**AEC 305 (Fall 2006)**
**Exam 1 (25%)**

**NAME** _____

**A. True or False: (3 points each).** *Identify if the following statements are true or false by circling the correct response.* ***IF THE STATEMENT IS FALSE CORRECT IT TO MAKE IT TRUE.***

1. True or False. The decline in the farmer's share of retail food expenditures over the past five decades has been primarily due to declining farm commodity prices. **False. The main reason the farmer share has declined is due to consumer's demanding more convenience and additional processing (i.e., more marketing costs).**

2. True or False. The farmer's share of the food marketing bill will always be greater than the farmer's share of the market basket since the former includes both at-home and away-from home consumption, while the latter only includes at-home consumption. **False. See Figure 2-5 in Schrimper. Since the marketing bill includes both at-home and away-from home consumption items (which requires more processing and other marketing costs), its corresponding farm value will always be LESS than the farm value of the market basket which only uses at-home items in its calculations.**

3. True or False. A decrease in a commodity price from one period to another would result in its corresponding price relative being negative (i.e., less than zero). **False. Price relatives are a ratio of two prices and thus will always be positive. In the case of a decline in price between two periods, the price relative will be less than 100, but greater than zero.**

4. True or False. Goods x and y are substitutes. An increase in the price of substitute good x would shift the demand curve of good y to the left. **False. The demand curve will shift to the right.**

5. True or False. If the income elasticity of a good is less than one it is classified as an inferior good. **False. A good is an inferior good only if its income elasticity is negative (i.e. less than zero).**

6. True or False. A sales manager desiring to maximize sales revenues would tend to lower prices of goods with the greatest demand elasticities (in absolute value). **True**

7. True or False. Higher income countries and individuals tend to have lower income elasticities for food compared to lower income countries and individuals. **True**

**B. Multiple Choice: Circle the correct answer. (3 points each)**

8. The largest expenditure of the food marketing bill is:

a. labor
b. profits
c. advertising
d. transportation
e. processing

9. Which of the following would be represented by a movement along a given demand curve?

a. a tax on alcohol
b. a higher price support (minimum price set by the government)
c. coupon price discount
d. all the above
e. none of the above

all affect price

10. Which of the following approaches would a livestock marketing economist adopt to evaluate the **performance** of all levels of the beef industry?

a. behavioral approach
b. institutional approach
c. functional approach
d. macro approach
e. micro approach

## C. Fill in the blank

11. Given an own-price elasticity of demand of -0.25, a 5 percent decrease in price will lead to a **1.25** percent **increase** (**increase or decrease)** in quantity demanded. The corresponding price flexibility coefficient would be **-4**, indicating that for every one percent increase in **quantity** leads to a **-4** percent **(increase or decrease) decrease** in price. (6 points)

## D. Short Answer/Calculations – Be sure to show all your calculations for full credit

12. How much of a change in the demand for pizza would result in from an 8 percent increase in the price of beer, if the cross-price elasticity of demand for pizza and beer is -0.5? Does the cross-price elasticity of demand indicate that pizza and beer or compliments or substitutes? How can you tell? Show your work for full credit. (6 points)

**.08*-0.5 = -.04 or -4 percent**. **Since the cross-price elasticity of demand is negative, pizza and beer are compliments**

13. The Lexington Herald Leader reported that the sale of a colt at the recent Keeneland Yearling Sale was the second-highest priced yearling, only behind the price paid for Seattle Dancer in 1985. Given the data in the following chart, calculate the real price of the three horses in 1983 dollars and in 2006 dollars. Was the colt sold in 2006 the second highest ever in real (i.e., inflation-adjusted) dollars? Show your work for full credit. (10 points)

| Year | Horse | Sale Price | CPI (1983=100) | Real Price in 1983 Dollars | Real Price in 2006 Dollars |
|---|---|---|---|---|---|
| 1983 | Snaffi Dancer | $10.2 million | 100 | **$10.2/100 x 100 = $10.2 mil** | **$10.2/(100/200x100)x100 =$20.4 mil** |
| 1985 | Seattle Dancer | $13.1 million | 108 | **$13.1/108 x 100 = $12.1 mil** | **$13.1/(108/200x100)x100 = $24.3 mil** |
| 2006 | Crown of Crimson colt | $11.7 million | 200 | **$11.7/200 x 100 = $5.85 mil** | **$11.7 mil** |

14. As a marketing analyst for the Kentucky Department of Agriculture, you have been asked to develop a livestock price index. Identify four decisions you would have to make in designing your price index. (6 points)

**You would have to decide which livestock commodities (i.e., horses, cattle, hogs, poultry, goats, sheep, etc.) to include, the weights for each commodity, which year to select as the base year, the number of years to analyze, and whether to do a simple, Laspeyres or Paasche index. Also you must decide on a nominal or real price index.**

15. In aggregate, does U.S. farm income (in terms of gross revenues) tend to increase or decrease when increasing quantities lead to lower prices? Explain you reasoning. (6 points)

**Since most agricultural commodities have inelastic demand, total revenue is generally lower in years with high quantities and low prices … but overall income may be supplemented by government payments in those years. Recall the article that we covered in class that talked about how farmers respond to low prices …. Increasing supplies leading to further declines in prices and revenues given the inelastic demand.**

16. On the back of this page are USDA Indices on ***Prices Received*** and ***Prices Paid by U.S. Farmers*****.** Based on this table, answer the following questions. Relevant values are circled (4 points each)

a. Interpret the **July 2006** index value for "All Farm Products" under ***Prices Received*** and "Production Items" under ***Prices Paid*** relative to the base year (be sure to state the base period as part of your answer).

**Prices received are 17% higher than the 1990-1992 base period, while prices paid for production items are 47% higher than the base period.**

b. Does your answer in 16a indicate anything about the profitability of farming in **July 2006**? Why or why not? W**hile it is true that prices paid increased faster than prices received over the period, it does NOT mean that farmer's were not profitable during this time frame. One could conclude that profitability declined.**

c. If the average nominal price of cotton was 62 cents/lb in 2003, given its **July 2006** index value (under ***Prices Received***), what was the nominal price of cotton in ***July 2006***?

**The price index value for cotton in 2003 was 85 vs 76 in July 2006, reflecting a 10.6% decline (i.e., 76/85 = .894). Thus the July 2006 cotton prices is $0.62*.894 = $0.55**

d. What will be the index value (assuming the base period does not change) for fertilizer (under ***Prices Paid:*** "Production Items") in **August 2006** if fertilizer prices fell 5% during **August 2006?**

**The July price index value for fertilizer is 173. 173 x .95 = 164. Note you simply just can't subtract 5 from 173.**

e. Calculate the percentage change in fuel prices in **July 2006** vs. the **annual level for 2003**.

**265/140 = 1.893 which indicates an 89.3% increase … or some of you calculated 140/265 = .528 which would indicate that prices were 47.2% lower in 2003**

17. Suppose the demand function for bananas by a typical household can be represented by the following equation.

$$Q = 95 - 200P_1 + 100P_2 + .0001INC$$

where: Q = annual number of bananas purchased
$P_1$ = price per banana
$P_2$ = price per apple
INC = household's annual income

a. Use the information contained in the above equation to calculate the own-price elasticity of demand for bananas AND the income elasticity for a typical household with $50,000 annual income when the price per banana is $.25 and the price per apple is $0.50. Show your work for full credit. (6 points)

**Plugging the prices and incomes into the demand equation yields a quantity of 100.**

**The own-price elasticity of demand is -200 x (.25/100) = -0.5**

**The income elasticity is .0001 x (50,000/100) = .05**

b. Given the sign of the income coefficient would this equation indicate that bananas are a normal or inferior good? Explain your answer. (3 points)

**Normal good, but banana demand exhibits very limited positive quantity response to income changes.**

18. Briefly discuss (**no** need to show graphically) how the following will affect the demand schedule **AND** the elasticity of demand. (4 points each)

a. an effective advertising campaign for a food product that convinces consumers to purchase more of a given item that has limited (i.e., few) quality substitutes

**Shift a fairly inelastic demand to the right given few substitutes.**

b. long-run change in consumer preferences that consumption of a product is unhealthy.

**Shift the demand curve to the left, which has a greater elasticity of demand (in absolute value) than what one would observed in the short-run**

c. the effects of an income increase on the demand for the higher priced cuts of beef (considered to be a normal good) in a country where beef represents a relatively large percentage of their food expenditures

**Shift demand to the right, which has a greater elasticity of demand (in absolute value) than for commodity that has a smaller share of expenditures**