FINAL EXAMINATION

ECONOMICS FOR BUSINESS
(Econ 815)

May 7, 2012 Professor D. Weisman

Instructions: There are two parts to this examination, weighted 40 points and 60 points, respectively. Write legibly and think carefully about your answers. You may find that graphical and/or mathematical analysis will assist you in answering some of these questions.

I. Short Answer (40 points). Answer 4 (and only 4) of the following 6 questions.

1. There are 2 identical firms in a market and each firm has a cost function given by C(Q) = 6Q. The market demand function is given by $Q = 10P^{-b}$. The Nash Equilibrium price is 8. It follows that b is equal to ___.

2 Rank the following market structures in decreasing order of consumers' surplus. [You may assume that market demand and cost structures are invariant across market structures and duopolists have identical costs.] Perfect Competition, Uniform Price Monopoly, Cournot Duopoly, First-Degree Price Discrimination (Resale Can Be Prevented), Bertrand Duopoly.

3. Two firms compete in a Bertrand setting for homogenous products. The market demand function is given by Q = 20 – P, where Q is quantity and P is price. The cost function for firm 1 is given by $C(q_1) = 4q_1$ and the cost function for firm 2 is given by $C(q_2) = c_2q_2$. At the Nash equilibrium in this market, firm 2 earns profits of 48. Determine the value of c_2.

4. A monopolist sells two products with demand functions given by $Q_1 = 100P_1^{-2}P_2^{\alpha}$ and $Q_2 = 50P_2^{-3}P_1^{\alpha}$. In addition, suppose the monopolist's cost function is given by $C(Q_1, Q_2) = 4Q_1 + 2Q_2$. What are the monopolist's profit maximizing prices when $\alpha = 0$? What can you tell me about the monopolist's profit-maximizing prices when $\alpha < 0$? [You may assume that all Lerner indices are positive in equilibrium.] Provide the economic rationale for this finding.

5. The market demand function is given by Q = 24 – 2P, where Q is quantity demanded and P is price. The cost function is given by C(Q) = 4Q. What is the deadweight loss from monopoly? How much better off would consumers be relative to the monopoly outcome if they bribed the monopolist to price at the competitive level? [Assume rational economic agents.]

6. Traveler's Express and Roadrunner, the only two shuttle services from Manhattan to Kansas City International Airport, merged recently. Yet the price of shuttle service has not changed. Suppose that that the inverse demand function for shuttle service is given by P = 30 – 2Q. The post-merger cost function is given by C(Q) = 2Q. Assume that competitive pricing prevails pre-merger and monopolistic pricing prevails post-merger. Determine the pre-merger cost function, C(Q) = cQ? That is, find the value of c?

II. Problems (60 points). Answer 2 (and only 2) of the following 3 questions.

1. [Merger Analysis] The Department of Justice (DOJ) is charged with overseeing mergers in the United States to determine if they are in the *public interest*. A merger is considered in the *public interest* if consumers' surplus does not fall as a result of the merger. The DOJ is currently deciding whether to allow the pending merger between Sprint and Verizon to proceed. The market demand for wireless telephone service is given by $Q = 36 - 2P + s$, where Q is quantity demanded, P is price, and s is an index of service quality. The market served by these two wireless carriers is currently competitive. The pre-merger cost function is $C(Q) = 10Q$. Assume that $s = 4$ pre-merger. The CEO of Verizon has told Wall Street analysts that the merger will result in efficiency gains. This implies that the post-merger cost function is $C(Q) = 10\theta Q$, where $\theta < 1$.

a) Suppose that the wireless market is competitive prior to the merger. Determine the price, quantity and consumers' surplus that prevails in equilibrium.

b) Suppose that the wireless market is a monopoly following the merger and $\theta = 4/5$. What value(s) of s must prevail in equilibrium in order for consumers to be no worse off from this merger.

c) Suppose that $s = 12$ post-merger and that the wireless market is a monopoly following the merger. For what value(s) of θ will consumers be no worse off from this merger?

2. Suppose that the Bosco Bus Company operates as a monopolist in the market for bus travel. Bosco's cost function is given by $C(Q) = 20Q$, where Q is the number of passengers. The company is in possession of the following information regarding 6 would-be passengers traveling from Manhattan, Kansas to Chicago, Illinois.

PASSENGER	**MAXIMUM WILLINGNESS TO PAY**
Business Traveler 1	200
Business Traveler 2	180
Tourist 1	100
Tourist 2	40
Student 1	30
Student 2	10

a) What is the profit-maximizing (uniform) price for Bosco Bus given that it is not allowed to engage in price discrimination? What is firm profit and consumers' surplus at this profit maximizing price?

b) What are Bosco's profits under first degree price discrimination when resale can be prevented? What is consumers' surplus and the deadweight loss?

c) Suppose that Bosco attempts to engage in first-degree price discrimination but is unsuccessful in preventing resale. What are Bosco's profits in this scenario? [Assume rational economic agents.]

d) Suppose that Bosco is precluded from first-degree price discrimination but is allowed to engage in third-degree price discrimination under which it segments its market into business, tourist, and student submarkets. What are Bosco's profit-maximizing prices?

e) Suppose that the cost function for Bosco Bus is now given by $C(Q) = S + 20Q$, where S is a sunk cost of entry. What inference can you draw about the value of S if Bosco enters the market if allowed to practice third-degree price discrimination but does not enter the market if restricted to uniform monopoly pricing? [Assume that first degree price discrimination is not an option here.]

3. [Cournot Oligopoly] Let inverse market demand be given by $P = 36 - 2Q$, where P is price and $Q = q_1 + q_2$. The cost function for firm 1 is given by $C(q_1) = 4q_1$ and the cost function for firm 2 is given by $C(q_2) = 8q_2$.

a) Derive the reaction functions for firm 1 and firm 2.

b) Determine the equilibrium level of output, price and consumers' surplus.

c) What is the maximum amount that consumers would be willing to pay to have these two firms play a Bertrand game rather than a Cournot game?