ECO 610 Final Exam
July 2015

Name: _____

4-digit number: _____

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. (5 pts.) In advising a group of investors about how much to pay for a plumbing supply business they are considering buying, you observe that the company has a non-trivial inventory of copper tubing of various diameters and lengths. Some of the tubing was purchased a year ago when copper was trading on the London Metal Exchange for $3.50 per pound, and the rest was purchased six months ago when copper prices were $3.00 per pound. A CPA friend who works for a public accounting firm that does external audits of companies says that she sometimes uses a LIFO (last in first out, so $3.00/lb.) approach and other times uses a FIFO (first in first out, so $3.50/lb.) approach, and that either are acceptable under GAAP. Which approach would you use to estimate the value of copper tubing inventory that this company holds?

2. (10 pts.) Sitting in your air-conditioned office in a tall office building in mid-town Manhattan, you scour the financial media every day looking for investments where firms are likely to earn above-normal returns. You know from your education and experience that certain characteristics of industries facilitate a softening of competition—something that you consider when dispensing advice to your clients. Describe (list) the characteristics of a market where fierce competition is less likely.

3. (5 pts.) Briefly describe the relevant characteristics of the cruise ship industry and explain what type of market structure it is.

4. (10 pts.) RJCorman Corp. commissions you to evaluate the economic viability of dinner trains in the central Kentucky region. Since they are the only company capable of setting up and running a dinner train operation, the market demand will be their demand. They have already commissioned a demand study using MBA interns and determined that nightly demand on Fridays and Saturdays is given by $Q = 300 - 5P$, where Q is the number of customers and P is the price of the dinner excursion package in dollars. They have also determined that their marginal costs are constant at $20 per customer (i.e. $MC = AVC = \$20$), and that they incur fixed operational costs of $1000 (TFC = $1000) every time they crank up the locomotive and haul dining cars around the countryside for three or four hours. Is this a losing proposition, or can RJCorman make an economic profit running a dinner train? Obviously you should evaluate the profit-maximizing output and price, and illustrate and explain what profits (or losses) will be earned.
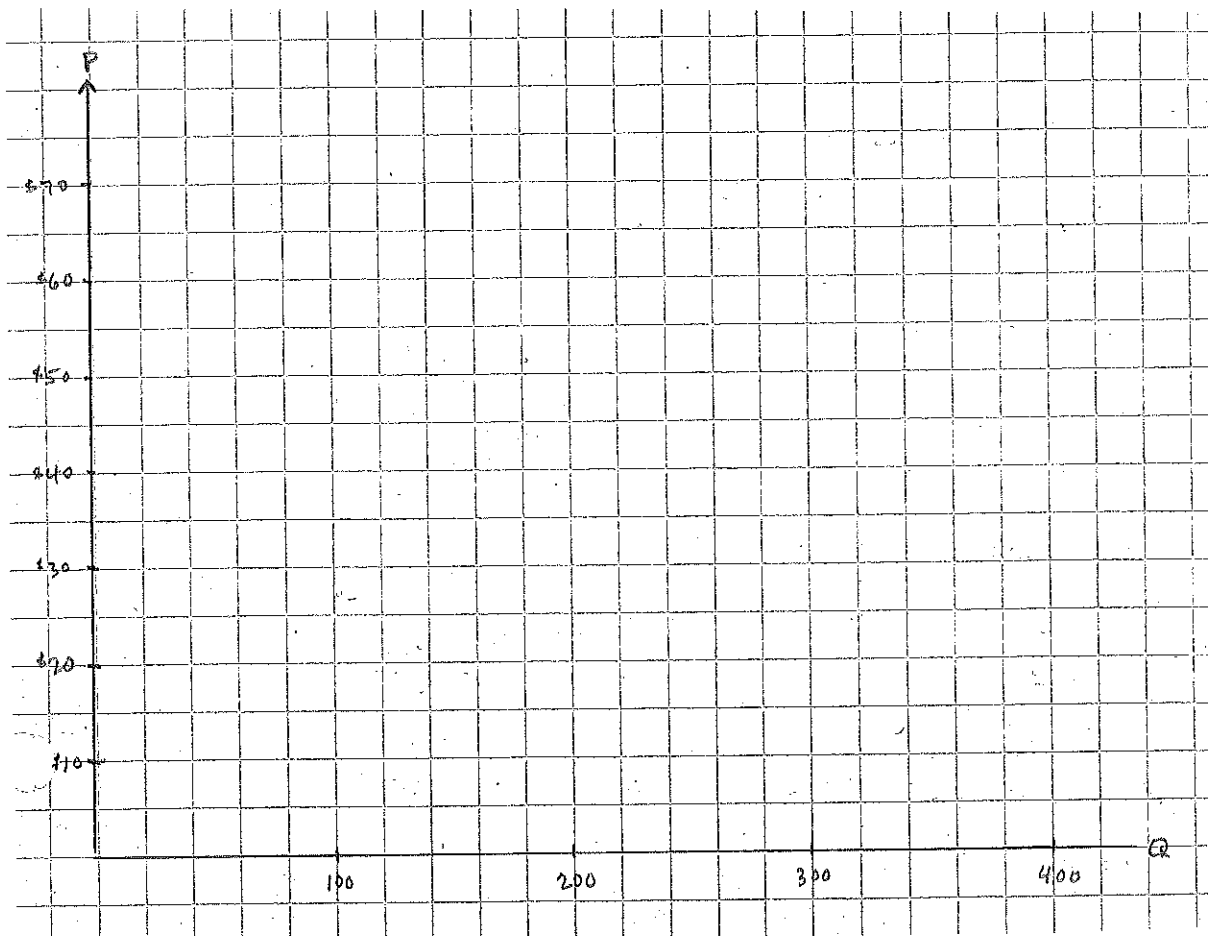
5. (5 pts.) Confirm that the inverse-elasticity pricing rule holds for the profit-maximizing price you calculated in the previous problem. (Hint: use the point elasticity formula: $\varepsilon = (\Delta Q/\Delta P)(P/Q)$ to calculate own-price elasticity of demand.)

6. (10 pts.) A large Midwestern electric utility is very active producing and selling electricity in the wholesale power market. It owns several coal-fired "merchant" power plants, and is considering building another one so that it can produce even more electricity to sell to wholesale customers on the eastern transmission grid. One option is to build on the Ohio River, where thermal coal travels up and down the river on barges and sells at a market price of $50 per ton. Another option is to build the power plant in Mingo County, WV, where you have just discovered a thick and rich new seam of coal on land that you own. Mining engineers have estimated that there is roughly 30 years' supply of coal in this location, which is about as long as a typical coal-fired power plant lasts. The up-front investment to remove overburden and get access to the coal is estimated to cost $20 per ton averaged over all 30 years' worth of coal at this mine. Ongoing variable costs to mine the coal once the mine is operational are estimated at $20 per ton. Transporting the coal to the Big Sandy/Ohio Rivers where it can be put on a barge costs $20 per ton. Transporting the coal to a mine-mouth electric generating plant and shipping the electricity out of the mountains costs essentially zero. The electric utility approaches you and proposes building a power plant on land they own adjacent to your mine. They propose a five-year contract to buy your coal at $45 per ton. Do you see any problems with this plan? In your answer you should include a discussion of asset specificity, hold-up, and economic profits vs. quasi-rents. A good answer will also propose a solution to any problems you identify.
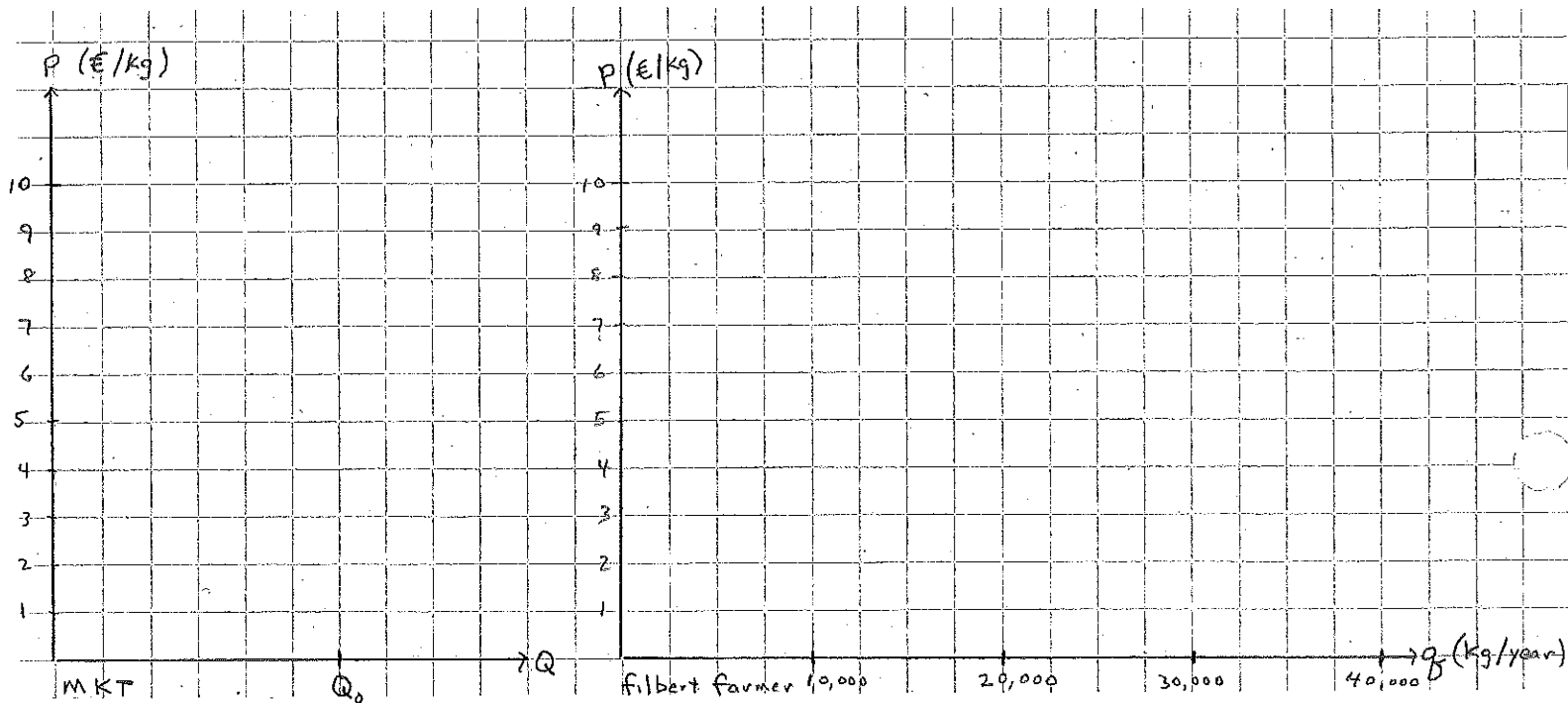
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7. (15 pts.) The fast-food restaurant industry in a small city is typified by firms facing the following demand and cost conditions.
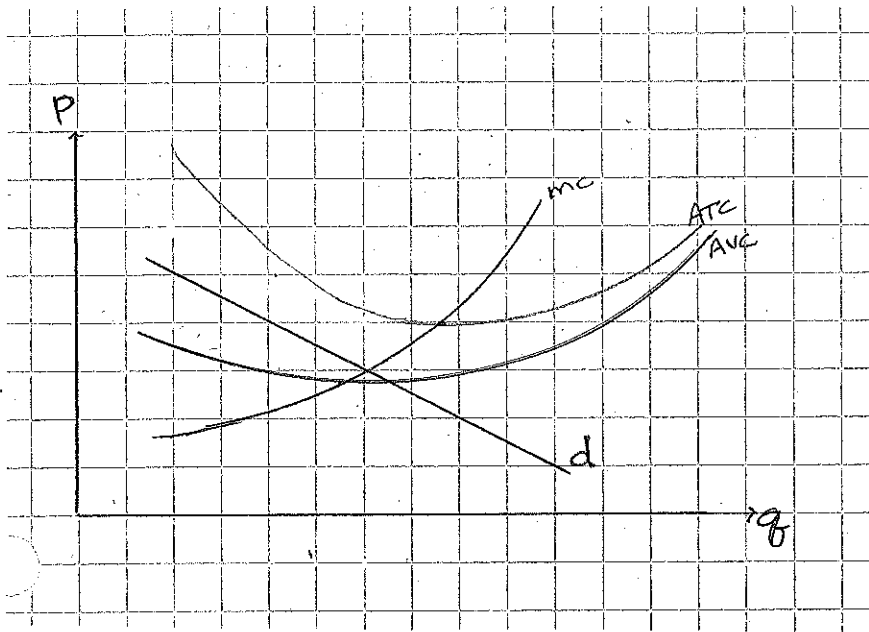
a) What output and price should the above firm select in order to maximize short-run profits? What will profits be? Illustrate output, price, and profits in the diagram and label (a).

b) What do you predict will occur in this market in the future? In the diagram above, illustrate the demand and cost conditions of a typical firm after the industry reaches a long-run equilibrium and label (b).

8. (15 pts.) The production of filberts (also called hazelnuts) is characterized by many small producers, a homogeneous product, and insignificant barriers to entry. The industry is currently in long-run equilibrium with price equal to 10€ per kilogram. A typical filbert grower produces 10,000 kg per year. Total industry output is Q_0.

a) Illustrate the current situation in the diagrams below. Label these answers (a).

p (€/kg)   p (€/kg)

10   10
9   9
8   8
7   7
6   6
5   5
4   4
3   3
2   2
1   1

MKT   Q₀   →Q   filbert farmer 10,000   20,000   30,000   40,000   →q (kg/year)

b) Technological progress in the form of mechanical harvesting equipment occurs in the industry. LRAC shifts downward by 30% and to the right, with the new minimum efficient scale for a filbert grower equal to 30,000 kg per year. Illustrate the new long-run equilibrium in the filbert industry and label these answers (b). Be sure to explain what you think will happen to market price, market output, each firm's output, and the overall number of firms when the market finally reaches the new long-run equilibrium.

9. (15 pts.) United Airlines and Frontier Airlines compete as duopolists in the Denver airport. Frontier is the column player in the payoff matrix below. It has three strategy options: Left (lots of low-priced flights), Middle (smaller number of medium-priced flights), and Right (a few high-priced flights). United is the row player, and has four strategy options: Top (many high-priced flights), High (a few high-priced flights), Low (many low-priced flights), and Bottom (many medium-priced flights). What strategy choices do you think each airline will make? Explain carefully the logical steps you use in arriving at your answer.

		Frontier Airlines		
		Left	Middle	Right
United Airlines	Top	4 , 5	3 , 0	6 , 4
	High	3 , 1	2 , 3	12 , 2
	Low	5 , 6	4 , 5	9 , 7
	Bottom	2 , 2	5 , 4	10 , 3

10. (10 pts.) Your sister is the mayor of Napflio. She awards you the monopoly franchise rights to provide cable TV services to citizens of Napflio. As such, you are the only provider and as long as you have no competition, the discounted present value of your economic profit stream is 40,000,000€. Trouble looms on the horizon, however, because a satellite TV company is considering entering your market. Your monopoly franchise rights only apply to hard-wired cable TV, and do not apply to satellite signals and rooftop satellite dishes. If entry occurs and you share the market with a competitor, your discounted present value of economic profits will fall to 18,000,000€. If you contest entry and fight a price "war," the discounted present value of economic profits is -2,000,000€.

You announce publicly that if entry occurs, you will fight. In preparation to fight a price war, you add capacity to your system which enables you to offer additional channels that your competitor could not. The cost of adding such capacity in preparation to fight for customers is 24,000,000€. Only if entry occurs would you find it necessary to utilize this capacity. (a) Is your threat to fight a price war credible? Why or why not? (b) Is the decision to make such a commitment to deter entry a good one? Explain why or why not. It would help if you draw the decision tree for this sequential-move game.