

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 down to 200 points) and is scheduled to take 120 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 14-point question should take 7 minutes. I can give extra time, but not much.

1) (10 points each) Use the regression results on the last page to answer THREE of the following questions. The regression is trying to predict sales of oranges.

A) Are the overall regression results good? BRIEFLY explain your logic.

B) Are the price of cars and the price of oranges significant? BRIEFLY explain your logic.

C) Write the equation which would predict the sales if the price of an orange was \$2, the price of a car was \$1000, the price of a dog is \$40, and the average income was \$20,000. Briefly explain how you got the equation but do not do the calculation.

E) Given the results, are dogs and oranges substitutes, likely substitutes, likely unrelated, likely complements, or complements. Explain your logic.

F) Suppose that income is \$20,000 and 10 oranges were sold. Calculate the income elasticity of demand for oranges. Briefly explain what you did.

2) (10 points) Answer EITHER Part A OR Part B.

A) Find the equilibrium for the decision tree to the right.

Explain how you reached that conclusion.

B) What is the most number of Nash Equilibria in a 4x6 payoff matrix if all entries are different. Explain your logic.

3) (14 points) Answer EITHER Part A OR Part B.

A) What number would you expect to be the own-price elasticity of demand for a McDonald's hamburger. Explain your logic.

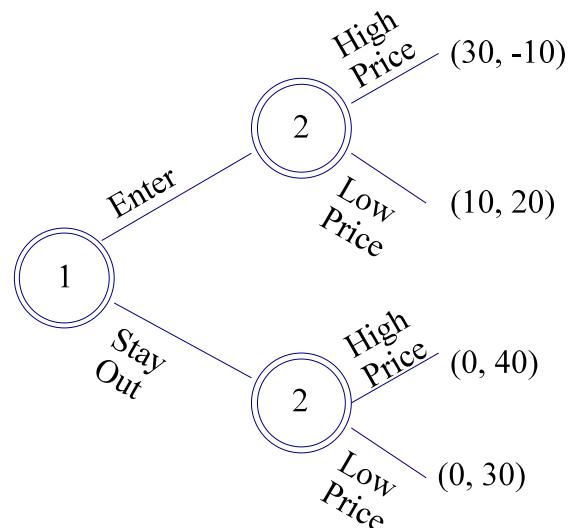
B) What number would you expect to be the cross-price elasticity of demand for bacon versus eggs. Explain your logic.

4) (16 points) For ONE of the following, calculate the elasticity using the formula requested and the data to the right.

**Show all work.** Then tell me what information that tells you about the product, explaining your logic.

A) Income elasticity of demand for coffee using the arc formula.

B) Cross-price elasticity of demand between coffee and tea using the point formula.



P <sub>Tea</sub>	P <sub>Coffee</sub>	Income	Q <sub>Coffee</sub>
\$2.50/cup	\$1/cup	\$600	100 cups
\$2.00/cup	\$2/cup	\$400	110 cups
\$2.50/cup	\$2/cup	\$600	80 cups
\$2.00/cup	\$2/cup	\$600	90 cups

5) (16 points) Answer EITHER Part A OR Part B.

A) Suppose the demand for a product is  $P = b - mQ$ . Find the total revenue function and use that to prove the marginal revenue curve starts where the demand curve starts and is twice as steep.

B) Use the table to the right to find CR4, CR8, and the HHI. Show all work.

Firm	A	B	C	D	E	F
Sales	10	10	20	20	40	100

6) (18 points) Answer EITHER Part A OR Part B.

A) Draw the diagram for the dominant firm with a com-

petitive fringe. Explain how you got the dominant firm's demand curve. **Do not** draw the MR curve for the dominant firm or find the quantity produced.

B) Draw the kinked demand curve. Explain why it takes that shape. Draw the MR curve for that demand curve and explain how you got it.

7) (20 points) Use the payoff matrix on the table to the right to find the following, if they exist: each players' dominant strategy, each players' secure (safe) strategy, the Nash equilibrium, and the cooperative equilibrium. Briefly explain how you got each one and show all work. You may write on the matrix itself.

8) (20 points) Answer EITHER Part A OR Part B.

A) If  $TC = 200 + 2Q + \frac{1}{2}Q^2$ , then find TVC, TFC, ATC, AVC, AFC, and MC. Show all work and briefly explain what you did.

B) What is a learning organization? Explain why the CEO must be visibly behind it.

9) (22 points) Answer EITHER Part A OR Part B.

A) Draw the AVC/ATC/MC/AFC diagram. Draw an increase in the wages paid the cleaning people. Explain why the curve(s) moved as drawn.

B) Draw the AVC/ATC/MC/AFC diagram. Draw an increase in the price of raw materials. Explain why the curve(s) moved as drawn.

10) (22 points) Copy the table into your test booklet. Fill it in showing all calculations. If there is no calculation, then explain how you got the answer.

11) (22 points) Answer EITHER Part A OR Part B.

A) Draw the ATC/AVC/MC/D diagram for a monopoly making positive profits. Find the quantity produced, price charged, and the profits. Explain how you found each of them.

B) Draw the ATC/AVC/MC/D diagram for a monopolistically competitive firm in the long-run equilibrium. Find the quantity produced and the price charged. Explain how you found the price and quantity and how you know it is in the long-run equilibrium.

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

A) Draw two isoquants and two iso-cost lines on an isoquant/iso-cost diagram which has the wage rate twice the rental rate. Make sure you have a scale on both axes. Draw an increase in the rental rate. Explain how you know the wage rate is twice the rental rate and why the curve(s) moved as drawn. Find both the old and new expansion paths. Which is steeper? What is the economic logic for that?

B) Draw an indifference curve/budget constraint diagram for chairs and desks which has a desk costing twice what a chair costs. Make sure you have a scale on both axes. Draw an increase in the price of a chair. Explain how you know the price of a desk is twice the price of a chair and why the curve(s) moved as drawn. Draw an additional line which will enable you to find the income and substitution effects. Find the two effects and briefly state how you found them. Given your drawing, are chairs and desks substitutes or complements. Explain your logic.

		Mustard Plug	
		High Price	Low Price
Less Than Jake	High Price	13	11
	Medium Price	14	17
Jake	High Price	4	8
	Medium Price	12	18

Q	TR	AR	MR
0			
2	30		
4		13	
	60	12	
7			5

**Regression Statistics**

Multiple R	0.82305
R Square	0.677412
Adjusted R Square	0.666192
Standard Error	806.8242
Observations	120

**Analysis of Variance**

	<i>df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance F</i>	
Regression	4	1.57e+08	39300721	60.37299	2.23e-27	
Residual	115	74861005	650965.3			
Total	119	2.32e+08				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Statistic</i>	<i>P-value</i>	<i>Lower 95.00</i>	<i>Upper 95.00</i>
Intercept	1111.000	137.570	8.076	6.13e-13	838.663	1383.662
Porange	-642.000	132.470	-4.846	0.000004	-904.848	-380.054
Pcar	0.067	0.032	1.857	0.056392	0.004	0.129
Pdog	5.000	0.585	8.550	1.30e-14	3.986	6.303
Income	0.001	0.008	0.120	0.996993	-0.016	0.017