

Answer Key for Practice Midterm

Name: _____

Instructions

1. There are three sections: multiple choice questions, essay questions, and computation questions.
2. This is a closed book, closed notes exam.
3. Simple calculator is allowed.
4. Please show all your work (except for the multiple choice questions). If you need more space, use the back of the page.
5. Fully label all graphs.

Part I: Multiple Choice Questions

Choose the best answer. Explanation is **not** required.

1. The ratio of a country's exports to its total output (GNP or GDP)
 - (a) is known as the index of openness.
 - (b) provides a rough measure of the importance of international trade to that economy.
 - (c) if calculated for the United States would be quite low.
 - (d) All of the above.**

2. Which of the following is true?
 - (a) Much of the trade of the European Union (EU) countries is with EU countries.**
 - (b) Industrialized countries tend to trade relatively little and largely with developing countries.
 - (c) Developing countries in Africa and South America tend to trade the most and largely with themselves.
 - (d) All of the above are true.

3. If the autarky price of T (in terms of S) were lower in country A than in country B,
 - (a) A has a comparative advantage in T.**
 - (b) B has a comparative disadvantage in S.
 - (c) A has a comparative advantage in S.
 - (d) All of the above.

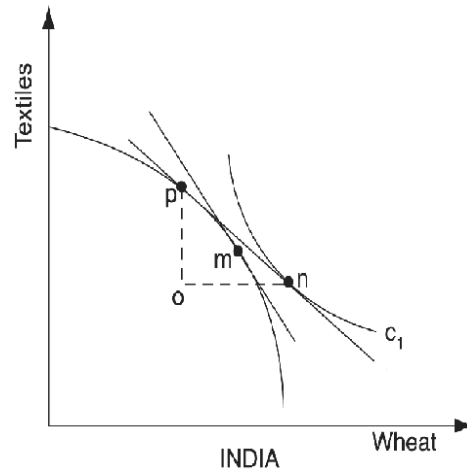
4. The classical theory predicts that
 - (a) countries will completely specialize in the production of export goods.
 - (b) considerable trade will occur between countries with different levels of technology.
 - (c) small countries could obtain all of the gains from trade when trading with large countries.
 - (d) All of the above.**

5. According to the classical theory of international trade
 - (a) only countries with low wages will export.
 - (b) only countries with high wages will import.
 - (c) countries with high wages will have higher relative prices of all goods.
 - (d) All the above are false.**

6. According to the HO model,
 - (a) everyone automatically gains from trade.
 - (b) the gainers from trade outnumber the losers from trade.**
 - (c) the scarce factor necessarily gains from trade.
 - (d) None of the above.

7. According to the factor price equalization theorem, if country A is labor abundant, then once trade opens
 - (a) wages and rents should fall in A.
 - (b) wages and rents should rise in A.
 - (c) wages should rise and rents should fall in A.**
 - (d) wages should fall and rents should rise in A.

Answer questions 8-10 based on the following diagrams of an international trade equilibrium between Australia and India



8. Australia has comparative advantage in
 - (a) Textiles.
 - (b) Wheat.**
 - (c) Both textiles and wheat.
 - (d) Can't tell without more information.

9. India's exports equal
 - (a) on units of wheat.
 - (b) op units of textiles.**
 - (c) cd units of wheat.
 - (d) Can't tell without more information.

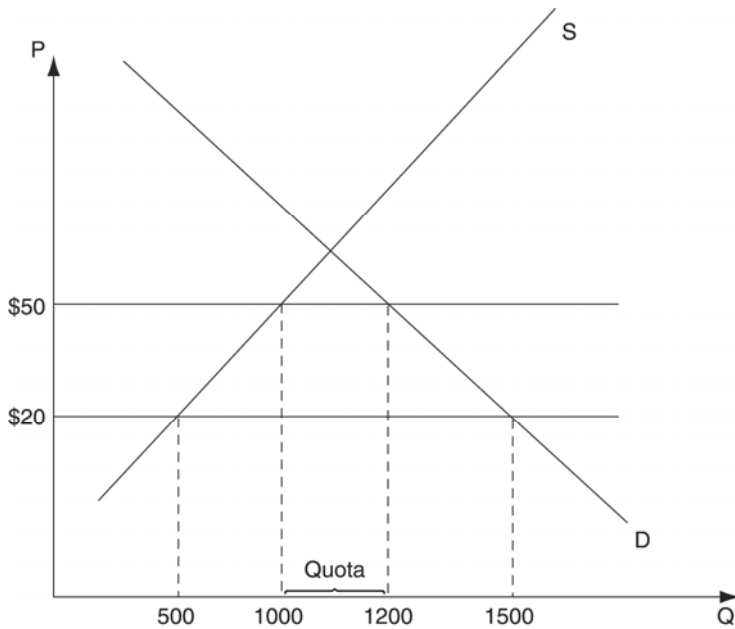
10. If wheat is land intensive and relative to textiles then according to the HO theory, Australia is _____ abundant.
 - (a) land**
 - (b) labor
 - (c) both land and labor
 - (d) Can't tell without more information

11. According to the Rybczynski theorem, at constant world prices, if a country experiences a gain in its capital stock it will produce
 - (a) more of the capital intensive good and less of the labor intensive good.**
 - (b) more of both goods.
 - (c) less of the capital intensive good and more of the labor intensive good.
 - (d) less of both goods.

12. According to the factor price equalization theorem, the _____ factor should oppose free trade policies in any given country.
 - (a) abundant
 - (b) scarce**
 - (c) neither
 - (d) Can't tell without more information

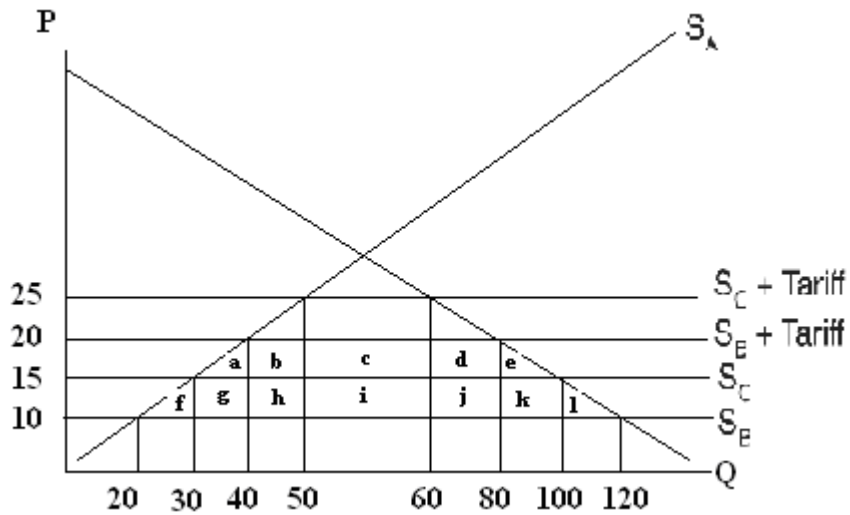
13. Suppose that there are two factors, capital and land, and that the United States is relatively capital abundant while Canada is relatively land abundant. According to the HO model,
- (a) Canadian landowners should support Canada-U.S. free trade.
 - (b) Canadian capitalists should oppose Canada-U.S. free trade.
 - (c) U.S. capitalists should support Canada-U.S. free trade.
 - (d) All of the above.**
14. According to the human skills theory
- (a) trade patterns depend upon a country's relative endowment of skilled workers.
 - (b) countries with large endowments of skilled labor will have comparative advantage in skilled labor intensive products.
 - (c) the Leontief paradox is explained by the fact that the United States is relatively skilled labor abundant.
 - (d) All of the above.**
15. A tariff can _____ raise a country's welfare
- (a) never
 - (b) sometimes**
 - (c) always
16. Like tariffs, quotas tend to lead to
- (a) higher prices and reduced imports.**
 - (b) increased government revenue.
 - (c) increased consumer surplus.
 - (d) All of the above.
17. _____ are profits that accrue to whomever has the right to import the quota restricted good.
- (a) Quota licenses
 - (b) Quota rents**
 - (c) Quota prices
 - (d) None of the above.
18. Tariffs and quotas tend to be similar in their domestic welfare effects
- (a) if quota licenses are given to foreigners.
 - (b) if quota license are auctioned.
 - (c) if quota licenses are given to domestic firms.
 - (d) Both (b) and (c).**

Answer questions 19-20 based on the following diagram.



19. The quota restricts trade by the same amount as a tariff of
- (a) \$20.
 - (b) \$30.**
 - (c) \$50.
 - (d) Cannot answer without more information.
20. Quota rents equal
- (a) \$2000.
 - (b) \$5000.
 - (c) \$6000.**
 - (d) \$10000.

Answer questions 21-24 based on the following diagram which depicts country A's market for its importable.



21. If A imposes a per unit tariff of \$10 on imports from both B and C, it will import
- (a) **40 units from B.**
 - (b) 10 units from C.
 - (c) 40 units from each.
 - (d) 40 units from B and 10 units from C.
22. If A forms a customs union with B, the quantity of trade creation will be
- (a) 100 units.
 - (b) **60 units.**
 - (c) 40 units.
 - (d) 30 units.
23. Domestic producers of this product in A would most prefer
- (a) a customs union with C.
 - (b) a customs union with B.
 - (c) a free trade agreement with both B and C.
 - (d) **no agreement with either country.**
24. Domestic consumers of this product in A would most prefer
- (a) a customs union with C.
 - (b) **a customs union with B.**
 - (c) a free trade agreement with C.
 - (d) no agreement with either country.

Part II: Essay Questions

1. Some have argued that the factor price equalization theorem implies that U.S. wages must fall to the level of those found in the least developed countries of the world. Comment on the validity of this statement.

The factor price equalization theorem holds in the HO model because of certain assumptions. Specifically, the assumption of identical production techniques leads to the result that workers everywhere will have the exactly the same productivity, and hence trade guarantees that they earn the same wage. In fact, workers in different countries have very different productivities, and receive different wages according to those productivities. Labor in the United States is more productive than labor in, say, Mexico, and receives a correspondingly higher wage. However, even though there are differences in factor prices due to differences in productivities even with free trade, one can expect these differences to be larger in the absence of trade. Hence, factor prices tend to be more equal across countries under free trade. The significance of the FPE theorem is its prediction of this tendency of factor prices to be equalized following a trade liberalization.

2. (a) Why were Leontief's findings considered to be paradoxical?

Leontief assumed that the US was the most capital abundant country in the world after World War II and expected his test of the HO model to confirm that US exports were relatively capital intensive while US imports were relatively labor intensive. Instead, he found that US imports were more capital intensive than its exports, hence Leontief's Paradox.

(b) Discuss one of the attempted reconciliations of Leontief's findings

Here are a few reconciliations:

*** Leontief: American workers were so productive relative to workers in the rest of the world, the U.S. should more properly be viewed as being relatively labor abundant.**

*** Jaroslav Vanek argued that an important third factor, natural resources, had been omitted from the analysis. Natural resources, such as minerals, tend to be produced using capital-intensive techniques. Thus, on a two-factor basis, U.S. imports appeared to be relatively capital intensive. [U.S. imports were actually intensive in a third factor, natural resources**

*** Prevailing U.S. tariff structure: U.S. tariffs on labor-intensive products tended to be high.**

*** Assumption 17 –international equality of tastes – is violated. Comparisons of expenditure patterns across countries indicate that differences in tastes and preferences could be significant in overturning HO predictions.**

*** Assumption 14 - identical technology, A14 - is violated. In his test, he used the U.S. input-output table to construct the factor requirements for both U.S. exports and U.S. import-competing goods. The assumption he then made was that foreign goods would be produced using technologies identical with those found in U.S. import-competing industries. If factor prices are not equalized internationally, and if labor is relatively more expensive in the U.S. than in the rest of the world, then Leontief's procedure would estimate that U.S. imports are relatively more capital intensive than the techniques actually used to produce these goods in the rest of the world.**

Part III: Computation Questions

Please show all the formulas and calculations.

1. Suppose that the United States and Mexico are the only countries in the world and that labor is the only productive input.

In the Mexico, it requires 6 hours of labor to produce a television (X) and 4 hours of labor to produce a computer (Y). In the United States, it requires 3 hours of labor to produce a television (X) and 3 hours of labor to produce a computer (Y).

In other words, we have the following input requirement table:

	hours of Labor required to produce	
	a television (X)	a computer (Y)
Mexico	6	4
U.S.	3	3

a) Which country has absolute advantage in X? in Y? Explain.

The U.S. has absolute advantage in both goods because it requires fewer resources to produce the same amount of goods.

b) Determine the pretrade relative prices ($\frac{P_X}{P_Y}$) i.e. the price of a television (X) in units of computer (Y) in each country.

In Mexico:
$$\frac{P_X}{P_Y} = \frac{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, X}}}{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, Y}}} = \frac{6}{4} = 1.5$$

i.e. the price of a television is 1.5 computers.

In the U.S.:
$$\frac{P_X}{P_Y} = \frac{W_{\text{US}} \times \text{hours}_{\text{US, X}}}{W_{\text{US}} \times \text{hours}_{\text{US, Y}}} = \frac{3}{3} = 1$$

i.e. the price of a television is 1 computers.

c) Complete the following table.

	Units of Labor required to produce		Opportunity Cost of producing 1 unit of	
	a television (X)	a computer (Y)	X	Y
Mexico	6	4	6/4=1.5	4/6=2/3
U.S.	3	3	1	1

d) Which country has comparative advantage in X? in Y? Explain.

The U.S. has comparative advantage in X because, as can be seen from b), the autarky (pretrade) relative price of X is lower in the U.S. Similarly, it can also be seen from c): the U.S. can produce X with lower opportunity cost.

Mexico has comparative advantage in Y because it can produce Y with lower opportunity cost.

e) If each country is endowed with 60 hours of labor, how much X and Y will each country produce after trade begins? Explain.

**Mexico will completely specialize in the production of good Y.
It will produce $60/4 = 15$ units of Y, none of X.**

**The U.S. will completely specialize in the production of good X.
It will produce $60/3 = 20$ units of X, none of Y.**

f) If Mexico and the U.S. sign a free trade agreement, what is the allowable range on the terms of trade (that is, the price of a television (X) in units of computer(Y) under free trade) if trade is flowing between these two countries according to comparative advantage? Why?

The terms of trade must lie between the two autarky relative prices i.e. the rate of exchange for a television must be between 1 computer and 1.5 computers.

If one television can be exchanged for less than 1 computer, the U.S. will not engage in trade with Mexico. If one television can be exchanged for more than 1.5 computers, Mexico will not engage in trade with the U.S.

g) Denote the wage rate in Mexico and the wage rate in the U.S. by W_M and W_{US} , respectively. Denote the exchange rate that translate units of Mexican peso into \$ by E . What is the allowable range on the relative wage rate, $\frac{W_{US}}{E * W_M}$, if trade is flowing between these two countries according to comparative advantage?

For the U.S. to export its comparative-advantage good X, it must be that

$$3 * W_{US} < E * 6 * W_M \text{ or } \frac{W_{US}}{E * W_M} < \frac{6}{3} \text{ or } \frac{W_{US}}{E * W_M} < 2$$

For Mexico to export its comparative-advantage good Y, it must be that

$$E * 4 * W_M < 3 * W_{US} \text{ or } \frac{4}{3} < \frac{W_{US}}{E * W_M}$$

Combining the two conditions, it must be the case that $\frac{4}{3} < \frac{W_{US}}{E * W_M} < 2$.

2. Suppose that a small, tropical country produces mangoes for domestic consumption and possibly for export. The national demand and supply curves for mangoes in this country are given by the following:

$$P = 50 - Q \quad (\text{national demand})$$

$$P = 25 + Q \quad (\text{national supply})$$

where P denotes the relative price of mangoes and Q denotes the quantity of mangoes (in metric tons).

a) What is the autarky price and quantity exchanged? Illustrate them on the demand and supply diagram for mangoes.

To find the autarky prices and quantities, the demand and supply equations must be solved simultaneously. To find Q , set the right hand sides equal to each other. So doing, yields $Q = 12.5$. Using this result, insert it into either equation to find $P = 37.5$.

Make sure to label your graphs!

b) Suppose that the world price of mangoes is 45. What are the level of domestic production and consumption? Will this small country export or import mangoes? If so, how many tons?

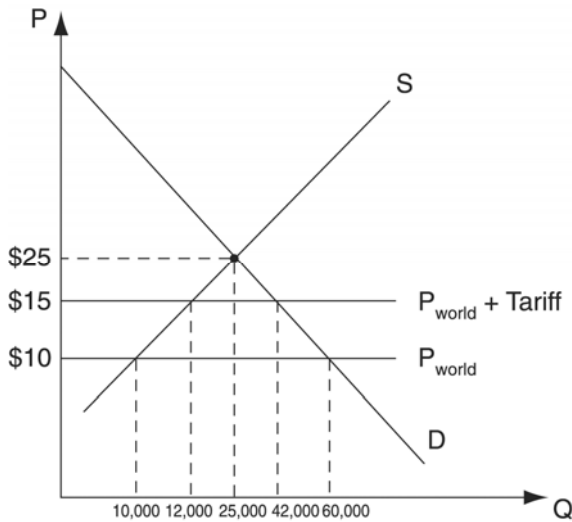
Domestic production : $45 = 25 + Q, \quad Q_s = 20$

Domestic consumption: $45 = 50 - Q, \quad Q_d = 5$

Since the world price is higher than autarky price of mangoes, this country would be an exporter of mangoes.

Then this country will export $(20-5) = 15$.

3. Answer the questions based upon the following diagram (assume the small country case).



a) What is the autarky price and quantity exchanged?

Autarky price = \$25. Quantity exchanged = 25,000 units.

b) Suppose the world price of this good is \$10. With free trade, calculate the total quantity of imports.
60,000-10,000 = 50,000 units.

c) With the tariff of \$5 per unit, calculate quantity of imports.
42,000 – 12,000 = 30,000 units.

d) With the above tariff, how much will the government be able to collect as tariff revenue?
\$5 * 30,000 = \$150,000

e). Illustrate the deadweight loss on the above diagram.

f) If instead of a tariff, the government restricts trade by imposing a quota. What is the amount of quota that would produce the same effects on the amount of imports as the above tariff?

The Quota of 30,000 units