International Economics Exam

Last name (in capital letters):

First name (in capital letters):

Student registration number:

Signature:

*General instructions:*

1. *Answer all questions from sections A and C, and answer only one question out of two from section B;*
2. *Exam papers that are missing either name, student number, or signature are not valid;*
3. *Write your name, student number, and signature also on the sheets employed to solve the exam; these sheets, together with scratch paper, have to be handed back;*
4. *Questions are to be answered in pen; pencil is allowed only for graphs;*
5. *Available time: 1 hour and 30 minutes.*

SECTION A

Multiple choice questions (2 points for correct answer – including the graphs where required, 0 for blank answer, -1 for wrong answer)

1. Consider the general traditional framework. Assume that trade is allowed in a country, and that the relative price the country faces after trade, p^T_X/p^T_Y, is smaller than relative price it faced under autarchy, p^A_X/p^A_Y. In this framework, **gains from exchange** occur because:
   a) the country exports X and imports Y
   b) given the same production pattern of autarchy, the country is able to sell abroad the good whose relative price is higher than in autarchy and buy from abroad the good whose price is lower
   c) the country is able to increase the production of the good relatively more expensive on international markets and to decrease the production of the good relatively cheaper

2. Consider the Brander-Spencer framework of strategic trade policy. If there is **cooperation** among the two governments
   a) there will be a subsidy paid to firms ($u=u^*>0$)
   b) there will be a tariff/tax paid by firms ($u=u^*<0$)
   c) there will not be either a subsidy or a tariff ($u=u^*=0$)

3. Consider the vertical FDI model. We know that the cost differential between the multinational and national form is $B^{MNE} - B^{NE} = H + t – (c – c^*)$. When the home country is losing competitiveness (**higher** c), this is conducive to
   a) shifting to the left the threshold of foreign marginal production cost c^* above which it is convenient to stay national
   b) shifting to the right the threshold of foreign marginal production cost c^* above which it is convenient to stay national
   c) making trade and FDI substitutes

4. Consider the model about the choice between licensing and horizontal FDI. In this model the profit differential between the multinational and national form is $\Pi^{MNE} - \Pi^{NE} = p - (\lambda - 1)(c + F) - (c + F + H)$. Represent graphically in the following space the Δrevenues of the MNE form (net of production costs of the additional plant) and the Δcosts (due to headquarters):

Δrevenues, Δcosts

1 λ
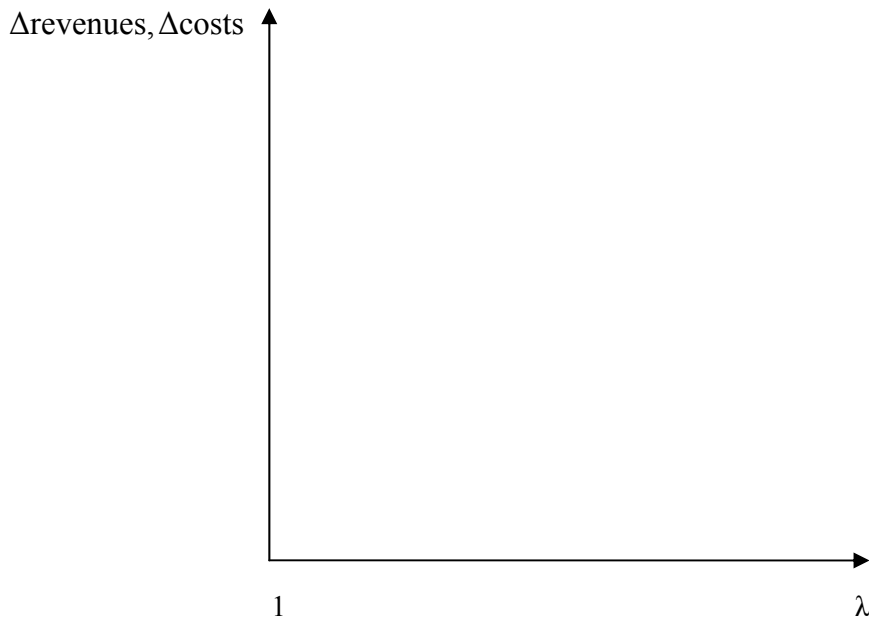
Growth/innovation (**lower** c) is conducive to
   a) shifting to the left the threshold of the excludability parameter $\lambda^\wedge$ above which it is convenient to stay national
   b) shifting to the right the threshold of the excludability parameter $\lambda^\wedge$ above which it is convenient to stay national
   c) a higher royalty paid by the foreign agent in equilibrium [hint: the equilibrium royalty satisfies the condition $(p - c - F) - R = p - \lambda (c + F)$]

SECTION B: Answer only one question out of the following two (answer either B.1 or B.2).

Question B.1: Ricardian model of trade

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?

v) 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 B.2: Theories of trade with imperfect competition

Let us consider the Brander and Krugman (1983) model with imperfect competition. In country H, in a given sector with homogeneous final output, there are two firms: one is domestic and the other is foreign. The marginal cost for production in country H of the domestic firm is c, while the marginal cost for production of the foreign firm is

$$\hat{c} = \frac{c}{\tau},$$

where the parameter $\tau < 1$ represents freeness of trade, which is inversely related to the level of trade barriers (transport costs, tariffs, etc.). Let us also recall that, when the domestic firm has market power, the profit maximizing price is p, being equal to

$$p = \frac{\sigma}{\sigma - s} c$$

where σ is the market demand elasticity, and s is the market share of the domestic firm in country H.

i) When there is autarchy there are no competitors for the domestic firm in market H. What is the autarchy price, p_A, that she charges in this case?

ii) Write the expression of the price, p^*, charged by the foreign firm in H, as a function of σ, s, c, τ, when trade is allowed.

iii) Since we are dealing with a homogeneous good, in equilibrium, when there is trade, it has to be that $p_T = p = p^*$, where p_T is the equilibrium price when there is trade. Starting from this condition, write the analytic expression of the market share, s, held by the domestic firm. Write also the analytic expression of the equilibrium price p_T as a function of the exogenous parameters σ, c, and τ only (the variable s is endogenous and disappears).

iv) Derive the analytic condition that has to be satisfied by the freeness of trade parameter, τ, in order to have trade; that is, derive the analytic condition that allows the foreign firm's market share to be positive in country H. Why does this condition depend on the parameter σ of market demand elasticity.

v) Compare the equilibrium price in H under autarchy, p_A, and the equilibrium price under trade, p_T. What price is the largest? Why?

SECTION C

"New trade" theories

Consider the **variety effect** framework. Suppose that fixed costs for a firm in the automobile industry (start-up costs of factories, capital equipment, and so on) are $5,000,000 and that variable costs are equal to $18,000 per finished automobile. The market elasticity of demand is assumed to be equal to 3. Assume that the size of the U.S. and the European labor forces are 250 million and 360 million people, respectively.

i) Calculate the equilibrium number of firms in the U.S. and European automobile markets without trade.

ii) What is the equilibrium price, operating margin and quantity-per-firm of automobiles in the United States and Europe if the automobile industry is closed to foreign trade?

iii) Now suppose that the United States decides on free trade in automobiles with Europe. How many automobiles firms will there be in the United States and Europe combined? What will be the new equilibrium price, operating margin and quantity-per-firm of automobiles?

[Hint: If you remember the final formulas relevant to this problem, you can substitute directly the problem's values into the formulas; if you don't remember the formulas you need to derive them from the three ingredients of full employment of workers, free entry/exit of firms, and profits maximizing price. Remember that in the variety effect model each firm enjoys a monopoly power, i.e., $s = 1$.]