

Name: \_\_\_\_\_

**Agricultural Economics 101**  
**Final Examination**  
**December 14, 1990**

**SHOW ALL WORK**

- I. \_\_\_\_\_ (25 pts.)
- II. \_\_\_\_\_ (35 pts.)
- III. \_\_\_\_\_ (25 pts.)
- IV. \_\_\_\_\_ (35 pts.)
- V. \_\_\_\_\_ (30 pts.)

*Note: Question III relates to the material covered by exam 1 and Question I relates to exam 2.*

1. Now that you have taken Agricultural Economics 101, Ed Burger is seeking your advice (lucky you!). Ed is making Holiday Salsa (!) and wants to hire workers to help him produce a sufficient supply for the holidays. The salsa sells for \$3.00 per jar and he finds that he has to pay workers \$250/week. In addition, he has assessed the worker's potential productivity and has estimated the following production function:

<u>Number of Workers Per Week</u>	<u>Jars of Salsa Produced Per Week</u>
1	220
2	420
3	600
4	700
5	740
6	700

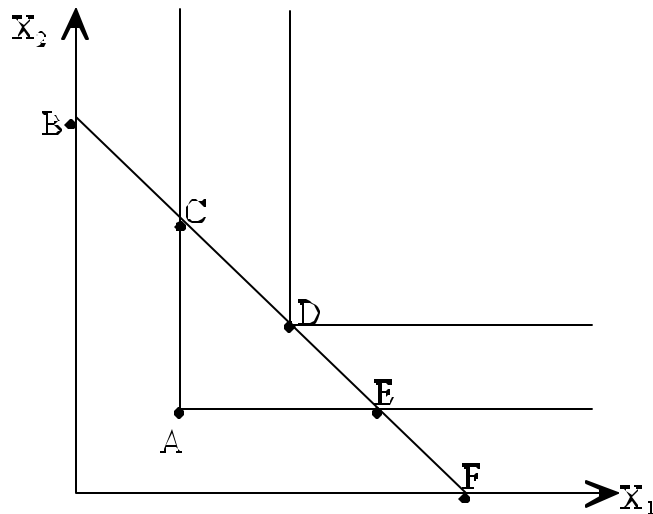
Given this information, please help Ed by doing the following:

- (a) Graph Ed's demand curve for hired labor on the attached graph. Be sure to label both axes.
- (b) Determine the number of workers that should be hired to maximize salsa output.
- (c) Determine the number of workers that should be hired to maximize Ed's profit.
- (d) Suppose that Ed finds that Joe has become a "competitor" and is also selling Holiday Salsa but at only \$2.50 per jar. If Ed lowers his price for salsa from \$3.00 to \$2.49 per jar, what impact will this change have on Ed's demand for labor (no impact, increase, decrease)?

*Note: This question is intended to get at the factors that cause changes in demand.*

Graph for  $I(a)$ :





- II. Two isoquants and an isocost line are shown above. The isoquants correspond to 1000 and 1200 units of output, and the isocost line corresponds to a cost of \$1800. The output can be sold for \$2/unit. Given this information, please answer the following.
- (a) Choose the point(s) (A, B, C, D, E, F) where 1000 units of output can be produced at least cost.
    - (1) Total revenue (TR)
    - (2) Total fixed cost (TFC)
    - (3) Total variable cost (TVC)
    - (4) Profit ( $\pi$ )
  - (b) If you move from point D to C, determine what impact this will have on:
    - (1) Total revenue (TR)
    - (2) Total fixed cost (TFC)
    - (3) Total variable cost (TVC)
    - (4) Profit ( $\pi$ )
  - (c) Determine the cost of purchasing input  $X_2$  at the point F.
  - (d) If you wanted to determine how many units of  $X_1$  to use to be economically efficient, which points (A, B, C, D, E, F) should you compare? Why?

III. The own-price, cross-price, and income elasticities for commodities A and B are shown below:

Own-price:

$$|\epsilon_A| = 0.92$$

$$|\epsilon_B| = 1.23$$

Cross-price:

$$\epsilon_{A \text{ w.r.t. } B} = 0.70$$

$$\epsilon_{B \text{ w.r.t. } A} = 0.20$$

Income:

$$\eta_y^A = 0.21$$

$$\eta_y^B = 0.22$$

Given this information, please determine the following:

- (a) If the price of commodity B increases by 8%, determine the percentage change in the quantity of B demanded.

Answer: \_\_\_\_\_ %

- (b) If consumer incomes increase by 10%, determine the percentage change in the quantity of commodity B demanded.

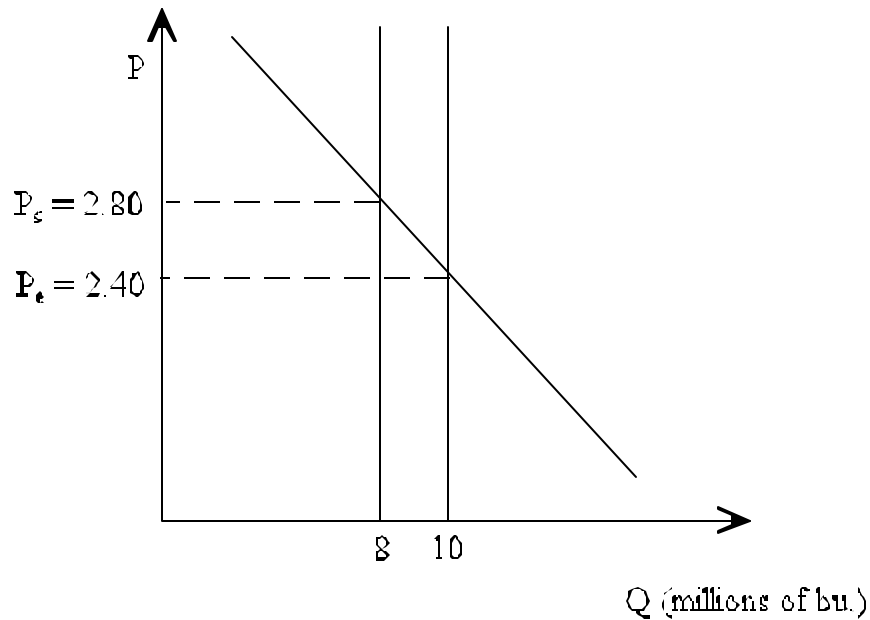
Answer: \_\_\_\_\_ %

- (c) Suppose the price of commodity B decreases by 7%. Determine the percentage change in the quantity of commodity A demanded.

Answer: \_\_\_\_\_ %

- (d) Is the demand for commodity A perfectly elastic, elastic, unit elastic, inelastic, or perfectly inelastic?

- (e) Is commodity A a normal good? Why?

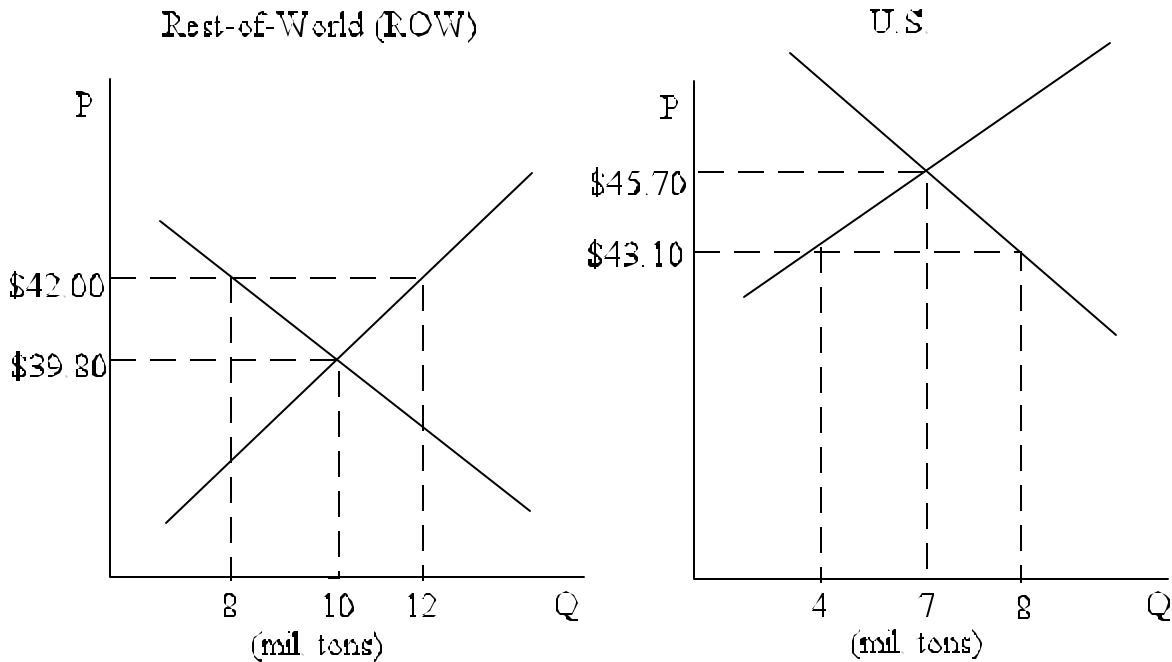


IV. The government has announced that wheat prices will be supported to aid wheat producers. The announced plan includes a loan/storage program with a support price equal to \$2.80/bu ( $P_s = \$2.80$ ). Given the graph above, determine:

- (a) The quantity of wheat that will be held in storage by the government.
- (b) The quantity of wheat that will be sold in the marketplace.
- (c) The price consumers will pay per bushel in the marketplace.

If a deficiency payments (direct payments) program was announced instead of the price supports described above, answer the following questions, assuming that the target price ( $P_t$ ) equals \$2.80:

- (d) Determine the price consumers will pay per bushel in the marketplace.
- (f) Determine the direct payment (per bushel) received by farmers.



- V. The U.S. imports sugar from other countries but also produces sugar domestically. The market supply and demand curves for sugar are shown above, and the equilibrium prices both with and without trade. Given these curves, please answer the following:
- Determine the quantity of sugar supplied in the U.S. if trade in sugar was prohibited.
  - If trade is allowed, determine the quantity of sugar supplied to countries other than the U.S.
  - Given trade, determine the quantity of sugar imported to the U.S.
  - Determine the average transportation cost per unit of output (ton of sugar) for sugar between other sugar-producing countries and the U.S.
  - Suppose the U.S. adopts a direct payments program to help U.S. sugar producers. If the target price is set at \$46.00 per ton, determine the per ton direct payment, given that trade is allowed.
  - Suppose (instead) that to aid U.S. producers of sugar, an import quota is adopted, with a quota of 5 million tons of sugar. Given this quota, determine the amount of sugar imported to the U.S.

*Note: This final is shorter than the typical final, I think. Final exams for 101 (spring) do not include true/false questions but may include "short answer" questions.*