Last name (in capital letters):

First name (in capital letters):

Student registration number:

Signature:

General instructions:

1. *Papers that are missing either name, student number, or signature are not valid*

2. *Write your name, student number, and signature also on the other sheets employed to answer the questions; these sheets, together with scratch paper, have to be handed back*

3. *Questions are to be answered with a pen; pencil is allowed only for graphs*

4. *Available time: 1 hour and 30 minutes*

5. *The exam papers evaluation and marking will be shown to students this afternoon*

Multiple choice questions (2 points for correct answer, 0 for blank answer, -1 for wrong answer)

1. In the Ricardian framework with two countries (Home and Foreign) and labor as factor of production consider the following unit labor requirements for the Cheese and Wine industries:

	Cheese	Wine
Home	1 hour/pound	3 hours/gallon
Foreign	5 hours/pound	4 hours/gallon

If in the free-trade equilibrium the relative price of cheese and wine is equal to 1, the wage in Home relative to the wage in Foreign is:
  a) 4
  b) 5/4
  c) 1

2. In the Heckscher-Ohlin framework suppose the following unit input requirements hold in the production of cigars and food: $a_{LC} = 2$ man-hours for 1 cigar; $a_{KC} = 2$ machine-hours for 1 cigar; $a_{LF} = 1$ man-hour for 1 K-calorie of food; $a_{KF} = 2$ machine-hours for 1 K-calorie of food.
From the data above it can be deduced that:
  a) cigars are labor-intensive, while food is capital-intensive
  b) cigars are capital-intensive, while food is labor-intensive
  c) both goods are labor-intensive

3. Consider the asset approach to foreign exchange markets. A rise in the future expected exchange rate dollar/euro (higher $E^e_{\$/\euro}$):
   a) causes a rise in the current exchange rate $E_{\$/\euro}$ (the dollar appreciates)
   b) causes a fall in the current exchange rate $E_{\$/\euro}$ (the dollar depreciates)
   c) causes a rise in the current exchange rate $E_{\$/\euro}$ (the dollar depreciates)

4. In the model with overshooting of the exchange rate, if we assume that money supply in the U.S. increases at time t_0
   a) the interest rate on dollar deposits in the long run tends to be permanently higher than the one prevailing before time t_0
   b) the interest rate on dollar deposits does not change neither in the short nor in the long run
   c) the interest rate on dollar deposits in the long run tends to go back to the same level prevailing before time t_0

Question: Ricardian model of trade (5 points)

Let us consider two big countries, H and F, that are trading with each other a good X and a good Y. There is only one factor of production, labor, and both countries have an endowment of labor equal to L_0. Country H has a comparative advantage in the production of good Y:

$$\frac{a_X^H}{a_Y^H} > \frac{a_X^F}{a_Y^F}.$$

i)   Draw the graph for the excess demand curves for good X for these two countries under free trade. Determine also graphically the equilibrium terms of trade, and call them $\hat{p}_0$. What is the condition with respect to E_X^H and E_X^F that the equilibrium terms of trade $\hat{p}_0$ satisfy?

ii)   Indicate the directions of trade; that is, indicate the sign of E_X^H, E_Y^H, E_X^F, E_Y^F when free trade between these two countries is allowed.

Let us now assume that country F grows due to an increase in its labor endowment from L_0 to L_1, with $L_0 <$ L_1.

iii)   Draw the original and the new production possibility frontier in country F and show graphically the original and the new equilibrium consumption points, C_0 and C_1 respectively, if the terms of trade stay constant at their initial level $\hat{p}_0$.

iv)   In a separate graph, show through the excess demand curves for good X in country H and country F how to determine the new terms of trade, $\hat{p}_1$, that are realized after country F grows. Which country is experiencing a deterioration of her terms of trade? Which country is experiencing an improvement of her terms of trade?

Going back to point iii), show what is the final consumption point C_2 (hint: take into account the change in the terms of trade). Is C_2 on a higher or lower indifference curve with respect to C_1? Why?

Question: Import tariffs with big countries (5 points)

Let us consider two big countries, H and F, that are trading with each other a good X and a good Y.

i)   Draw the graph for the excess demand curves **for good Y** for these two countries under free trade, under the hypothesis that $p_A^H > p_A^F$; that is, the equilibrium relative price p_X/p_Y in autarchy is higher in country H with respect to country F. Determine also graphically the equilibrium terms of trade, $\hat{p}$. What is the condition that equilibrium terms of trade $\hat{p}$ satisfy?

Country F decides to levy an *ad valorem* tariff equal to t on imports. After the introduction of the tariff, equilibrium terms of trade change, and they assume a new value that we indicate with $\hat{p}_t$.

ii)   Write the analytic expression for the domestic relative price in country F, p_t^F, after the import tariff is levied, as a function of the new international terms of trade $\hat{p}_t$.

iii)   Show graphically through the excess demand curves for good Y in country H and country F how to determine the new terms of trade, $\hat{p}_t$, after the tariff is levied.

Redo points ii) and iii) in the case of an import tariff levied by country H on good X.

Question: Theory of multinational enterprises (5 points)

Consider the model that describes the choice between *outsourcing* and vertical MNE.

i) Employing the same notation seen in class, write the profit equation for the multinational form, Π^{MNE}, as a function of the parameters (p_A, c^*, a, H), and that of the national form, Π^{NE}, as a function of the parameters (p_A, c^*, a, θ, γ).

ii) Compute the profit differential $\Pi^{MNE} - \Pi^{NE}$ and write the conditions under which this differential is larger, equal or smaller than zero. Represent graphically Δrevenues of the MNE form and the associated Δcosts.

iii) Discuss the role of the parameter θ in shaping the organizational choice of the firm, and retrieve the threshold value for this parameter that affects the choice.

iv) Finally, show graphically the impact of **productivity growth** in the foreign country (c^* goes down) on the likelihood to observe the presence of vertical MNE.

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