MBA (FT) – November 2021

MBAFT - 6103 Managerial Economics

Time: 3 hours *Max. Marks: 70*

Instructions

This is an open book exam. You are free to read materials available online and offline. What you are not free to do are these: 1. Not consult another person (friends, family, teacher, etc), 2. Copy and paste materials from online/offline sources

Even if you have written the correct final answer, you will get a score of zero if 1. you give an answer without showing your work, or 2. your answer does not match your work, or 3. your answers looks exactly like someone else's answer or materials published offline/online..

To get a non-zero score, solve the paper yourself. Explain using your own words and show all your work to get full points.

All questions are compulsory

1. Your start-up is targeting young professionals who prefer to have hot and healthy lunch in office. You are selling preservative free, microwavable healthy meals that use exclusive organic ingredients. The initial demand estimation done by a reputable consulting company (by the name of *Vain*) who have scouted about 20 urban markets around the country for the month of September is given by:

$$Q = -5{,}200 - 42P + 20P_x + 5.2I + 0.20A + 0.25M$$
$$\quad\quad (2.002) \quad (17.5) \quad (6.2) \quad (2.5) \quad (0.09) \quad (0.21)$$

$R^2 = 0.55, \quad n = 26$

where:
Q = Quantity sold per month
P = Price of the product
P_x = Price of your closest competitor
I = Average income (allotted to purchasing lunch)
A = Monthly advertising expenditure
M = Number of microwaves sold to offices in a particular urban area

As of now: $P_x = 600$; $I = 5{,}500$; $A = 10{,}000$; $M = 5{,}000$

You are contemplating to charge a price of $P = 500$.

For interpreting the result of regression, please note that the numbers noted in parenthesis are the standard errors of the estimated coefficients that appear just above. The sample size is denoted by n and the coefficient of determination by R^2. You may consider a t-value of 2 and above to conclude significance at 0.05 level.

i. Compute price elasticity of demand, income elasticity of demand, cross-price elasticities, advertising elasticity of demand.

(5 marks)

ii. Do you think you should cut prices to increase market share with an eye on total revenue (because you are a start-up you are not paying a lot of attention to cost, yet)? Explain. If you suggest price-cut then what is the price below which you cannot go? If you suggest price hike then what is the price above which you cannot go? Explain numerically as well as use appropriate graphs.

(5 marks)

iii. The forecasting team is predicting a recession (non-Covid recession, meaning, people will still go to offices and eat lunch) in the next one year. How concerned should you be about the impact of this recession on sales? Explain. You may make assumptions regarding the likely outcome of a recession. State your assumptions clearly. s.

(5 marks)

iv. The demand equation shows that higher advertisement lead to higher sales. Find the optimal advertising to sales ratio that you should aim for in this case. Explain your logic and methodology. Use appropriate graphs. [*Hint: 1. Assume total cost of production TC = C(Q,…A) + A. 2. Treat A as one of the inputs of production. That will imply a certain kind of relation between Marginal Revenue and Marginal Cost 3. Consider the Inverse Elasticity pricing Rule. 4. Use 2 and 3 to convert everything in terms of elasticity. 5. Use the numerical value of the elasticises you have calculated. 6. Done*!]

(5 marks)

2. *Mamta* has figured out that her utility function is given by:

$$U(FB, BB) = (FB)^{0.5} + (BB + 4)^{0.5}$$

where *FB* refers to a good (say, football) and *BB* refers to another good (say, basketball) that M*amta* carers about.

i. Draw the indifference curve for U = 12.

(5 marks)

ii. Price of *FB* is 1 and price of *BB* is 8 and *Mamta* can spend a total of 100 on these two items. Draw the budget line for M*amta* and solve her optimization problem. Solve both numerically and graphically.

(5 marks)

iii. What is special about this utility function (as compared to the properties of the usual increasing and strictly concave utility function)? Find out the individual demand function for the product *FB*. Draw the demand function.

(5 marks)

3. i. Ned Bayward practices third-degree price discrimination when selling barrels of Eastfarthing Leaf in the isolated villages of *Toadmorton* and *Forlorn*. The reason for this is that the residents of *Toadmorton* have a particular preference for Eastfarthing Leaf, while the people in *Forlorn* can either take it or leave it. Ned's total cost of producing Eastfarthing Leaf is given by the equation: TC= $10+0.5\ Q^2$

The respective demand equations in *Forlorn* and *Toadmorton* are

$$Q_1 = 50 - \frac{P_1}{4.5}$$

$$Q_2 = 75 - \frac{P_2}{7.5}$$

where $Q = Q_1 + Q_2$.

a. Calculate Ned's profit-maximizing price and output level in each market. Verify that the demand for Eastfarthing Leaf is less elastic in the *Toadmorton* than in *Forlorn*. What does your answer imply about Ned's pricing policy? Find the firm's total profit at the profit-maximizing prices and output levels.

(5 marks)

b. Suppose that the firm charges a uniform price in the two markets in which it sells its product. Find the uniform price charged, and the quantity sold, in the two markets. What is the firm's total profit? Compare the two answers

(5 marks)

ii. Consider the following market demand and cost equations for two firms in a duopolistic industry.

$$P = 300 - (Q_1 + Q_2)$$

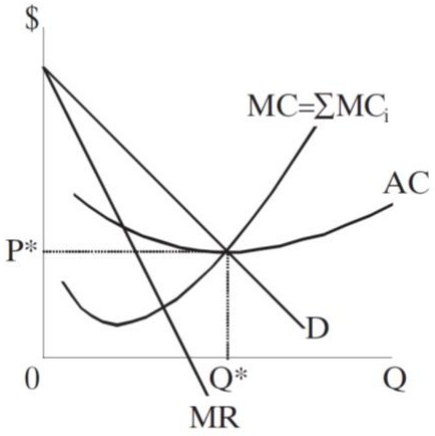
$$TC_1 = 60\ Q_1$$

$$TC_2 = 60\ Q_2$$

Suppose that firm 2 is a Stackelberg leader and that firm 1 is a Stackelberg follower. What is the profit-maximizing output level for each firm?

(5 marks)

4. Suppose initially that the blodget industry in Ancient Elam is in long run competitive equilibrium, with each firm in the industry just earning normal profits. This situation is illustrated in Figure



i. Find the equilibrium price and the industry output level. Mark them in the graph above.
(5 marks)

ii. Suppose that venture capitalists organize a syndicate to acquire all the firms in the blue blodget industry. The resulting company, Kablooy, is a profit-maximizing monopolist. Find the equilibrium price and output level. What is the monopolist's economic profit? Show graphically as well.
(5 marks)

iii. Suppose that the Antitrust Division of the U.S. Department of Justice is concerned about the economic impact of consolidation in the blue blodget industry but is generally of the opinion that it is not in the national interest to "break up" Kablooy. Instead, Justice Department lawyers recommend that the blue blodget industry be regulated. In your opinion, what are the economic concerns of Justice Department? In your answer, explain whether consumers were made better off or worse off as a result of consolidation in the blue blodget industry? Also, be sure to compare prices, output levels, production efficiency, and consumer surplus before and after consolidation.
(5 marks)

iv. If you believe that consumers have been made worse off, what regulatory measures would you suggest be recommended by the Justice Department? Do you foresee any potential long-run economic problems arising from the decision to allow the blue blodget industry from continuing as a monopoly.
(5 marks)