Sample questions for Market Structure Unit

Note: These are some sample questions for Quiz 2 as well as end term exam. They need not necessarily appear in the exam in the same format or pattern. Nevertheless, one can take the cue from these and prepare accordingly. For example, some MCQs could appear based on the following questions (or similar questions), for Quiz 2.

Chapter: Perfect Competition

1. The price of a commodity in a competitive firm is given as P = 10. The cost function is given by the equation TC = 17 + 0.4Q + $0.1Q^2$. Based on the information, find the equilibrium quantity, revenue and the accounting profits for the competitive firm.

2. The price of a commodity in a competitive firm is given as P = 435. The cost function is given by the equation TC = 15Q + $21Q^2$. Based on the information, find the equilibrium quantity, revenue and the accounting profits for the competitive firm.

3. The price of a commodity in a competitive firm is given as P = 20. The marginal cost is given by the equation MC = 0.5Q. Based on the information, find the equilibrium quantity, revenue and the accounting profits for the competitive firm.

4. Repeat the previous exercise for…

   a. P = 100; MC = 2 + 2Q
   b. MR = 15; MC = Q. Find the price as well.
   c. TR = 12Q; TC = 2 + $0.125Q^2$. Find the price as well.

5. The MC of a competitive firm is 10 – 2Q + Q^2. The market price is P = 18. Find the profit maximizing quantity.

6. A competitive firm has AC = $\frac{4.5+2Q+0.5Q^2}{Q}$. The MC = 2 + Q. If the market price is P = 5, how much profit will the firm earn?

Chapter: Monopoly

1. The price of a monopoly firm is given as P = 180-10Q. The cost function is given by the equation TC = 84 + 42Q - $12Q^2$ + $15Q^3$. Find the equilibrium price, quantity, and the accounting profits for the competitive firm.

2. How will the profits change if there is a lump sum seller tax of Rs. 120, from the previous question? **(Hint: consider possible changes in the cost function).**

3. How will the profits change if there is a per un it seller tax of Rs. 24, from question 1? **(Hint: consider possible changes in the cost function).**

4. Assume a monopolist has MC = 10 and no fixed costs. The monopolist faces a demand curve of P = 100 - 3Q. Find the equilibrium quantity and price.

5. Assume a monopolist has MC = 20 and no fixed costs. The monopolist faces a demand curve of P = 100 - 4Q. Calculate the deadweight loss. **(Hint: Think of the monopoly quantity and compare it with competitive quantity)**

6. Based on market research, a film production company in Ectenia obtains the following information about the demand and production costs of its new DVD:

Demand P	:	1000-10Q
Total Revenue TR	:	$1000Q-10Q^2$
Marginal Revenue MR	:	1000-20Q
Marginal Cost MC	:	100+10Q

   a. Find the price and quantity that maximize the company's profit.
   b. Find the price and quantity that would maximize social welfare.
   c. Calculate the deadweight loss from monopoly.

Chapter: Monopolistic Competition

1. The price of a commodity in a monopolistically competitive firm is given as P = 72-Q. The cost function is given by the equation $TC = 5Q^2$. Based on the information, find the profit maximizing price, quantity and the level of profit in the short run. What will be the equilibrium quantity in the long run?

2. The P of a monopolistically competitive firm is P = 96-4Q. $TC = 2Q^2$. Based on the information, find the short run price, quantity and profits. Also, the long run profit maximizing quantity.

3. Try out question number 7 (Chapter on Monopolistic Competition) from Mankiw's 9^{th} edition.

Chapter: Oligopoly

1. A duopoly market has firms competing with each other. However, they cooperate and plan to collude. Each action gives them payoffs in the form of profits. Based on the table below, answer the questions.

	Firm B	
Firm A	Cooperate	Do not cooperate
Cooperate	A $1000, B $1000	A $200, B$1500
Do not cooperate	A $1500, B $200	A $400, B $400

- What is Firm A's best strategy for any action of Firm B?
- What is Firm B's best strategy for any action of Firm A?
- Why are they respectively the best strategies? Explain using payoff values.
- Identify the Nash equilibrium using the dominant strategy rule, as given in the text book.

2. Mary and Raj are the only two growers who provide organically grown corn to a local grocery store. They know that if they cooperated and produced less corn, they could raise the price of the corn. If they work independently, they will each earn $100. If they decide to work together and both lower their output, they can each earn $150. If one person lowers output and the other does not, the person who lowers output will earn $0 and the other person will capture the entire market and will earn $200. The table below represents the choices available to Mary and Raj.

		Mary	
		A	B
Raj	A	($100, $100)	$200, $0
	B	$0, $200	($150, $150)

What is the best choice for Raj if he is sure that Mary will cooperate? If Mary thinks Raj will cheat, what should Mary do and why? What is the prisoner's dilemma result? What is the preferred choice if they could ensure cooperation? A = Work independently; B = Cooperate and Lower Output. (Each results entry lists Raj's earnings first, and Mary's earnings second.)

3. Jane and Bill are apprehended for a bank robbery. They are taken into separate rooms and questioned by the police about their involvement in the crime. The police tell them each that if they confess and turn the other person in, they will receive a lighter sentence. If they both confess, they will be each be sentenced to 30 years. If neither confesses, they will each

receive a 20-year sentence. If only one confesses, the confessor will receive 15 years and the one who stayed silent will receive 35 years. The table below represents the choices available to Jane and Bill.

		Mary	
		A	B
Raj	A	30,30	35,15
	B	15,35	20,20

If Jane trusts Bill to stay silent, what should she do? If Jane thinks that Bill will confess, what should she do? Does Jane have a dominant strategy? Does Bill have a dominant strategy? A = Confess; B = Stay Silent. (Each results entry lists Jane's sentence first (in years), and Bill's sentence second.)

General hints in attempting questions

1. In some questions you might see ‘profit maximizing quantity and price’ and in some others ‘equilibrium quantity and price’. They are essentially the same. They would be used interchangeably often.

2. Unless otherwise specified, the profit maximization refers to a short run case. But I have tried to keep the questions as uniform as possible. However, one needs to know the short run and long run equilibrium conditions to arrive at conclusions.

3. If you are not provided with some information directly, for example in question 2 in perfect competition section above, try to reach the profit maximizing condition with the available information (depending on whether it is long run or short run). Not every question shall be direct.