

ECO 3704
Summer 2016
Exam 1
7/12/2016
Time Limit: 115 Minutes

Name (Print): _____

This exam contains 7 short answer questions, one longer answer, and 2 long answer questions. You must complete all short answer and longer answer questions; however, you only need to complete 1 of the long answer questions. Check to see if any pages are missing.

You may *not* use your books or notes on this exam. Calculators are permitted.

You are required to show your work on each problem on this exam. The following rules apply:

- **Organize your work**, in a reasonably neat and coherent way, in the space provided. Work scattered all over the page without a clear ordering will receive very little credit.
- **Show your work**. A correct answer, unsupported by calculations, explanation, or algebraic work will receive no credit; an incorrect answer supported by substantially correct calculations and explanations might still receive partial credit.
- If you need more space, use the back of the pages; clearly indicate when you have done this.

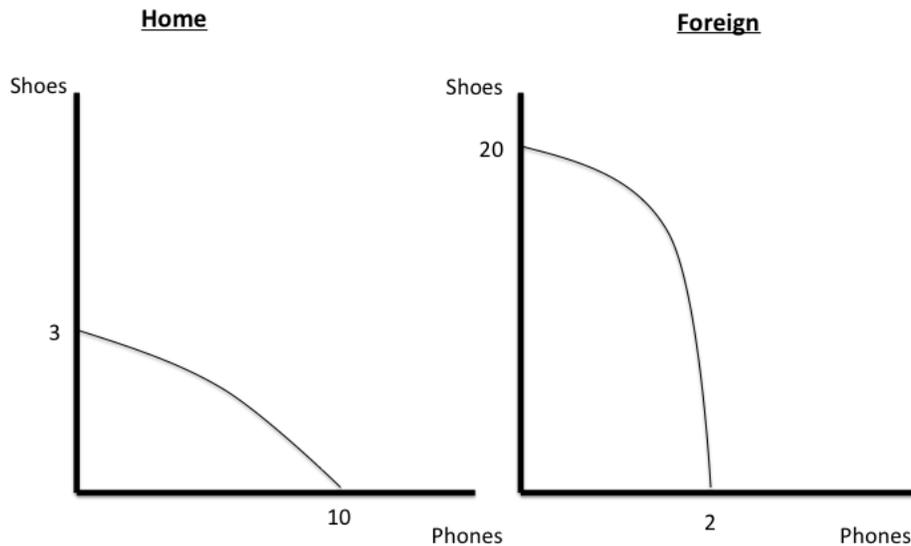
Short Answer Questions: Please answer the following in no more than twenty words each.

1. (6 points) How might a country encourage migration?

2. (6 points) State the Stolper-Samuelson theorem.

Longer Answer Question: Please answer the following. Be sure to label any graphs.

1. (18 points) (HO Model) There are two countries: Home and Foreign. The countries both produce phones and shoes. Assume that phones are capital-intensive.
 - (a) (7 points) Judging from the PPF's below, which country is capital abundant.



- (b) (7 points) Draw the export supply curve and import demand curve on the same graph with phones on the x-axis and the relative price of phones to shoes on the y-axis. Make sure to label which curve belongs to which country. There is no need to label the intercepts.

Long Answer Questions: Please answer the following. Show all work. Draw graphs where needed. Only answer 1 of the 2 questions.

1. (40 points) (Ricardian Model) Shirtland has two industries: teddy-bears and anvils. Every extra unit of labor in the teddy-bear industry produces 1 teddy bear. Likewise, an extra worker in the anvil industry produces $\frac{1}{2}$ of an anvil. There are 100 workers in Shirtland.

(a) (10 points) Draw the PPF with teddy-bears on the x-axis. Be sure to label the necessary points. Draw in a generic utility curve.

(b) (10 points) Suppose trade opens up with Tieland. Tieland, without trade, sells teddy-bears at $(\frac{P_t}{P_a})^* = 1$, where $\frac{P_t}{P_a}$ is the relative price of teddy-bears to anvils. When trade opens up, which country will export anvils? Why? Give a possible relative trade price of teddy-bears.

- (c) (10 points) Without trade, Shirtland produces and consumes 60 teddy bears and 20 anvils. How much labor is in the anvil industry? How much labor is in the teddy bear industry? With trade, how much labor is employed in the anvil industry and how much labor is employed in the teddy bear industry?
- (d) (10 points) Suppose that after trade occurs, preferences in Shirtland also change dramatically such that the utility curve is now a straight line of the same slope as the new trade price line. How much of each good will shirtland consume after trade? Explain your answer.

2. (40 points) (Specific Factors Model) Zamunda produces rice and textiles. Labor is used to produce both goods. Land (T) is used to produce rice while capital (K) is used to create textiles. The marginal product of labor in the rice industry is $40L_R^{-\frac{3}{4}}$, where L_R is the amount of labor employed in the rice industry. Likewise, the marginal product of labor in the textile industry is $50L_T^{-\frac{1}{2}}$, where L_T is the amount of labor employed in the textile industry.
- (a) (10 points) The wage in both sectors is $w = 10$. If P_R , the price of rice, is equal to 2, what is the amount of labor used in the rice sector. How many workers are in the country if $P_T = 1$, where P_T is the price of textiles. Graph the equilibrium wage and labor in each industry using a graph with wage on the y-axis and L_R and L_T on the x-axis.

- (b) (10 points) Are either industries displaying diminishing returns of labor? Which? Now assume that the price of rice increases and the price of textiles decreases. Will the wage increase, decrease, or stay the same? Why?

- (c) (10 points) Assume the same prices as in part (a). Suppose a new soil was invented and used in every rice farm. The soil changes the marginal product of labor such that $MPL_R = 80L_R^{-\frac{1}{2}}$. Does this soil increase the productivity of the workers? Why or why not?

- (d) (10 points) Suppose immigration reform resulted in a larger workforce. There are now 100 workers in this economy. Show graphically (no need to compute anything) how this will change the equilibrium from part a. How does wage change?

Bonus question (5 points): Given an MPL equal to $7L_r^{-\frac{1}{2}}$, give a possible production function for an industry that uses both labor and land.