t that induces the collectively rational solution?

A 2
B 4
C 6
D None of the above.

7	In Question (4), assume that there are no transactions costs and that there is complete information. Suppose, firm 1 possesses the exclusive right to pollute the lake, i.e. firm 2 is not allowed to pollute. Firm 2 proposes an emission allocation to firm 1 that maximizes the total profit of both firms. How large is the minimum compensation that firm 1 will demand from firm 2 for accepting its proposal?

A 75
B 100
C 150
D 20

8	Which statement concerning Popper's idea about how to solve the induction problem is *false*?

A It is not justified to conclude the validity of a statement from a singular observation. However, one can conclude the falseness of a statement from a counterexample.

B Abandoning the principle of empirism, according to which in science only observations and experiments can decide on the acceptance or rejection of laws and theories, solves the induction problem.

C It is not possible to deduce a theory from statements based on observations. However, this does not impede the possibility to falsify a theory by observations.

D The foundation of Popper's understanding of science, based on continuous falsification trials, is the conjectural nature of human cognition (Vermutungscharakter der menschlichen Erkenntnis), i.e. the reasoning that scientific cognition is purely hypothetical and cannot claim universal validity.

9	Which of the following statements about Kuhn's concept of scientific revolutions is *false*?

A The existence of a new paradigm is a necessary condition for a scientific revolution.

B The comparison between paradigms is satisfied by their commensurability (Kommensurabilität).

C The crisis of an existing paradigm and the existence of a new paradigm that is not convulsed (erschüttert) by anomalies, are sufficient conditions for a scientific revolution.

D The term „normal science" describes research that is founded on one or more scientific achievements of the past and that is accepted by the scientific community for some time as the basis for its further research.

10	Which of the following statements concerning the Samuelson-condition is false?

A In optimum, the sum of the marginal willingness to pay of all agents has to be equal to the marginal cost of producing the public good.

B In optimum, the marginal rates of substitution of all agents have to be equal to the marginal rate of transformation.

C Extending the production of the public good increases efficiency as long as the total additional utility exceeds the additional costs.

D In optimum, the sum of the marginal rates of substitution has to be equal to the marginal rate of transformation.

11	Which of the following statements describes the concept of "empirism" in economic theory?

A Science-theoretic approach that derives its insights from reason (Vernunft) and applies induction as a method of obtaining its insights.

B Science-theoretic approach that derives its insights from reality and applies induction as a method of obtaining its insights.

C Science-theoretic approach that derives its insights from reality and applies deduction as a method of obtaining its insights.

D Science-theoretic approach that derives its insights from reason (Vernunft) and applies deduction as a method of obtaining its insights.

12	Which of the following statements about the Coase-theorem is *false*?

A The absence of transactions costs and a complete system of property rights are necessary conditions for the theorem's validity.

B Given the theorem's assumptions, negotiations result in an efficient allocation independently of the initial distribution of property rights.

C Given the theorem's assumptions, at the end of the negotiation process, a good is possessed by the person with the highest valuation for it.

D Given the theorem's assumptions, the final distribution of profits is independent of the initial distribution of property rights.

13	A village's inhabitants live from catching fish in a close-by lake. The quantity of fish caught per month, F, depends on the number of boats on the lake: $F(B) = 20 \cdot B - 0,5 \cdot B^2$. The price per fish is 1 EUR, a boat costs 10 EUR per month. What is the optimal number of boats that should fish on the lake?

A   15
B   20
C   5
D   10

14	In Question (13), suppose that there are no restrictions on how many boats can fish on the lake, i.e. who wants to fish can have as many boats as he wants. Suppose that all boats have the same fishing technology. How many boats will be on the lake?

A   15
B   5
C   10
D   None of the above.

15	How large is the welfare loss of individually rational behavior compared to the collectively rational behavior in Question (13)?

A   25
B   40
C   50
D   100

Section: Public Economics

16	For electing a mayor, 81 voters have the choice between three candidates: Anton, Berndt, and Claus. The following table shows the voters' preferences:

rank \ number of voters	30	1	29	10	10	1
1	Anton	Anton	Berndt	Berndt	Claus	Claus
2	Berndt	Claus	Anton	Claus	Anton	Berndt
3	Claus	Berndt	Claus	Anton	Berndt	Anton

Who wins the election if a Borda-count is applied?

A   Anton
B   Berndt
C   Claus
D   There is a tie between Anton and Berndt.

17	Who wins the election in Question (16) if the Condorcet-rule is applied?

A   Anton
B   Berndt
C   Claus
D   Nobody, because there will be cyclical majorities.

18	Who wins the election in Question (16) if a Coombs-count is applied?

A   Anton
B   Berndt
C   Claus
D   No clear answer can be given, because Anton and Berndt both have 11 times the last place in voters' preferences.