

EQUATIONS YOU MAY NEED FOR EXAM III

Depreciation = (Purchase price - salvage value) / years of useful life

Average Value = (Purchase price + salvage value) / 2

Marginal revenue = change in total revenue / change in control variable

Marginal cost = change in total cost / change in control variable

Slope = change in Y / change in X

Percent change in Q_d = $[(Q_1 - Q_0) / Q_0] \times 100$

Percent change in P = $[(P_1 - P_0) / P_0] \times 100$

E_d = percent change in Q_d / percent change in P

E_d = (change in Q_d / change in P) * (P₀ / Q₀)

Percent change in P = percent change in Q_d / E_d

Percent change in Q_d = percent change in P * E_d

Percent change in TR = (1 - | E_d |) X percent change in price

E_I = Percent change in Q_d / percent change in I_d

E_S = Percent change in Q_S / percent change in P

Average Relative Price_i = (Nominal Price_i/CPI_i) X 100 Where i = year
in 1982-84 dollars

EXPLANATION OF TERMINOLOGY USED

Graph = accurately scaled, precisely plotted, accurately drawn to scale, and labeled.

Rough sketch or illustrate = not scaled or precisely plotted, but completely labeled.

What "explain" means on one of my exams:

Websters Collegiate Dictionary defines EXPLAIN as:

1. to make plain or understandable
2. to give the reason of or cause of
3. to show the logical development or relationships of

Websters continues by enhancing the definition with the following statement:

"Explain implies a making plain or intelligible what is not immediately obvious or entirely known."

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED MANNER

EXAM #3
ARE 012, Spring 1996

Answer the six (6) questions below. Do all parts of each question. Use a separate sheet of paper to answer each numbered question, and arrange your answers in numerical order when finished with the exam. Write the number of each question and your name on the top of each sheet of paper you use. You must show all work to receive full credit. The price of all parts of each question is provided in the left hand margin so that you may make an informed management decision regarding the production of this exam. **DO NOT** write answers on the test sheets unless granted permission to do so. Be thorough and complete in ALL your responses. **RETURN THE TEST SHEET !!!** No test sheet: F for the exam.

Please read and sign the Honor Pledge that follows on this exam sheet:

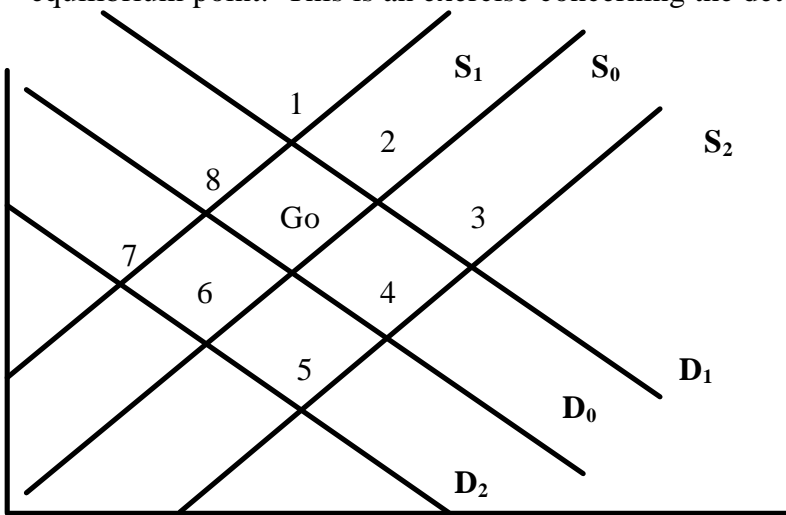
I have neither given or received unauthorized aid on this exam. _____

Student's Signature

- (10) 1. Using any commodity as an example you wish, illustrate a persistent **SHORTAGE** by using a rough sketch. Label your axis, all prices and quantities, and the curves you draw. Does not need to be drawn to scale.
- (5) a. What must a government do to create a persistent **SHORTAGE**?
- (5) b. What price action should the government take to eliminate the persistent **SHORTAGE**?
- (5) 2. In the recent past, when the annual wheat harvest has decreased by 5 percent, wheat prices have increased 20 percent. What is the price elasticity of demand for wheat based on this historical relationship?
- (5) a. Using the price elasticity computed above, how much will the quantity of wheat purchased by processors increase if the government removes the current price floor and the price of wheat decreases 20 percent?
- (5) 3. Sketch a demand curve and label the three sections of elasticity. Directly below this demand curve, sketch THE APPROPRIATE total revenue curve. **REMEMBER TO LABEL THE AXIS OF EACH GRAPH AND ALL CURVES !**
- (5) a. If total revenue increases when price is decreased, in which section of the demand curve is the commodity currently priced?
- (5) b. If total revenue increases when price is increased, in which section of the demand curve is the commodity currently priced?

4. Below is the market that faces Ogburn Landscape Services. Ogburn Landscape Services concentrates its marketing efforts in Raleigh and Cary, North Carolina. Many other landscape service firms are operating in these markets, and demonstrate service of equal quality to that of Ogburn Landscape. (20 Points)

Always start at GO ! Read the statements below the graph and determine the new equilibrium point. This is an exercise concerning the determinants of demand and supply.



- _____ There is an increase in the population of potential consumers in both Raleigh and Cary due to economic growth.
- _____ State and Federal government agencies employ a large percentage of the market Ogburn Landscape Services deals with. Salaries for State and Federal employees will be decreased 10 percent tomorrow due to the voter's desire to trim government.
- _____ Ogburn Landscape Services is accused of low quality workmanship, use of stressed and diseased plants, and billing people for work not contracted to be performed. This accusation by the "Parade of Homes" appeared in the News and Observer.
- _____ Three Stooges Landscapes Inc., a competitor of Ogburn Landscape Services announce in a full page news paper advertisement that they are cutting their contract rates by 20 % across the board.
- _____ The government announces that the "minimum wage" will increase from \$4.25 per hour to \$5.15 per hour. Ogburn Landscape's labor force consists of 50% minimum wage labor.
- _____ Landscape Supply Company, a major input supplier to landscape service firms in this area, announces they intend to increase the real price of their products an average of 15 percent due to an increase in demand by landscape service companies for their

products.

5. In 1980 the average nominal price of gasoline was \$1.25 per gallon. At this price, 71.9 billion gallons of gasoline were consumed in the U.S. that year. In 1988, the average nominal price of gasoline was \$.95 per gallon. At this price, 71.0 billion gallons of gasoline were consumed in the U.S.

$$(CPI_{1980} = 82.4; CPI_{1988} = 118.3)$$

- (10) a. Calculate the 1980 average relative price of gasoline, and the 1988 average relative price of gasoline.
- (5) b. **Graphically illustrate what happened in the market over this time period.**

6. The NCSU Faculty Club increased the monthly dues charged members from \$45 in 1992 to \$51 for 1993. The financial position of the Faculty Club had been deteriorating for some time, the increased dues were supposed to increase the total revenue of the club, enhance the Club's financial position, and help finance some club improvements. Improvements to the Club were begun based on the Club Officers' assumption that more revenues would be available from the increase in monthly dues. However, the total revenue received by the Faculty Club from monthly dues decreased, and the Faculty Club's financial position became severe.

$$CPI_{1992} = 140.3; CPI_{1993} = 144.2$$

- (5) a. Calculate the relative price of faculty club dues in 1992 and 1993. Calculate the percentage change in the real price of faculty club dues?
- (10) b. Why did total revenue from Faculty Club dues decrease ?
- (5) c. What price action, **ceteris paribus**, should the Faculty Club have taken in 1993 to increase total revenue from Club dues?

BONUS QUESTIONS: Each bonus question below is worth ten (10) points

- (5) 1. **Illustrate AND explain** in detail why a producer with pricing power would normally want to price his product or service in the elastic portion of a negatively sloped demand curve.
- (5) a. Provide a written explanation of a strategic marketing example that is an exception to this rule.

2. Determine the income elasticity of demand given the information below:

SHOW ALL YOUR WORK !!!!!

- (5) a) $I_0 = \$12,000$ $I_1 = \$36,000$
 $Q_0 = 25$ $Q_1 = 10$
- (5) b) What commodity classification is illustrated here ?
- (6) 3. List the determinants of a relatively inelastic demand curve ?
- (2) a. Provide a written interpretation of the following price elasticity of demand estimate:

$$E_d = - 1.00 ?$$

- (2) b. Is the above elasticity of demand estimate elastic, or inelastic?
4. In 1922, an Associate Degree Program was started at NCSU in Agriculture entitled: "Two-Year Course in Practical Agriculture"

The following was the nominal cost per SCHOOL YEAR to attend the program:

Tuition	\$45.00
Room rent, fuel, lights	\$40.00
Board in College:	\$153.00
Fees (approximately)	\$20.00
Breakage and military equipment deposit	\$20.00
Total	\$278.00

- (5) a. The CPI index (1982-84) for 1922 is 16.8. What was the real price per year of attending the first Agricultural Institute in 1922 as measured in 1982-84 dollars?
- (5) b. What was the price per year of attending the first Agricultural Institute in 1922 as measured by 1996 dollars? The CPI index (1982-84) for 1996 is currently 153.7.

