This is the final (and the only) examination. It will take 60 minutes.

In order to pass successfully the exam, read the following instructions carefully:

• write legibly, unintelligible handwriting will not be corrected and will receive zero points
• make answers short and to the point – irrelevant material may be penalized
• the exam has 4 pages (including one extra page for notes), make sure you have all pages
• negative points are awarded for wrong answers (only) in part I
• if you have a question, you must ask it publicly and I will answer publicly
• any violation of academic honesty will be punished to the fullest extent possible

I. Multiple choice questions (circle the correct answer) – more than one answer can be correct, points are subtracted for incorrect answers (30 points total, -30 points minimum)

1. (6 points) According to Brander-Spencer equilibrium in the Cournot model the introduction of an export subsidy (ceteris paribus)
   a. leads to profit maximization of the subsidised company given the reaction curve of the company from the other country.
   b. leads to higher level of production of the subsidised company than is the production of the company from the other country.
   c. leads to higher level of production of the subsidised company than it would otherwise be without any subsidy.
   d. leads to lower level of production of the subsidised company than it would otherwise be without any subsidy.

2. (6 points) The term “spiderweb” spiral of the international trade (see picture) can explained by
   a. restrictive monetary policies of the Fed.
   b. expansive monetary policies of the Fed.
   c. fiscal restriction.
   d. tariff retaliation.

![Down the Plughole](image-url)
3. **(6 points)** The parameter $\varepsilon$ in the Dixit-Stiglitz monopolistic competition (and hence Krugman model)
   a. measures the elasticity of substitution between two different varieties.
   b. measures the price elasticity of demand for a variety.
   c. is used as a measure of economies of scale in equilibrium.
   d. none of the above is correct.

4. **(6 points)** The pure external economies of scale mean that
   a. an increase in industry-wide output alters the technological relationship between input and output for each individual firm.
   b. market structure cannot be perfectly competitive.
   c. market structure can be perfectly competitive.
   d. external economies are transmitted by the market through price effects for the individual firm, which alter its output decision.

5. **(6 points)** Trade indifference curve
   a. reflects the curvature of the iso-utility curve only.
   b. reflects the curvature of the iso-utility curve and of the production possibility frontier.
   c. is the underlying phenomena behind the “optimal tariff” theory.
   d. reflects the curvature of the production possibility frontier only.

II. True, False or Uncertain? Explain in space provided! (30 points total, 0 points minimum)

1. **(6 points)** Capital intensity parameter $\alpha$ in the usual Cobb-Douglas production ($Y = K^\alpha L^{1-\alpha}$) function represents the share of total costs paid for the use of capital in the production process.
   Reminder: Prove your answer!

2. **(6 points)** According to Hecksher-Ohlin theorem the country abundant with capital will produce only capital intensive goods.

3. **(6 points)** As opposed to Ethier’s interpretation of Krugman model, the utility in original Krugman model increases due to the increase of consumption of final good which is made possible by more efficient production process.
Questions 4 and 5 use the same graph and setting. The graph depicts the situation of a monopolist in a country of Alusia that is producing an olive oil. The country is closed to international trade to begin with.

4. **(6 points)** After the opening of the country to international trade there would be no production of olive oil in Alusia.

5. **(6 points)** It is impossible (not even theoretically) to impose tariff such that the price and production would correspond to competitive level corresponding to domestic technological structure.
III. Write a detailed answer (30 points total, 0 points minimum)

1. (10 points) Japan was forced to open itself to international trade in 1859 by force. It therefore offer a quasi-natural experiment to test predictions of comparative advantage theory. In a table below you see the goods prices changes between 1853 and 1869 and net exports in 1869. Do data support the comparative advantage theory predictions?

<table>
<thead>
<tr>
<th>Good</th>
<th>Price change (%)</th>
<th>Net export (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silk</td>
<td>100</td>
<td>0,7</td>
</tr>
<tr>
<td>Silkworm eggs</td>
<td>80</td>
<td>1,1</td>
</tr>
<tr>
<td>Wax</td>
<td>10</td>
<td>0,1</td>
</tr>
<tr>
<td>Cotton</td>
<td>40</td>
<td>- 0,2</td>
</tr>
<tr>
<td>Rice</td>
<td>0</td>
<td>- 1,1</td>
</tr>
<tr>
<td>Iron</td>
<td>- 70</td>
<td>- 0,2</td>
</tr>
<tr>
<td>Sugar</td>
<td>- 30</td>
<td>- 0,5</td>
</tr>
<tr>
<td>Tea</td>
<td>- 20</td>
<td>0,6</td>
</tr>
</tbody>
</table>

2. (30 points) Let’s assume that labour is easier to reallocate than capital, which we refer to as sector-specific (in the short run and intermediate run, but not in the long run). The picture below depicts the value marginal product of labour (VMPL) for manufacturers/M (bottom left origin) and food/F (bottom right origin), given the distribution of capital. In equilibrium, a sector’s VMPL is equal to the wage rate. The distance between two origins is equal to the total labor force; the allocation of labor to manufacturers is measured from the left-hand origin and the allocation of labor to food from the right-hand origin. In both sectors the marginal product of labor (and VMPL) declines as more labor is used.

a) Depict the equilibrium ($E_0$) and resulting wage rate for manufacturers ($w_{m0}$) and wage rate in the food sector ($w_{f0}$).

b) Now assume that from exogenous reasons the price of manufacturers increases. Depict the short run equilibrium ($E_1$) and resulting wage rates ($w_{m1}$, $w_{f1}$). (Note: in the short run labor and capital allocation do NOT change).
c) In the medium term the allocation of labor DOES change. So, depict the medium term equilibrium (E$_2$), resulting wages ($w_{m2}$, $w_{f2}$) and explain in the production of manufacturers and food (if any).

d) In the long run both labor and capital allocation DO change. So, depict the long-run (neoclassical) equilibrium (E$_3$). Explain the movement of rental rate for manufacturers. Relate the result to the Stopler –Samuelson theorem.