

**MBA (FT) – November/December 2020**  
**MBAFT - 6103** **Managerial Economics**  
**Paper Code – 410901103**

*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.*

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**All questions are compulsory**

1. Meanwhile in a parallel Universe it is 1980. Bell bottoms and bandanas are all the rage. The world is about to get hit by an economic crisis, but it hasn't happened yet.

IMC is an established company manufacturing small appliances with several product lines. Personal computers are making a great splash in various parts of the world. IMC-PC is the only player who is active in the domestic market. The product demand is showing steady growth and manufacturing defects are within tolerable range.

IMC-PC's production unit requires two inputs: labour (L) and components (C). Labour and components must be used in the ratio 1:25. Also, we have the following data: 1 unit of labour and 25 units of components produce 100 units of output. The ratio of the inputs must remain unchanged for any amount of production.

IMC-PCs costs are as follows: Fixed cost is 1,000; all of it sunk. Unit cost of labour is  $w=10$  and unit cost of component is  $c=100$ . Labour is sourced locally while components come from other countries.

IMC-PC is a profit maximizing firm with no capacity constraints.

IMC-PC has estimated the Consumer demand for PCs as a linear function:  
 $Q_d = 2030.1 - P$ , where  $Q_d$  stands for quantity demanded and  $P$  stands for price.

- a. Help IMC-PC identify the production function. Holding  $L$  fixed at  $L=100$ , draw the production possibility frontier of this production function. Also draw the indifference curve when the production target is 1000. What is the elasticity of substitution for this particular production function? Show the steps to arrive at the elasticity of substitution number to get full points.

(10 marks)

- b. From the nature of the technology that you have identified above can and the sector referred to here, what is your conjecture regarding the fixed cost and variables cost of this particular production process. Explain your answer. Based on your answer, what is probable industry structure in this case? Do the principles of free-entry and exit condition hold for this industry? Explain your answer. What will technological innovation mean in this context? Explain with appropriate graphs.

(10 marks)

- c. The Government, in a bid to encourage local production of components, imposes a tax of 20 per unit. What kind of tax is this? How will this change the optimal choice of labour and components for the same production (say, 1000 units of output)? How will it change the total cost? Find out and draw the cost functions before and after (meaning, before the imposition of the tax and after). Remember, what a cost function is: total cost as a function of output; the one you arrive at by solving the manager's cost minimization problem. Derive the cost function and show your work to get full points. Can you draw the supply function of IMC-PC now with the new costs? Draw and explain how you got this.

(10 marks)

- d. Assume the post-tax prices of inputs for the producer. Given the market structure you have assumed, find the price that the consumer's will have to pay in this market. Show graphically. At this price, is it possible that IMC-PC might be able to get higher revenue by charging a slightly higher price? Explain your answer using appropriate graphs. Also, take a look at the market demand function. What kind of consumer utility function can generate such a market demand? Explain.

(10 marks)

- e. You have the perfect tools to know the future exactly (you are a consultant) and you can see that by 1990 there will be a lot more player in this market. Technology has changed significantly and the total cost curve of a IMC-PC is given by  $TC(q) = 10,000 + q^2$ . The technology is now widely understood and there are  $n$  identical players in the market. The demand has also increased dramatically to:  $Q_d = 10,200 - P$ . What will be the long run equilibrium price in this new market and the what will be the quantity produced by IMC-PC? How many firms will be there in 1990? Find numerical answers. Draw the relevant graphs. What is a likely outcome for this industry in future? Discuss.

(10 marks)

2. Consider the Global market for electric cars. Create a simultaneous game of “Who Gets a Bigger Market Share” with at least two players --- American carmaker, Tesla and Chinese carmaker, Nio. You can, of course, choose more players. Assume that they are both operating in the same market and looking to formulate optimal business strategies. Choose at least three strategies for each of the players. You can choose the same set of strategies for the two players or you can choose different strategies. The strategies are such that strategy chosen by player 1 affects player 2’s payoffs and vice versa. Construct payoffs corresponding to each pair of strategy --- that means tell a story for each payoff. Write everything down. Draw the game matrix and solve for Nash Equilibrium. Does this equilibrium (that you have decided by the design of the game) make sense in light of what we know about these two companies? You can read online sources to know more about these two companies.

*(20 marks)*