

## Assignment 4 Solutions.

1. Answer the following questions. Use diagrams to demonstrate your answers.

- (a) Explain why a monopoly that charges single price produces less than a competitive firm and results in an inefficient outcome.

*Both competitive firm and monopoly maximize profits by choosing output so that  $MR=MC$ .*

*For competitive firm  $MR=P$  and therefore to max profit a competitive firm chooses output so that  $MC=P$ . Since the rule for choosing output is  $P=MC$ , the supply of the competitive firm is represented by  $MC$  and in the equilibrium the output is efficient:  $Supply(MC)=Demand(MV)$  and gains from trade are maximized.*

*Monopoly faces a downward sloping demand and as we discussed in the lecture  $MR$  is not equal to price at any level of output.  $MR$  is always lower than  $P$  because if monopoly wants to sell additional unit of output it will have to lower price for all units it is selling. In conclusion for monopoly  $MR < P$  and since the firm equalizes  $MR$  and  $MC$  the price it will charge for the product is above the marginal cost.*

*Producing where  $MC=P$  when firm charges a single price does not maximize monopoly's profit. You could show it in several ways. The simplest way: to max profit firm needs  $MC=MR$ , if it chooses output so that  $MC=P$ ,  $MC > MR$  because  $MR < P$  - the output is above profit maximizing level and firm will find it profitable to lower quantity produced.*

- (b) Will monopoly always result in inefficient market outcome? If you think that yes, argue carefully why so. If you think that it is possible that monopoly will be efficient, explain under what circumstances it will be so.

*There are two types of price discrimination under which profit maximizing output is efficient.*

2. Tetracycline is an antibiotic that is used to treat both humans and animals. The price of tetracycline for human use is higher than price of tetracycline for animal use. Why? For full marks use diagrams to demonstrate.

*Answer with diagrams is in the book on p. 307. Common mistake was to say that price of human medication is higher because people are willing to pay more for it. Recall that in economics we do not explain phenomena by using preferences, because this is not really an explanation.*

4. There are 10 people living in a small town. Each person's demand for rides in amusement park is  $P = 5 - .5q$ , where  $q$  is the number of rides that a person demands at price  $P$ . There is one amusement park that has fixed cost  $FC = 50$  dollars; marginal cost of a ride per person is zero.

- (a) Find and plot on a diagram market demand for the rides. If amusement park charges single price per ride, what are the profit maximizing price and number of

rides? Demonstrate on a diagram. What is the profit of the amusement park?

*Market demand is  $P = 5 - .05Q$ .  $Q^M = 50$ ,  $P^M = 2.5$ , profit is 75*

- (b) Now suppose that instead of charging single price the park wants to charge both entry fee and price per ride. What fee and price per ride will maximize park's profit? Explain shortly how this pricing strategy works. Calculate the profit the park will collect in this case. Use a diagram to demonstrate your answer.

*To answer this part you need to use individual demands. Price per ride is zero,  $FEE=25$ . Profit =  $10 \times 25 - 50 = 200$ .*