Principles of Economics I: Microeconomics – Final [2016/1/15]

Note: You have 3 hours (9:10am-12:10pm), and there are 100 (+ 10 bonus) points. Allocate your time wisely.

Part A: (32%): True or False:

Determine whether these statements are true or false, and briefly state your reasoning (less than 200 words): (Note: Simply stating True or False without reasoning earns at most 1 point.)

1. (4%) True or False. Monopolists can achieve any level of profit they desire because they have unlimited market power.
2. (4%) True or False. Heavy competition among firms for a limited number of customers leads to such devices as discounts for students and senior citizens.
3. (4%) True or False. The firms that sell personal computers have never banded together to form a cartel. We may infer from this that at least one firm would fail to benefit from a successful cartel.
4. (4%) True or False. When all firms in an industry charge the same price, this is evidence of collusion.
5. (4%) True or False: Many supermarkets charge paper towel manufacturers for the right to display their products prominently. If this practice were banned, cereal manufacturers would be better off in the long run.
6. (4%) If the customers of a monopolist could get together and bribe him to act like a competitor, then they could make both themselves and him better off.
7. (4%) If Hewlett Packard could require all HP laserjet printer owners to buy all of their toner cartridges directly from HP, it would charge monopoly prices for those toner cartridges.
8. (4%) A profit-maximizing monopolist whose firm was a source of negative externalities might produce exactly the socially optimal level of output.

Part B (40%): Starbucks Coffee and Coffee Bean Prices

Excerpts from "Why Starbucks Prices Went Up as Coffee Beans Got Cheaper" (New York Times, 8/15/2015)

…Coffee has been caught in a commodities downdraft that intensified briefly last week as China, a big commodities consumer, devalued its currency. The currencies of commodity producers like Malaysia, Indonesia, Russia, Colombia and Brazil have fallen for months now, along with oil, iron and steel. Coffee has taken one of the deepest dives.

Yet on July 6, Starbucks said that its costs were rising and that it was raising the price of much of its brewed coffee by 5 to 20 cents a cup.

At the Midtown Manhattan store I frequent, a "venti" cup — 20 ounces of joe — rose 10 cents to $2.55 before tax, while a "tall" 12-ounce cup stayed at $1.95. Tall cups rose in price in many other places, said Jim Olson, a spokesman. Prices for food remain unchanged. Over all, Starbucks said customer bills would increase 1 percent… (omitted)

The price changes in the global coffee market have been breathtaking. The futures price for standard Arabica, the benchmark for premium coffee, peaked in October and fell 44 percent in world markets by July 6, the day of the Starbucks announcement. Some companies responded by lowering prices. J. M. Smucker announced in late June that it was cutting supermarket prices of its Folgers and Dunkin' Donuts brands by an average of 6 percent. Starbucks left its packaged coffee unchanged, but decided to extract more revenue in its stores…(omitted)

Hamish Smith, a commodities economist with Capital Economics in London, said in an interview that a company like Starbucks "can't afford to be in a position where it will run out of coffee or will suddenly have to pay an unexpectedly high price for it."…(omitted)

But when coffee prices drop unexpectedly, as they did this year, these advance strategies can have some negative short-term consequences: It's likely that Starbucks paid more than the current spot market price for coffee stocks, which would be reflected in future financial statements. That's one reason Starbucks is on a different timetable than the broad market.

Another is that coffee accounts for less than 10 percent of Starbucks's overall costs, Mr. Olson said. The premium Starbucks experience requires considerable spending on real estate and wages, and on extensive employee benefits, equipment, distribution and marketing, he said.

And there may be another factor. Howard Schultz, Starbucks's chief executive, told investors during the conference call last month that "mobile payments now represent 20 percent of all in-store transactions in our U.S. stores, more than double the figure from only two years ago." I use an iPhone app to pay these days: It's easy to transfer money without noticing the cost.

First assume both coffee and coffee bean markets are perfectly competitive. Answer the following questions:

1. (4%) How much does coffee beans account for Starbucks' overall cost? How much would average cost of Starbucks coffee decrease (in percentages) when coffee bean prices drop by 44%? Did Starbucks coffee price change accordingly in the above article? Explain.
2. (4%) Draw a supply and demand diagram to analyze the effect of China devalued its currency on coffee bean price and quantity.
3. (3%) How does this affect the fixed cost, variable cost and marginal cost of Starbucks coffee?
4. (3%) How does this change in production cost affect the price of Starbucks coffee? Explain.
5. (6%) What are other costs for producing Starbucks coffee? Which of them have price changes that could have offset the change in coffee bean prices? How big would this price change need to be to offset the change in coffee bean prices?
6. (4%) Explain why Starbucks could have "paid more than the current spot market price for coffee stocks." How would this affect Starbucks coffee price?

Now assume firms in the coffee market each face a linear demand curve and engage in monopolistic competition.

7. (4%) How does Starbucks determine its price and quantity in this market? Draw a diagram and explain.
8. (3%) How are other companies responding to the change in coffee bean prices? How would that affect the demand for Starbucks coffee?
9. (2%) Assume this change in the demand for Starbucks coffee results in a rotation of the demand curve centered at the old outcome (so your answer to Question 7 is still on the new demand curve). What is the economic meaning of this shift in demand?
10. (5%) Draw a diagram to explain how Starbucks sets its price and quantity under the new demand curve to explain why it is plausible for Starbucks to raise coffee price as a response to maximize profit.
11. (2%) Which of the above reasoning is most likely to explain Starbucks' unusual pricing behavior? Explain.

Part C (18 + bonus 3%): Uber China vs. Didi Kuaidi

Excerpts from "Uber Chief Executive Dismisses Chinese Rival Didi Over Subsidies" (Financial Times 1/11/2016)

…"Didi holds over 80 per cent of the market, which means our competitor has to bleed subsidies to make up for inadequate numbers of riders and drivers," the Chinese group said… (omitted)

Uber launched in China in 2013 and says it has a market share of 30-35 per cent, and that this is growing rapidly…

Both companies have spent heavily in the past year on subsidies in an effort to lock up China's most lucrative cities as markets. Uber has been reported to spend up to three times the fare on driver subsidies in an effort to get more operators on the road.

Neither Uber nor Didi disclosed how much they spent subsidising drivers and riders. But both companies have invested about $1bn in the past year in China, much of which has been for that purpose… (omitted)

Answer the following questions:

1. (3%) What is the market share of Didi as reported by the dominator of the market? How is having "adequate numbers of riders and drivers" or not relate to subsidies?
2. (3%) What is the market share reported by Uber China after it enters China in 2013? What do you think is the effect of its subsidy on market share?

Consider the game played between Uber and Didi, assumed to be the only two taxi app companies in China. Both companies have to choose whether to invest $1bn annually to subsidize their drivers and riders. Let the market share report by Didi be the outcome if both do not subsidize, as well as if both do subsidize. Let the market share reported by Uber be the outcome if Uber invests in subsidies heavily, but Didi does not.

3. (3%) How much did Uber gain by being the only company investing in subsidies? If the same gain were to realize if Didi was the only company to invest in subsidies, what would the market share of the two companies be if Didi invested while Uber did not?
4. (6%) Draw the payoff matrix of the game assuming the gain in market share outweigh the cost of investment. Is there a dominant strategy for Uber? Is there a dominant strategy for Didi? Why or why not?
5. (3%) What is the Nash equilibrium of this game? Does the outcome explain what is happening in the article?
6. (bonus 3%) Do the assumptions above hold in reality? How would your answers to the above questions change if the assumptions were false?

Part D (10 + bonus 7%): The Voter Coordination Game

No news excerpts are provided since this is supposed to be a hypothetical question…

Suppose there are 100 voters in Daiwan, a hypothetical country that has the exact same party list election rules of Taiwan. In other words, all parties that earn more than 5% of the votes split 34 party seats in the iDaiwan Congress with at least two seats each. According to Mr. Garlic Freezing, 46 of the 100 voters will vote for Party D, 25 of them will vote for Party K, 9 of them will vote for Party N, and 12 of them will vote for other small parties that would be less than 3 votes each. 3 voters each will vote for Party P and Party M. The last two voters are undecided.

Consider the game played between the remaining two voters who prefer Party P and Party M the most (equally!). If both vote for Party P, the vote shares for the five major parties would be (D, K, N, P, M)=(46, 25, 9, 5, 3), resulting in party seat allocation of (D, K, N, P, M)=(18, 10, 4, 2, 0). If both vote for Party M, the vote shares would be (D, K, N, P, M)=(46, 25, 9, 3, 5), resulting in party seat allocation of (D, K, N, P, M)=(18, 10, 4, 0, 2). If one votes for Party P and the other for Party M, the vote shares would be (D, K, N, P, M)=(46, 25, 9, 4, 4), resulting in party seat allocation of (D, K, N, P, M)=(19, 11, 4, 0, 0).

1. (2%) Suppose the two voters like Party K (but not as much as Party P and M), and hate Party D and Party N a lot. Rank the above three party seat allocation outcomes for these two voters.
2. (6%) Draw the payoff matrix of the game. Is there a dominant strategy for each of the two voters? Why or why not?
3. (2%) Is there any pure Nash equilibrium in this game?
4. (bonus 2%) Suppose one of the two remaining voters can send the message "I will vote for Party __" to the other voter. What do you think would happen?
5. (bonus 2%) Suppose both voters can simultaneously send messages "I will vote for Party __" to the other side. What do you think would happen?
6. (bonus 3%) The Central Election Committee of Daiwan does not allow elections polls results to be announced in the last few days before the election. Do you think the two remaining voters would prefer this ban to be lifted? Why or why not?