

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 240 points (to be scaled up to 200 points) and is scheduled to take 2 hours. Therefore, expect to spend 1 minute for every 2 points. For example, a 16-point question should take 8 minutes. Because of the exam that follows your exam, I cannot give you extra time.

1) I created some regression results for the demand of oranges based upon the price of oranges, the price of apples, and advertising by the orange growers. The results are below. Answer **all** parts.

<i>Regression Statistics</i>						
Multiple R	0.9001					
R Square	0.8888					
Adjusted R Square	0.7835					
Standard Error	3.235					
Observations	42					
<i>Analysis of Variance</i>						
	<i>df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance F</i>	
Regression	3	418.4773	139.4924	3.012	0.041864	
Residual	38	263.1237	26.31237			
Total	41	681.601				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Statistic</i>	<i>P-value</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	15.4512	8.511138	1.815409	0.07678	-3.5128	34.4152
Poranges	-24.345	11.42362	-2.13111	0.039123	-49.7984	1.108412
Papples	-28.3213	17.9137	-1.58099	0.121566	-68.2355	11.5929
Advertising	22.23	13.43309	1.654869	0.105587	-7.70078	52.16078

A) (10 points) What is the predicted equation for the demand function of oranges? How accurate is the formula? Explain your logic.

B) (10 points) Which variables are significant and which are not? How can you tell?

C) (10 points) Given the statistics, do you feel apples and oranges are substitutes, complements, likely substitutes, likely complements, or too difficult to tell? Explain your logic.

D) (10 points) Would you do advertising? Why or why not?

2) (10 points) For EITHER the industry in Part A OR the industry in Part B, determine if the industry is a monopoly, pure oligopoly, differentiated oligopoly, monopolistically competitive, or perfectly competitive industry. Explain your logic.

A) College education

B) Grocery stores.

3) (10 points) Answer EITHER Part A OR Part B.

A) Why might a repeated game result in the cooperative equilibrium, even if the Nash equilibrium

is not the cooperative equilibrium?

B) Why did I append “-Nash” to the Bertrand and Cournot models?

4) (10 points) Answer EITHER Part A OR Part B.

A) What moves the indifference curves? Why would that move them?

B) What are  $MRP_L$  and  $MRC_L$ ? Why should they be equal?

5) (12 points each) Answer TWO of the following parts.

A) Suppose the income elasticity of demand for computers was 1.2. What does that tell you about computers? Explain your logic.

B) Suppose the cross-price elasticity of televisions and computers was -0.4. What does that tell you about computers? Explain your logic.

C) Suppose that the own-price elasticity of demand for computers was -1.2. What does that tell you about computers? Explain your logic.

6) (16 points) Find both bands' dominant strategy, if they exist. Also, find the Nash Equilibrium and the cooperative equilibrium. Explain how you found the dominant strategies and the two equilibria. (Note that an equilibrium is a pair of strategies, not a pair of payoffs.)

		The Mighty Mighty Bosstones	
		Very High Price	Medium Price
Less Than Jake	High Price	100 500	110 100
	Low Price	400 480	420 220

7) (16 points) Illustrate EITHER the event in Part A OR the event in Part B on the supply and demand for buying a big truck for transporting goods. Explain why the curve(s) moved as drawn.

A) The price of buses increases.

B) The price of diesel increases.

8) (16 points) Answer EITHER Part A OR Part B.

A) Suppose a firm's total cost function is given by  $TC = 10 + 5Q + \frac{1}{2}Q^2$  and their total revenue function is given by  $TR = 55Q - 2Q^2$ . Find the marginal revenue and marginal cost functions. Remembering the equation that is profit maximizing for all firms, find the firm's profit maximizing output.

B) Copy the table to the right into your test booklet.

Q	TC	MC	TR	MR	$\Pi$
0	10		0		
1	15		10		
2	17		19		
3	21		23		
5	33		31		

Fill it in. Show all work. Use it to prove that the formula that maximizes profits for all firms does in deed maximize profits for this firm. ( $\Pi$  = profits.)

9) (20 points) Answer EITHER Part A OR Part B.

A) Draw the industry supply and demand for a good that we import. Show the world price and explain how you know we are importing the good. Illustrate the effect of an appreciation of the US\$ on the diagram. Explain why the diagram changed as drawn.

B) In the long-run, monopolistically competitive firms produce where profits are zero. Draw the LRATC/LRMC/D/MR diagram for a monopolistically competitive firm in the long-run. Use it to prove they do not produce the socially optimal quantity.

10) (22 points) Do EITHER Part A OR Part B.

A) Draw the industry demand and firm demand for a dominant firm with a competitive fringe of a limited number of competitors (a.k.a. Price Leadership). Find the large firm's output, the fringe output, industry output, and the industry price. Explain how you got each of them.

B) Use the MC/ATC diagram for a firm in a cartel and the MC/D diagram for the cartel to find the price and quantity that the cartel would like to produce and the quantity the cartel would want the firm to produce. Explain why the firm will not want to produce at that price and quantity combination.

11) (26 points) Answer EITHER Part A OR Part B.

A) Draw the indifference curve/budget constraint diagram for soda and chips. Illustrate an increase in the price of chips. Find the old and new quantities purchased of each. Explain why the curve(s) moved as drawn and how you got each point. Given your diagram, are soda and chips complements or substitutes? Explain your logic.

B) Draw the isoquant/isocost diagram for a firm. Illustrate an increase in the rental rate of capital. Find the old and new quantities of capital and labor used to produce the same level of output. Explain why the curve(s) moved as drawn and how you got the quantities of labor and capital used before and after the rent increase.

12) (30 points) Answer EITHER Part A OR Part B.

A) Can you use Figure #1 to derive LRATC or SRATC? Explain your logic. Derive that curve. Show all work and briefly explain how you got the points. What would be necessary to derive the other curve? Do not derive it, just explain what you would have to add to the diagram to derive it and how that would help you.

B) Given Figure #1, what is the ratio of  $w/r$ ? Explain how you reached that conclusion. Derive the MC curve. Is that LRMC or SRMC? Explain how you got the curve and how you know which curve it was.

