International Trade: Theory and Policy 5EN455
Final Examination – May 26, 2015

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)** In neoclassical framework (2x2x2) there is a one-to-one correspondence between the prices of the final goods and the prices of the factors of production.
   a. This holds if both goods are produced and also for corner solutions.
   b. This implies if factor prices are known, the prices of final goods can be derived but not the other way around.
   c. This implies if factor prices are known, the prices of final goods can be derived and vice versa.
   d. none of the above is correct.

2. **(6 points)** If GLi = 0
   a. there is only inter-industry trade, no intra-industry trade.
   b. there is only intra-industry trade, no inter-industry trade.
   c. intra-industry trade is equal to inter-industry trade.
   d. none of the above is correct.

3. **(6 points)** Assume a monopoly in a production of good M and a competitive industry in a production of a good F.
   a. Demand curve for M is always inelastic at a point of production in autarky.
   b. The effect of opening market to international competition is larger production of M.
   c. The effect of opening market to international competition is lower level of achieved utility.
   d. The effect of opening market to international competition is increase of relative price of M to price of F.

4. **(6 points)** In the core economic geography model
   a. we assume monopolistic competition in the production of M goods.
   b. we assume monopolistic competition in the production of F goods.
   c. we assume the mobility of labor in between the regions.
   d. none of the above is correct.
5. **(6 points)** Iceberg transportation costs (introduces by Samuelson in 1952)
   a. are used when most of the transportation costs are invisible.
   b. imply that only a fraction of goods shipped between locations arrives at destination.
   c. always decrease the welfare as they rise.
   d. none of the above is correct.

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

1. **(6 points)** There are two factors of production: L and K. Assume a production function \( M = K^{\delta}L^{1-\delta} \) and a cost function \( wL + rK \).
   \( \delta/(1-\delta) * (w/r) \) shows us the ratio of factors of production K/L. Prove your answer!

2. **(6 points)** VERs are completely equivalent to tariffs provided that quotas are distributed by the government protecting its home market for free and domestic industry is a monopoly. Prove your answer!

3. **(6 points)** The income elasticity of demand for any variety in Dixit-Stiglitz model of demand is 1. Prove your answer!
Questions 4 and 5 use the same setting. Assume Dixit-Stiglitz model of monopolistic competition. One specific measure of economies of scale is: average costs divided by marginal costs.

4. **(6 points)** If marginal costs are lower than average costs, an increase in production will reduce the cost per unit. Prove your answer!

5. **(6 points)** For a low value of ε this measure of economies of scale (average costs divided by marginal costs) is high. Prove your answer!
III. Write a detailed answer (40 points total, 0 points minimum)

1) (5 points) Show in a graph of PPF the impact of tariff on the general equilibrium. Assume neoclassical world.

2) (35 points) Assume that firm A (from country A) produces quantity $q_A$ and the firm B (from country B) produces $q_B$. Their production is exported to a third country where they are engaged in a Bertrand type competition (the good are imperfect substitutes). Their prices are $p_A$ and $p_B$. Companies face linear demand curves $q_A = a - p_A + p_B$ and $q_B = a - p_B + p_A$. Both firms have marginal costs $c$.

   a) (5 points) Set both profit functions $\pi_A$ and $\pi_B$.

   b) (5 points) Derive reactive functions.

   c) (5 points) Find the Bertrand equilibrium.
d) (20 points) Derive the optimal size of the tax $t$ maximizing imposed by the government of the country A on the firm A that would strategically maximize domestic welfare. Find optimum values of $p_A$, $p_B$ and $\pi_A$ (A’s firm profit net of taxes).