TUM School of Management
Department of Economics & Policy
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Exercise Exam 2: Principles of Economics – Winter Term 2025-2026

Answer Sheet

Family Name: ____________________

Given Name: ____________________

Signature: ____________________

Student No.: 0 __ __ __ __ __ __ __

●	⓪	⓪	⓪	⓪	⓪	⓪	⓪
①	①	①	①	①	①	①	①
②	②	②	②	②	②	②	②
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④	④	④	④	④	④	④	④
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⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨

Example:

Marking: Ⓐ ● Ⓒ Ⓓ

Improper: Ⓐ ☒ Ⓒ Ⓓ

Correction: Ⓐ ● ● Ⓓ

Please mark your answers with a black pen!

Block 1	**Block 4**	**Block 7**
1: Ⓐ Ⓑ Ⓒ Ⓓ	16: Ⓐ Ⓑ Ⓒ Ⓓ	31: Ⓐ Ⓑ Ⓒ Ⓓ
2: Ⓐ Ⓑ Ⓒ Ⓓ	17: Ⓐ Ⓑ Ⓒ Ⓓ	32: Ⓐ Ⓑ Ⓒ Ⓓ
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Block 2	**Block 5**	**Block 8**
6: Ⓐ Ⓑ Ⓒ Ⓓ	21: Ⓐ Ⓑ Ⓒ Ⓓ	36: Ⓐ Ⓑ Ⓒ Ⓓ
7: Ⓐ Ⓑ Ⓒ Ⓓ	22: Ⓐ Ⓑ Ⓒ Ⓓ	37: Ⓐ Ⓑ Ⓒ Ⓓ
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Block 3	**Block 6**	
11: Ⓐ Ⓑ Ⓒ Ⓓ	26: Ⓐ Ⓑ Ⓒ Ⓓ	
12: Ⓐ Ⓑ Ⓒ Ⓓ	27: Ⓐ Ⓑ Ⓒ Ⓓ	
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14: Ⓐ Ⓑ Ⓒ Ⓓ	29: Ⓐ Ⓑ Ⓒ Ⓓ	
15: Ⓐ Ⓑ Ⓒ Ⓓ	30: Ⓐ Ⓑ Ⓒ Ⓓ	

Exercise Exam 2: Principles of Economics

Dr. Christian Feilcke
TUM School of Management

Instructions:

1. Including the answer sheet, the exam consists of 18 pages. Please check whether your copy is complete.
2. The exam consists of 40 multiple choice problems (MCP).
   - Each MCP has 4 possible answers **(A)** – **(D)**, of which exactly one is true.
   - For each MCP, please indicate the answer you deem correct by filling out the corresponding letter circle on the answer sheet.
   - If you select the correct answer, you receive 3 points for the MCP.
   - If you select a wrong answer or no answer at all, you receive 0 points for the MCP.
   - If you select several answers or if your selection is unclear, you receive 0 points for the MCP.
3. Only the answer sheet is used to determine your grade.
4. Unless otherwise specified, the labeling of variables and parameters is identical to the notation used in the lectures and exercise classes.
5. Do not separate the answer sheet from the other pages.
6. You may use the back of the pages for sketches, calculations, etc..
7. Permitted materials: non-programmable scientific calculator, dictionary

Block 1: Specialization and Trade

Problems 1-5 refer to the following scenario:

Three tennis players, Gabriela, Martina, and Steffi are stranded on a lonely island. Each of them spends 24 hours producing tennis balls and tennis rackets. The following table shows how many hours each player needs to produce one tennis ball and one tennis racket, respectively.

	Hours per	
	tennis ball	tennis racket
Gabriela	1	3
Martina	2	8
Steffi	8	8

Each player wants to obtain as many tennis balls as possible but only one tennis racket.

Problem 1

(A) Gabriela has a comparative advantage over Martina and Steffi in the production of tennis balls.

(B) Gabriela has a comparative advantage over Martina and Steffi in the production of tennis rackets.

(C) Steffi has a comparative advantage over Gabriela and Martina in the production of tennis balls.

(D) Steffi has a comparative advantage over Gabriela and Martina in the production of tennis rackets.

Problem 2

The joint transformation curve of the three tennis players has a slope of -1 where joint production

(A) of tennis balls is larger than 0 but smaller than 12.

(B) of tennis balls is larger than 12 but smaller than 36.

(C) of tennis rackets is larger than 0 but smaller than 3.

(D) of tennis rackets is larger than 11 but smaller than 14.

Problem 3

Under autarky, the total production of tennis balls is

(A) 30.

(B) 31.

(C) 32.

(D) 33.

Problem 4

Assume that the three tennis players agree to trade 1 tennis racket for 2 tennis balls. Compared to autarky, optimal specialization and trade will increase the available quantity of tennis balls by

(A) 3 for Steffi and 0 for Martina.

(B) 2 for Steffi and 1 for Gabriela.

(C) 1 for Martina and 2 for Steffi.

(D) 0 for Martina and 3 for Gabriela.

Problem 5

Assume that Martina leaves the island. The remaining Gabriela and Steffi can realize mutual gains from trade if they agree on terms of trade

(A) between 1 and 3 tennis rackets per tennis ball.

(B) between 3 and 4 tennis rackets per tennis ball.

(C) between 1 and 3 tennis balls per tennis racket.

(D) between 3 and 4 tennis balls per tennis racket.

Block 2: Consumption and Demand

Problems 6-10 refer to the following scenario:

Consider a utility-maximizing individual with a given income $y > 0$. The individual's utility function is given by

$$U(q_1, q_2) = q_1 \cdot q_2^{\frac{1}{2}},$$

where $q_1 \geq 0$ and $q_2 \geq 0$ denote the quantities of good 1 and good 2, respectively. The goods prices are given by $p_1 = 1$ and $p_2 > 0$, respectively.

Problem 6

The individual's optimal consumption of good 1

(A) increases as income increases and decreases as the price of good 2 increases.

(B) decreases as income increases and increases as the price of good 2 increases.

(C) increases as income increases, while it does not depend on the price of good 2.

(D) neither depends on income nor on the price of good 2.

Problem 7

If $y = 300$ and $p_2 = 4$, the individual's optimal spending on good 2 amounts to

(A) 300.

(B) 200.

(C) 100.

(D) 0.

For Problems **8-10**, assume that $y = 300$, and consider a price decrease from $p_2 = 4$ to $p_2 = \frac{1}{2}$.

Problem 8

Regarding good 2, the substitution effect of the price decrease amounts to

(A) $\text{SE}_2 = 25$.

(B) $\text{SE}_2 = 75$.

(C) $\text{SE}_2 = 100$.

(D) $\text{SE}_2 = 125$.

Problem 9

Regarding good 1, the income effect of the price decrease amounts to

(A) $\text{IE}_1 = 25$.

(B) $\text{IE}_1 = 75$.

(C) $\text{IE}_1 = 100$.

(D) $\text{IE}_1 = 125$.

Problem 10

The individual would reach the same level of utility *after* the price decrease as *before* the price decrease if she had to pay a lump-sum tax of

(A) $T = 50$.

(B) $T = 100$.

(C) $T = 150$.

(D) $T = 200$.

Block 3: Production and Supply

Problems 11-15 refer to the following scenario:

Consider a profit-maximizing and price-taking firm with a production function

$$q = F(L, K) = L^{\frac{1}{2}} + K^{\frac{1}{2}},$$

where $q \geq 0$ denotes output, and $L \geq 0$ and $K \geq 0$ denote the input of labor and capital, respectively. The wage rate for labor is given by $w = 1$, the rental rate for capital is given by $r > 0$, and quasi-fixed costs of production are given by $c^f = \frac{1}{2}$. Let $p \geq 0$ denote the market price per unit of output.

Problem 11

The production function exhibits

(A) constant returns to scale and constant marginal products in both inputs.

(B) constant returns to scale and decreasing marginal products in both inputs.

(C) decreasing returns to scale and constant marginal products in both inputs.

(D) decreasing returns to scale and decreasing marginal products in both inputs.

Problem 12

The isoquants of the production function are

(A) strictly convex.

(B) strictly concave.

(C) linear.

(D) orthogonal.

Problem 13

The variable costs of production are

(A) $c(q) = \frac{r}{1+r}q^2$.

(B) $c(q) = \frac{r}{1-r}q^2$.

(C) $c(q) = \frac{r^2}{1+r}q^2$.

(D) $c(q) = \frac{r^2}{1-r}q^2$.

Problem 14

If $p = r$, the firm's short-run supply is

(A) $q = \frac{1+r}{2r}$.

(B) $q = \frac{1-r}{2r}$.

(C) $q = \frac{1+r}{2}$.

(D) $q = \frac{1-r}{2}$.

Problem 15

Which is the threshold price, above which the firm's long-run supply is $q > 0$?

(A) $p = \left(\frac{2r^2}{1+r}\right)^{\frac{1}{2}}$

(B) $p = \left(\frac{2r^2}{1-r}\right)^{\frac{1}{2}}$

(C) $p = \left(\frac{2r}{1+r}\right)^{\frac{1}{2}}$

(D) $p = \left(\frac{2r}{1-r}\right)^{\frac{1}{2}}$

Block 4: Perfect Competition

Problems 16-20 refer to the following scenario:

Consider a perfectly competitive market in the long run. Market demand is

$$Q^D(p) = 320 - 10p,$$

where $p \geq 0$ denotes the market price. The market is served by $n \in \mathbb{N}$ identical profit-maximizing firms. Each firm has total costs of

$$C(q) = \begin{cases} c^f + 2q^2, & q > 0 \\ 0, & q = 0, \end{cases}$$

where c^f denotes quasi-fixed costs, and $q \geq 0$ denotes output of the respective firm.

Problem 16

The equilibrium number of firms is $n^* = 24$ if quasi-fixed costs are

(A) $c^f = 2$.

(B) $c^f = 8$.

(C) $c^f = 32$.

(D) $c^f = 50$.

Problem 17

In equilibrium, total surplus is TS = 4,480 if quasi-fixed costs are

(A) $c^f = 2$.

(B) $c^f = 8$.

(C) $c^f = 32$.

(D) $c^f = 50$.

For Problems **18-20**, assume that quasi-fixed costs are $c^f = 8$.

Problem 18

The introduction of a price ceiling at $\overline{p} = 10$ results in a welfare loss of

(A) 0.

(B) 120.

(C) 240.

(D) 480.

Problem 19

If a tax on profit at the rate $t = 0.25$ is introduced, output per firm in equilibrium is

(A) 2.

(B) 4.

(C) 5.

(D) 10.

Problem 20

If each firm receives a lump-sum subsidy $S = 6$ whenever quasi-fixed costs arise, the equilibrium number of firms is

(A) 40.

(B) 120.

(C) 280.

(D) 600.

Block 5: Market Failure

Problems 21-25 refer to the following scenario:

Consider a monopoly market in the long run. Market demand is

$$Q^D(p) = a - 2p,$$

where $p \geq 0$ denotes the market price, and $a > 0$. The monopolist's total costs are

$$C(Q) = \begin{cases} cQ, & Q > 0 \\ 0, & Q = 0, \end{cases}$$

where Q denotes output and $c > 0$.

Problem 21

In equilibrium, the monopolist's output is $Q^M > 0$

(A) if and only if $\frac{a}{c} > 2$.

(B) for all $\frac{a}{c} > 1$.

(C) if and only if $\frac{a}{c} < 8$.

(D) for all $\frac{a}{c} < 16$.

Problem 22

If the monopolist's output in equilibrium is $Q^M > 0$, the corresponding monopoly price is

(A) $p^M = \frac{a+2c}{4}$.

(B) $p^M = \frac{a+c}{2}$.

(C) $p^M = \frac{a-2c}{4}$.

(D) $p^M = \frac{a-c}{2}$.

Problem 23

If the monopolist's output in equilibrium is $Q^M > 0$, the corresponding welfare loss is

(A) $\text{WL} = \left(\frac{a+2c}{4}\right)^2$.

(B) $\text{WL} = \left(\frac{a+c}{2}\right)^2$.

(C) $\text{WL} = \left(\frac{a-2c}{4}\right)^2$.

(D) $\text{WL} = \left(\frac{a-c}{2}\right)^2$.

For problems **24-25**, assume that $a = 80$ and $c = 20$.

Problem 24

If a price ceiling at $\overline{p} = 25$ is introduced, the remaining welfare loss in equilibrium will be

(A) WL $= 0$.

(B) WL $= 25$.

(C) WL $= 50$.

(D) WL $= 100$.

Problem 25

If a tax $t > 0$ per unit of output is introduced, tax revenue will be maximized at

(A) $t = 10$.

(B) $t = 20$.

(C) $t = 30$.

(D) $t = 40$.

Block 6: Macroeconomic Indicators

Problems 26-27 refer to the following scenario:

Consider an economy with only three producers: a farmer, a miller, and a baker. In a particular year, only the following production and expenditure activities take place.

- The farmer purchases grain seeds for 100,000 Euros from abroad and sows them. She sells her grain harvest for 300,000 Euros to the miller.
- The miller uses the grain to produce flour. He sells one part of his flour production for 300,000 Euros to the baker, another part for 200,000 Euros to domestic consumers, and the rest for 100,000 Euros abroad.
- The baker purchases further ingredients for 100,000 Euros from abroad which she uses together with the flour to produce bread. She sells a part of her bread production for 500,000 Euros to domestic consumers and the rest for 300,000 Euros abroad.

Problem 26

The economy's nominal GDP in that particular year amounts to

(A) 700,000 Euros.

(B) 800,000 Euros.

(C) 900,000 Euros.

(D) 1,000,000 Euros.

Problem 27

The economy's net exports in that particular year amount to

(A) $-200{,}000$ Euros.

(B) $-100{,}000$ Euros.

(C) 100,000 Euros.

(D) 200,000 Euros.

Problems 28-30 refer to the following scenario:

Consider a closed economy which produces only two goods; tennis balls and tennis rackets. In each period, the entire output is consumed.

Base Period: 2023

	Output of tennis balls	Price per tennis ball	Output of tennis rackets	Price per tennis racket
2023	100	5	35	100
2024	400	1	20	140
2025	150	2	30	120

Problem 28

Compared to 2023,

(A) both nominal and real GDP are greater in 2024.

(B) nominal GDP is greater and real GDP is smaller in 2024.

(C) both nominal and real GDP are smaller in 2025.

(D) nominal GDP is smaller and real GDP is greater in 2025.

Problem 29

(A) In 2024, the GDP-Deflator is 0.7.

(B) In 2024, the CPI is 1.0.

(C) In 2025, the GDP-Deflator is 0.8.

(D) In 2025, the CPI is 1.1.

Problem 30

The inflation rate

(A) between 2023 and 2024 based on the GDP-Deflator is 0.1.

(B) between 2023 and 2024 based on the CPI is -0.2.

(C) between 2024 and 2025 based on the GDP-Deflator is 0.3.

(D) between 2024 and 2025 based on the CPI is -0.4.

Block 7: Economic Growth

Problems 31-35 refer to the following scenario:

Consider a closed economy in the long run. Output Y is determined by the production possibilities according to

$$Y = F(L, K) = L^a K^{1-a},$$

where L denotes the labor force, K denotes the capital stock, and $a \in (0, 1)$. Output is used for consumption C and investment I. Investment equals savings sY, where $s \in (0, 1)$ denotes the saving rate. Savings are invested in the capital stock. In any period t, the labor force grows at the rate $n = \frac{1}{20}$, while the capital stock depreciates at the rate $\delta = \frac{1}{20}$. Let lower-case letters denote quantities per worker.

Problem 31

In any steady state,

(A) capital per worker k grows at the rate $\frac{1}{10}$.

(B) the capital stock K grows at the rate $\frac{1}{10}$.

(C) output per worker y grows at the rate $\frac{1}{20}$.

(D) output Y grows at the rate $\frac{1}{20}$.

Problem 32

If $a = \frac{1}{4}$ and $s = \frac{2}{5}$, steady-state capital per worker is

(A) $k^* = 64$.

(B) $k^* = 128$.

(C) $k^* = 256$.

(D) $k^* = 512$.

Problem 33

If $a = \frac{1}{4}$ and $s = \frac{4}{5}$, steady-state output per worker is

(A) $y^* = 64$.

(B) $y^* = 128$.

(C) $y^* = 256$.

(D) $y^* = 512$.

Problem 34

If $a = \frac{1}{2}$, the golden-rule saving rate is

(A) $s_{gold} = \frac{1}{4}$.

(B) $s_{gold} = \frac{1}{3}$.

(C) $s_{gold} = \frac{1}{2}$.

(D) $s_{gold} = \frac{2}{3}$.

Problem 35

If $a = \frac{1}{2}$, an increase of the saving rate from $s = \frac{1}{4}$ to $s = \frac{1}{3}$

(A) implies an immediate decrease in consumption as well as a decrease in the steady-state consumption per worker.

(B) implies an immediate decrease in consumption but an increase in the steady-state consumption per worker.

(C) implies an immediate increase in consumption as well as an increase in the steady-state consumption per worker.

(D) implies an immediate increase in consumption but a decrease in the steady-state consumption per worker.

Block 8: Economic Fluctuations

Problems 36-40 refer to the following scenario:

Consider a closed economy in the short run, where Y denotes output, and r denotes the interest rate. In the goods market, demand Z comprises private consumption $C(Y-T) = 100 + \frac{2}{3}(Y-T)$ with taxes $T \geq 0$, planned investment $I(r) = 300 - 10r$, and government consumption $G \geq 0$. Total savings S comprise private savings S_{Pr} and government savings S_G. In the financial market, liquidity demand is $L(Y,r) = Y - 10r$, while money supply is $M \geq 0$. In the initial general equilibrium, output is $Y = 1{,}000$, while the interest rate is $r = 10$. Assume that the upper limit on output is $Y = 2{,}000$.

Problem 36

In the initial general equilibrium, if government consumption is $G = 200$, then taxes must be

(A) $T = 150$.

(B) $T = 200$.

(C) $T = 250$.

(D) $T = 300$.

Problem 37

Assume that taxes are increased by 100, while government consumption and money supply remain unchanged. As a result, investment in general equilibrium will

(A) increase by 50.

(B) increase by 150.

(C) decrease by 50.

(D) decrease by 150.

Problem 38

Assume that government consumption and taxes are both increased by 100, while money supply remains unchanged. As a result, private consumption in general equilibrium will

(A) increase by 25.

(B) increase by 50.

(C) decrease by 25.

(D) decrease by 50.

Problem 39

Assume that government consumption and taxes are both decreased by 100, while money supply is increased by 100. As a result, private savings in general equilibrium will

(A) increase by 25.

(B) increase by 50.

(C) decrease by 25.

(D) decrease by 50.

Problem 40

Ceteris paribus, an increase

(A) in government consumption decreases investment, decreases government savings, and decreases private savings in general equilibrium.

(B) in taxes increases investment, increases government savings, and decreases private savings in general equilibrium.

(C) in money supply, increases investment, increases government savings, and increases private savings in general equilibrium.

(D) in money supply increases investment, decreases government savings, and increases private savings in general equilibrium.