The following aids may be used: Calculator

This examination comprises three questions. Please answer all of them. In total, you can get 120 points. The available amount of time is two hours.

Question 1:

Consider the usual specific-factors-model with two industries (*furniture* and *transportation equipment* with output prices P_F and P_T) and three factors of production (*craftsmen C, engineers E*, and *natural resources R*). Suppose that natural resources R are mobile between the two industries. The resource units used in the transportation industry are denoted by R_T and the resource units used in the furniture industry are denoted by R_F ($R = R_T + R_F$). Furthermore, it is assumed that craftsmen are specific to the production of furniture, $Q_F = Q_F(C, R_F)$, and that engineers are specific to the production of transportation equipment, $Q_T = Q_T(E, R_T)$.

a) (*10 points*) Draw the usual four quadrant diagram, where in the upper right quadrant the production possibility frontier is depicted (with output Q_T on the horizontal axis and output Q_F on the vertical axis) and in the lower left quadrant the allocation of natural resources.

b) (*4 points*) Let MPR_F denote the marginal product of natural resources in the furniture industry and let MPR_T denote the marginal product of natural resources in the transportation industry. Briefly explain whether the following statement is correct: "The opportunity cost of transportation equipment in terms of furniture is equal to the ratio MPR_T/MPR_F".

c) (*5 points*) Explain algebraically, why the equilibrium allocation of natural resources is characterized by the following condition: $MPR_T/MPR_F = P_F/P_T$. (Hint: The price of a unit of natural resources P_R must be identical in both industries.)

d) (*5 points*) In a *single* diagram, draw a curve which depicts $P_T \cdot MPR_T$ as a function of R_T and a curve which depicts $P_F \cdot MPR_F$ as a function of R_F. Using this diagram, determine the equilibrium allocation of natural resources (R_T^1, R_F^1) and the equilibrium price of natural resources (P_R^1).

e) (*5 points*) Up to now, only one country (*Home*) was considered. Now suppose that there is a second country (*Foreign*) which in every aspect (production technology, consumers, factor endowments) is identical to Home, the only difference being: Foreign has more craftsmen. Indicate in your diagram of question 1d also Foreign's $(P_T^* \cdot MPR_T^*)$-curve and Foreign's $(P_F^* \cdot MPR_F^*)$-curve, given that $P_T^* = P_T$ and $P_F^* = P_F$.

f) (*8 points*) According to the information and the results of question 1e, depict in a single new diagram the relative supply curves (RS and RS^*) and the relative demand curves (RD and RD^*) of Home and Foreign. Which pattern of trade will emerge when the two countries open up for trade?

g) (*3 points*) List for Home the distributional consequences arising from the pattern of trade identified in question 1f.

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Question 2:

Consider a *small* country (*Home*) with two goods (*food* and *manufactures*). Suppose that Home trades with another country (*Foreign*) and that there are no barriers to trade. World prices for the two goods are denoted by P_F^* and P_M^*.

a) (*8 points*) Suppose that at current world prices P_F^* and P_M^*, Home imports food and exports manufactures. Depict this situation in a diagram which shows Home's production possibility frontier (usual shape, with the output of manufactures Q_M on the horizontal axis and the output of food Q_F on the vertical axis). Indicate Home's optimal output bundle Q_1 and optimal consumption bundle D_1.

b) (*10 points*) Suppose that Home imposes an ad valorem tariff t on imports of food. Indicate in your diagram of question 2a the new output bundle Q_2 chosen by Home. Indicate in your diagram also Home's budget constraint associated with the new output bundle Q_2 and justify the slope and the position of this budget constraint.

c) (*12 points*) Indicate in your diagram of question 2b the new consumption bundle D_2 and compare it to the original consumption bundle D_1. Explain how the overall welfare loss can be decomposed into two subeffects: the production efficiency loss and the consumption efficiency loss. What happens to Home's volume of trade and to Home's terms of trade?

d) (*10 points*) Draw the same type of diagram as in questions 2a to 2c for the case that (instead of a tariff) an export subsidy is granted to Home's exports of manufactures.

Question 3: Shorties

a) (*3 points*) Comment on the following statement: "For a country, free trade is beneficial only if this country is productive enough to stand up to international competition. But many countries have no comparative advantage in anything."

b) (*4 points*) For countries with identical technologies, resources, and consumers, there can still exist an incentive for trade. Explain why.

c) (*5 points*) Using a suitable numerical example, explain why labour market pooling can be beneficial for both workers and employers.

d) (*8 points*) Australia primarily exports high-tech products whereas it imports low-tech products. In the context of the standard-trade-model, illustrate graphically the impact on Australia's terms of trade of the following events:
A) South Korea and some other Asian countries shift their production away from low-tech products to high-tech products.
B) Australia introduces an export subsidy on its high-tech exports.

e) (*10 points*) In the context of a partial equilibrium model, explain the welfare effects arising for country *Home* which abolishes an import tariff on some good G (large country case). For your explanation, use a suitable diagram which depicts the market situation in *Home* for good G.

f) (*10 points*) Suppose that a government cares only about maximizing its votes in the next election. Suppose that its votes depend solely on two factors: a) cash put into election-campaign, b) degree to which the government policy serves the interest of "special groups". It is assumed that the cash for the election campaign is provided by the "special groups". Using the four quadrant diagram outlined in the course, show by which degree of special interest policy the government maximizes its votes.