ECO 610 Midterm Exam   Name: _____
July 2014

100 points total. Point values for each question are as indicated. Answer each question in the space provided. General advice: show your work, including any formulas or diagrams that you use in reasoning through your answers.

1. (15 pts.) Dried distillers' grains (DDGs) are a co-product of corn ethanol that is fed to cattle and pigs. Ethanol producers use corn to produce ethanol and DDGs and get roughly 25% of their revenue from DDGs and 75% from their primary product, ethanol. The U.S. has been exporting large quantities of DDGs to China. China recently banned the importation of DDGs from the U.S. over concerns that genetically modified corn was being used to produce the DDGs.

a) The price of DDGs in the U.S. has fallen from $207 per ton to $167 per ton in the past month. Using demand and supply analysis, briefly explain and illustrate why this has occurred.
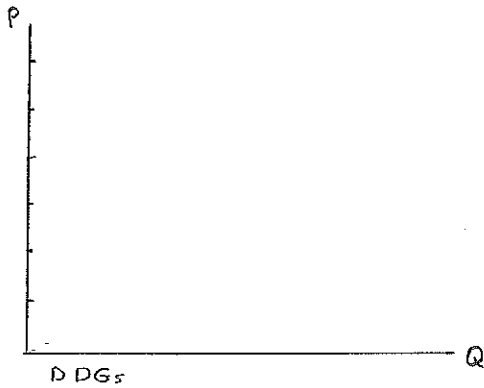
b) What do you think will happen in the U.S. market for ethanol? Use demand and supply analysis to illustrate and briefly explain.
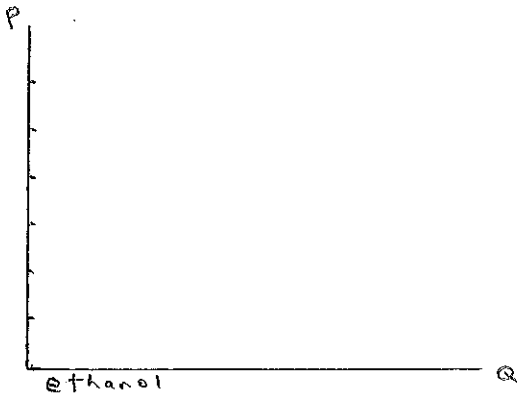
c) Soybean meal, made from crushed soybeans, is an alternative food source for pigs. Use supply and demand analysis to analyze the effect of lower DDG prices on the U.S. market for soybeans.
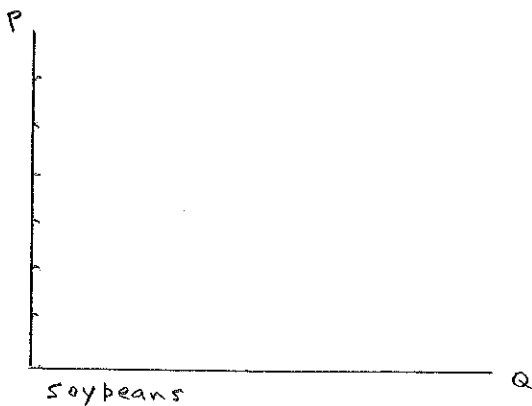
2. (15 pts.) Gillette decides to reduce the price of its ProGlide 5-blade men's razor handle from $10 to $7.

a) When it reduces the price of the handle, Gillette experiences an increase in the sales of ProGlide razor blades from 200,000 units per week to 300,000 units per week. Compute the cross-price elasticity of demand between the price of ProGlide handles and ProGlide razor blades.

b) Gillette also sells Mach 3 razor handles and blades, which as the name suggests are an older technology that uses 3 blades instead of ProGlide's 5 blade system. Mach 3 razor blade sales fall by 15% after the price of ProGlide handles is reduced. Compute the cross-price elasticity between the price of ProGlide handles and Mach 3 razor blades.

c) What do you infer about the relationship between razor handles and blades from the elasticities you have computed? What information would you need to have if you wanted to determine whether this was a profitable move by Gillette?

3. (15 pts.) You have decided to acquire a motor scooter to use for transportation while spending the next year in Lexington getting your MBA. The only remaining question is whether to buy or lease (rent). If you lease a motor scooter the monthly lease fee is $150, which includes everything except for gasoline, oil, and routine maintenance. Alternatively, if you decide to buy and own the same scooter for the whole year, the initial purchase price is $4000. The expected market value of the scooter at the end of a year's usage is $3000. You have plenty of money in savings, where it earns 5%. Your credit rating is pretty good, so a bank will lend you $4000 at a 5% rate as well. Monthly gas, oil, and routine maintenance can be expected to run about $50. Annual taxes, title, license, and insurance expenses associated with owning your own scooter are $500. So, should you lease a scooter from the local motorcycle dealer or buy one outright? Explain your reasoning in meticulous detail.

4. (15 pts.) Labor and capital are used to produce widgets according to the production table below:

		Labor Input				
		1	2	3	4	5
	1	20	40	55	65	70
Capital	2	40	60	75	85	90
Input	3	55	75	90	100	105
	4	65	85	100	110	115
	5	70	90	105	115	120

a) You are currently producing Q=85 using L=4 and K=2. Anticipating that demand for your product is going to increase over time, you contemplate increasing your output. Over your planning horizon you can vary the amounts of both labor and capital that you employ. If the price of labor is w=$75 and the price of capital is v=$225, how would you change your input mix as you expanded output? Explain your reasoning.

b) Suppose that an opportunity presents itself to your widget company whereby you can sell as many widgets as you want to at a price of P=$10. This opportunity only exists for a very limited time, so you are stuck with your current building, machinery, equipment, etc. of K=3. You can vary the amount of labor you use, however, if you want to increase output. Currently the per unit price of labor is w=$75. How many workers would you employ in the short run and how many widgets would you produce? Explain your reasoning.

5. (10 pts.) What are some reasons that a firm might see its per unit costs decline as its scale of operation (long-run output) increases?

6. (5 pts.) Illustrated below are the demand curves for ice skating entertainment in Lexington, Louisville, and Cincinnati. Draw a LRAC curve for ice skating rinks that is consistent with Lexington having one ice skating rink, Louisville having two, and Cincinnati having four.
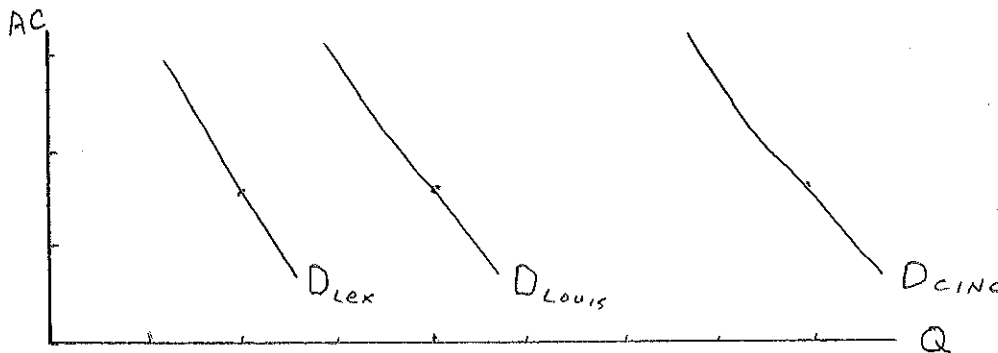
7. (5 pts.) Use the concept of the value chain to explain the tactical shift that Cannondale made in its manufacture and assembly of high-end bicycles. The other player in this story is Shimano.

8. (10 pts.) Recall the virtual tour that you took of the Toyota plant. Toyota makes dies that are specifically designed and used for stamping out Camry front quarter panels, hoods, doors, etc. Can you think of any problems that might arise if Toyota outsourced body parts and bought them from another company? You should explain the fundamental problem here and incorporate the concept of hold-up in your answer.

9. (5 pts.) Briefly explain why some people are too hot and other people are too cold during the wintertime in China.

10. (5 pts.) TFC = $100. When AFC=$20, then AVC = $10. What is Q and what is TC?