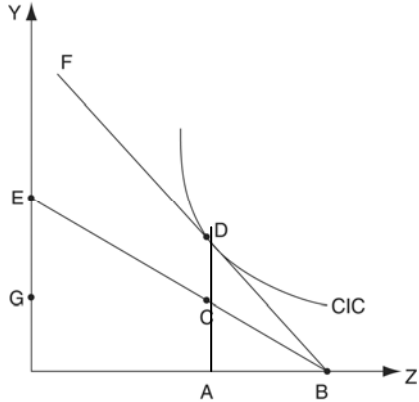


**Assignment 2**  
**Answer Key (Maximum Score = 100)**

**Multiple-Choice Questions** (2 points each)

Answer questions 1-5 based on the following diagram of a country in international trade equilibrium



EB represents the country's PPF. FB represents the country's terms of trade line.

1. This country has comparative advantage in good
  - (a) S.
  - (b) T.
  - (c) Y.
  - (d) Z.**
2. In equilibrium, this country produces at point
  - (a) B.**
  - (b) C.
  - (c) D.
  - (d) E.
3. In equilibrium, this country consumes at point
  - (a) B.
  - (b) C.
  - (c) D.**
  - (d) E.
4. Exports for this country equal
  - (a) OA units of Z.
  - (b) AB units of Z.**
  - (c) AC units of Y.
  - (d) AD units of Y.
5. Imports for this country equal
  - (a) OA units of Z.
  - (b) AB units of Z.
  - (c) AC units of Y.
  - (d) AD units of Y.**

6. According to the Heckscher-Ohlin (HO) model the source of comparative advantage is a country's
  - (a) technology.
  - (b) advertising.
  - (c) factor endowments.**
  - (d) Both (a) and (c).
  
7. The HO model rules out the classical model's basis for trade by assuming that \_\_\_\_\_ is (are) identical between countries.
  - (a) factor endowments
  - (b) factor intensities
  - (c) technology**
  - (d) opportunity costs
  
8. If tastes are identical between countries, then comparative advantage is determined by
  - (a) supply conditions only.**
  - (b) demand conditions only.
  - (c) supply and demand conditions.
  - (d) Can't tell without more information.
  
9. 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.**
  
10. In his tests, Leontief found that
  - (a) U.S. exports are capital intensive relative to U.S. imports.
  - (b) U.S. exports are labor intensive relative to U.S. imports.**
  - (c) U.S. exports are neither labor nor capital intensive.
  - (d) None of the above.
  
11. Leontief's results were considered paradoxical because the United States was believed to be
  - (a) technologically efficient relative to the rest of the world.
  - (b) capital abundant relative to the rest of the world.**
  - (c) labor abundant relative to the rest of the world.
  - (d) All of the above.
  
12. The simultaneous export and import of airplanes by the United States is an example of
  - (a) increasing returns to scale.
  - (b) imperfect competition.
  - (c) intraindustry trade.**
  - (d) interindustry trade.
  
13. Tariff levels in developing countries tend to be \_\_\_\_\_ tariff levels in developed countries.
  - (a) lower than
  - (b) about equal to
  - (c) higher than**
  - (d) there is no general pattern

### Classical Model of International Trade

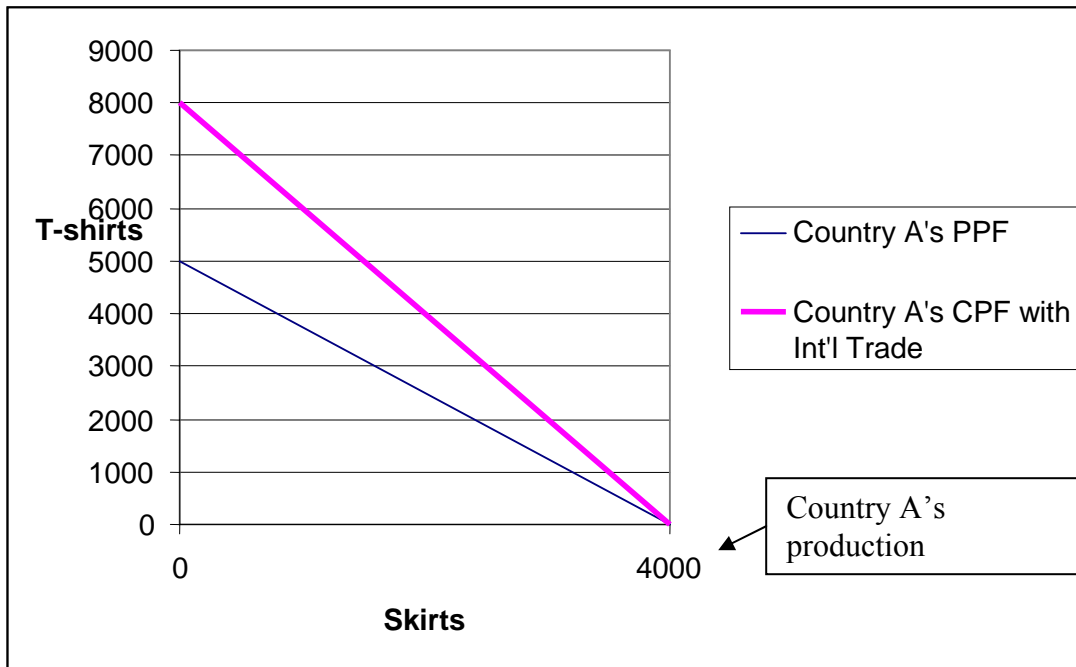
14. (16) Suppose that labor is the only productive input and there are 20,000 hours of labor available in country A. Five hours of labor are needed to produce 1 skirt, while 4 hours are required to produce 1 t-shirt.

a) Show country A's PPF (with skirts on the x-axis) (3 points).

b) Suppose that the free trade relative price of skirts is 2. Which good will country A export (3 points)? How many skirts and t-shirts will country A produce once trade is allowed (4 points)?

Show the production point (3 points) as well as the consumption possibilities frontier (3 points) on the diagram you drew in part a).

**Country A will export skirts since pre-trade relative price of skirts is lower than the free trade price. Country A will completely specialize in the production of skirts i.e. producing 4000 skirts. Country's CPF is determined by the TOT line.**



### The Heckscher – Ohlin Model

15. (8) Consider the following data on the factor endowments of two countries, A and B:

	Countries	
	A	B
Labor Force (millions of workers)	45	20
Capital Stock (thousands of machines)	15	10

a) Which country is relatively capital abundant? Which country is relatively labor abundant? Explain (4)

c) Suppose that good S is capital intensive relative to good T. Which country will have comparative advantage in the production of S? Explain (4).

First, both countries have more labor than machines. But country A's labor-capital ratio is three-to-one, while B's is only two-to-one. Thus country A is relatively labor abundant, and country B must be relatively capital abundant. Alternatively, country A has three thousand workers for every machine (45,000,000/15,000), while country B has two thousand workers per machine. Thus country B is relatively capital abundant, and country A is relatively labor abundant.

From the HO theorem, we know the labor-abundant country A will have comparative advantage in the relatively labor-intensive good (T), and the capital-abundant country B will have comparative advantage in the relatively capital-intensive good (S).

### Short Essay Questions

16. (3) State the factor price equalization theorem. 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.

**Factor Price Equalization Theorem: Given all assumptions of the Heckscher-Ohlin model, free trade will lead to the international equalization of individual factor prices.**

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.

17. (3) What is Leontief Paradox? List three of the attempted reconciliations of Leontief's findings. Discuss one of them.

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.

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.**

18. (3) Discuss various reasons why we might expect countries to engage in intraindustry trade.

**First, transportation costs may be a factor. If two parts of a country are very far apart, it might be logical for one region to export a product while another distant region imports the same product. Second, the data may be misleading. Since import and export data tend to be aggregated across broad categories, a country might be simultaneously exporting and importing goods in the same category although they have very different characteristics. Finally, economies of scale may lead to specialization in narrow product lines (or varieties of a good), with countries exporting several varieties of a product in exchange for different varieties of the same product.**

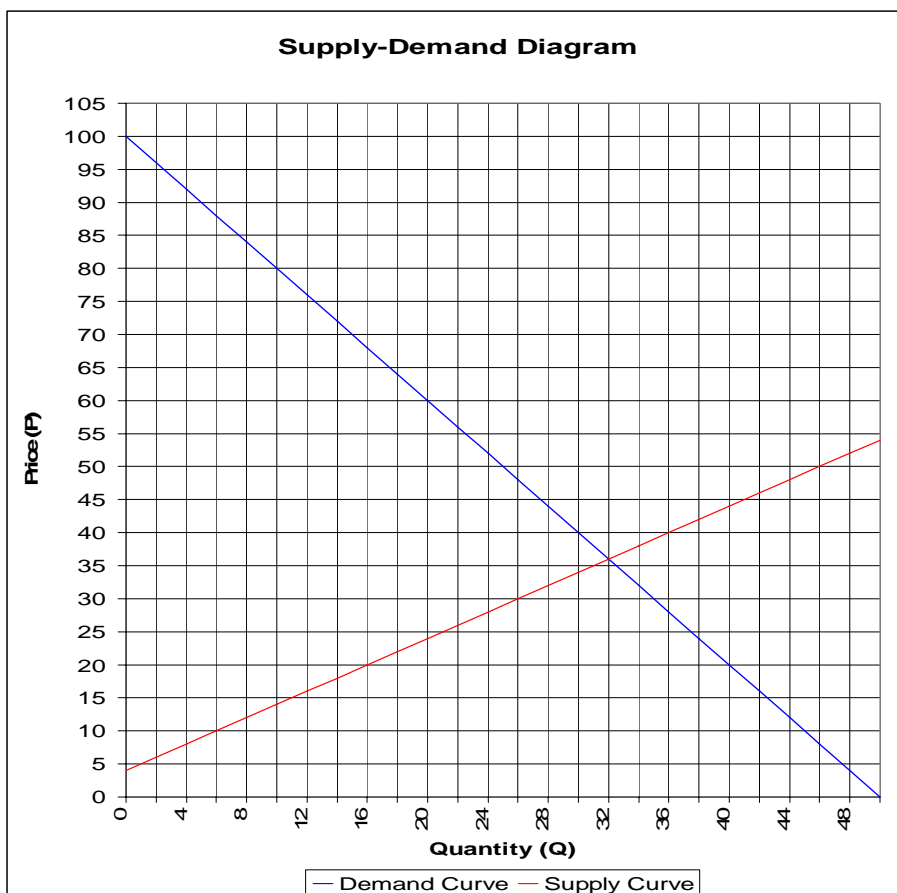
## Tariffs

19. (41) Suppose that the domestic demand and supply for shoes in a small open economy are given by

$$\begin{array}{ll} P = 100 - 2Q & \text{(demand)} \\ P = 4 + Q & \text{(supply)} \end{array} \quad \text{where } P \text{ denotes price and } Q \text{ denotes quantity.}$$

a) What are the autarky price of shoes (3) and quantity produced (3)? Illustrate them on the demand and supply diagram for shoes (4).

$$\text{Solve } 4 + Q = 100 - 2Q \rightarrow Q = 32 \rightarrow P = \$36.$$



**Make sure to label the intercepts as well as the equilibrium P and Q on the above graph!!!**

b) What are the levels of domestic production (3), consumption (3), and imports (3) if the world price is 10? Illustrate them on the demand and supply diagram for shoes (3).

To find domestic production, use the domestic supply equation evaluated at the price of \$10.

$$10 = 4 + Q \quad (\text{supply})$$

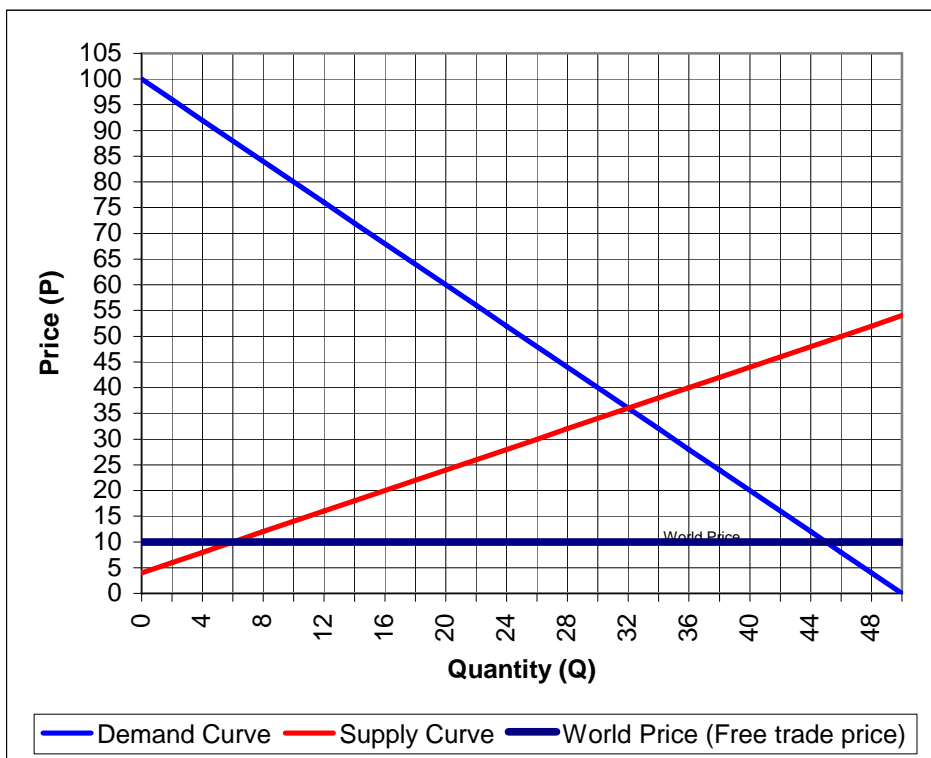
→  $Q_1 = 6$  ; domestic production = 6

To find domestic consumption, use the domestic demand equation evaluated at the price of \$10.

$$10 = 100 - 2Q \quad (\text{demand})$$

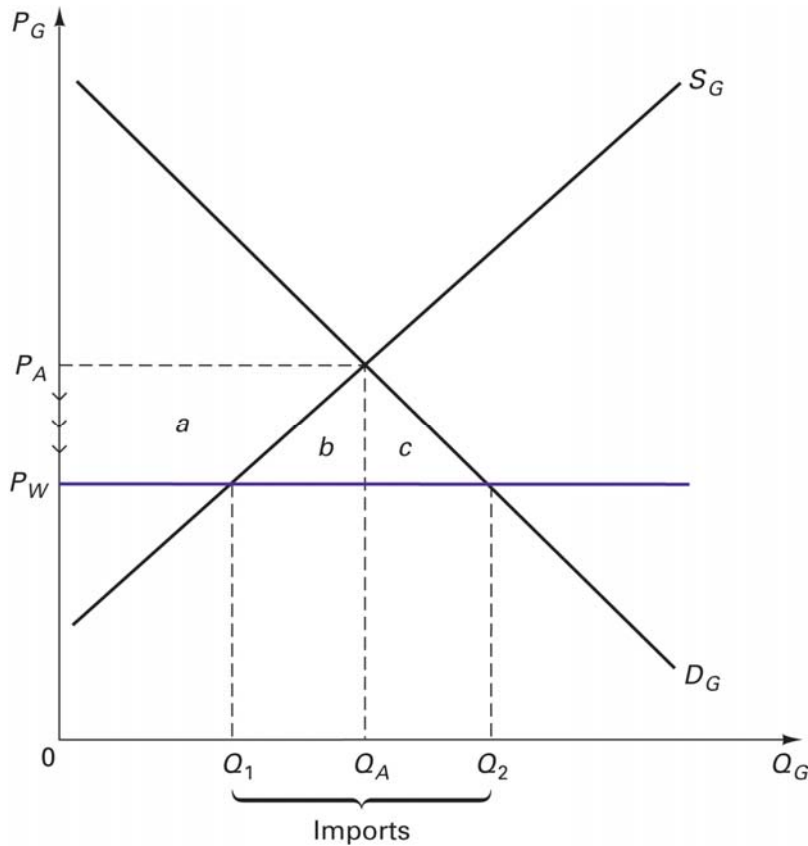
→  $Q_2 = 45$  ; domestic consumption = 45

Imports = domestic consumption – domestic production =  $Q_2 - Q_1 = 45 - 6 = 39$ .



c) Use the diagram you drew in part b) to prove that the country is better off with free trade (4).

Hint: You need to show the net welfare change of a move to free trade. Net welfare change = the sum of the change in consumer surplus and the change in producer surplus. You do not need to calculate anything. Indicating the area of each object is enough. Figure 6.4 and Table 6.2 in the textbook maybe useful.



**A move to free trade increases consumer surplus by  $\$(a+b+c)$  but decreases producer surplus by  $\$a$ .**

**Thus, national welfare improves by  $\$(b+c)$  with free trade.**

Gains from free trade (imports side) – the market for an importable

$\Delta CS$   $\$(a+b+c)$  (better off)

$\Delta PS$   $-\$a$  (worse off)

$\Delta \text{Welfare}$   $\$(b+c)$

d) What are the levels of domestic production (2), consumption (2), imports (2), and government revenue (2) if this country were to impose a specific tariff of \$2?

**With a specific tariff of \$2, the domestic price = free trade price + \$2 = \$12. At this price, we can calculate domestic production, consumption and imports.**

**Domestic production (using the supply curve) = 8;**

**Domestic consumption (using the demand curve) = 44;**

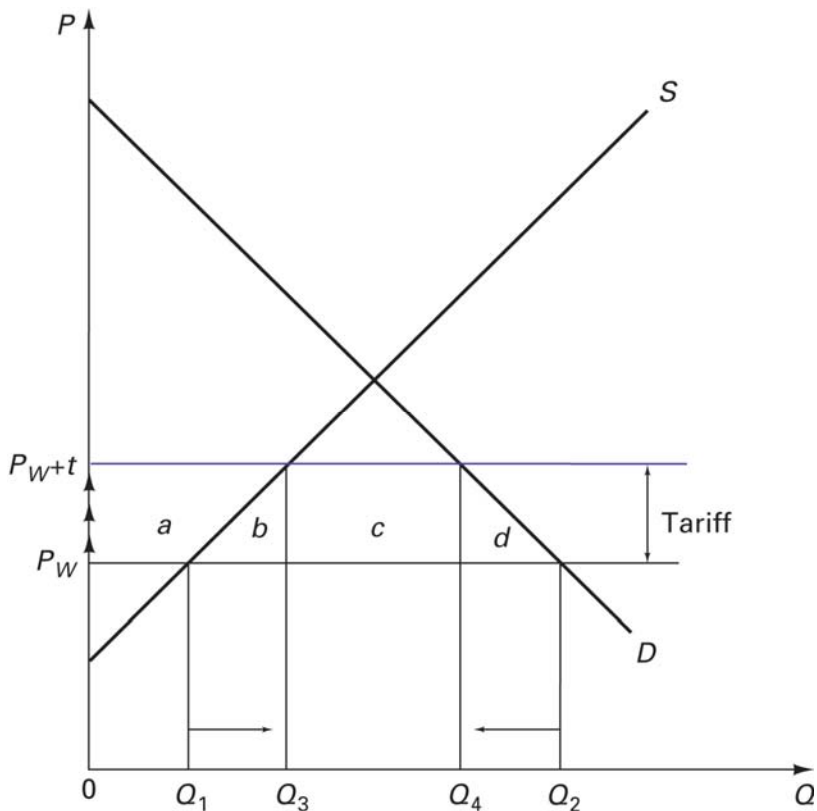
**Imports = 36;**

**Government Revenue = imports \* tariff per unit = 36\*\$2 = \$72.**

**Insert a diagram.**

e) In a separate diagram, illustrate the effect of the import tariff in part d) on the society's net welfare i.e. illustrate the net welfare change of a move from free trade to trade with tariff (4).

Hint: Figure 6.6 and Table 6.4 may be useful.



**A specific Tariff = \$t**

**Δ imports does not affect the world price as it is an economically small country.**

**ΔCS                                    -a-b-c-d**

**ΔPS                                        a**

**ΔGovt Revenue                        c**

**ΔWelfare                                -b-d**

f) What is the deadweight cost of the tariff in part d) (if there is any) (3)?

**The economy as a whole has lost \$(b+d) - the deadweight Cost of the tariff.**