Problem Set 8 - Solutions

1A) Probably perfectly competitive. Many manufacturers produce aspirin, the product is standardized, and new manufacturers can easily enter and existing manufacturers can easily exit the industry.

1B) Not perfectly competitive. There are only a few manufacturers of SUVs, each with large market share. Also, SUVs are not a standardized product.

2A) FC = 50,000

(Assumes constant MC within each 1,000 units of output)

Quantity	VC	MC of DVD	AVC	ATC
0	0	$5	—	
1,000	$ 5,000	3	$ 5	$55.00
2,000	8,000	1	4	29.00
3,000	9,000	5	3	19.67
4,000	14,000	6	3.5	16.00
5,000	20,000	13	4	14.00
6,000	33,000	16	5.5	13.83
7,000	49,000	23	7	14.14
8,000	72,000	27	9	15.25
9,000	99,000	51	11	16.56
10,000	150,000		15	20.00

(P - ATC)*Q

B) If the price per DVD is $25 then Bob will sell 8,000 DVDs. and earn profit of $78,000. This must be short-run because otherwise firms would enter the market given that economic profits exist. In the long run, firms will continue to enter until price equals minimum ATC. Based on data in table this happens at P = ATC = 13.83.

3A) Bob's break even price is $13.83, this is where price = minimum ATC. Bob's shutdown price would be 13.83 in the long-run and $3 in the short-run. Below these prices Bob would not be covering his avoidable costs.

B) If the price of DVDs is $2, the price is below Bob's shut-down price of $3. Therefore, Bob should shut down in the short-run.

C) If the price of DVDs is $7, Bob should produce 5,000 DVDs because for any greater quantity his marginal cost exceeds his marginal revenue (market price in this case). His total profit will be -$35,000. (P-ATC)*Q
In the short-run Bob should produce this amount because his short-run loss if he were to shut down would be greater. (-$50,000), so he is at least covering his variable cost in the short-run. In the long-run, he will exit the industry because his profit is negative. price of $7 is below his break even price of $13.83.
P > AVC
(P < ATC)

D) At a price of $20, Bob should produce 7,000 DVDs. If he produces any more then his MC would exceed his marginal revenue. His total profit would be $41,000. In the short-run, he will produce because he is covering his variable cost (Price is above his shutdown price). In the long-run, he will stay in the industry because his profit is not negative. (Price is above break even price) ← P > ATC
(P-ATC)*Q
P > AVC

4) A) False, for a profit-maximizing firm in a perfectly competitive industry, profit is maximized by producing a quantity at which marginal cost is equal to the market price.

B) False, Changes in fixed cost do not affect marginal cost and so do not change the profit maximizing quantity of output produced. Changes in fixed cost do, however, change the amount of profit earned and the firm's break-even price: the higher fixed cost, the higher the firms break even price and the lower its profit.

5A) Merck has a patent for Zetia. This is an example of a government created barrier to entry giving Merck market power.

B) There is a large fixed cost associated with building a network of water pipes to each household. The more water delivered, the lower the average total cost becomes. This gives the firm a cost advantage over other companies, giving the firm market power.

C) Chiquita controls most banana plantations. Control over a scarce resource gives Chiquita market power

D) The Walt Disney Company has the copyright on animations featuring Mickey Mouse. This is another example of a government-created barrier to entry that gives the Walt Disney Company market power.

(4)

MC=4

6A)

Price	Quantity	TR		MR
12	0	0	>	10
10	1	10	>	6
8	2	16	>	2
6	3	18	>	-2
4	4	16	>	-6
2	5	10	>	-10
0	6	0		

B) Bob would charge a price of $0. At this price, there would be 6 downloads. (Quantity demanded would be 6)

C) Bill would charge a price of $6. At this price, total Revenue would equal $18. Quantity demanded at this price would be 3.

D) Ben would charge a price of $8. At this price, Quantity demanded would be 2. Any downloads beyond this point would cause MR < MC and would decrease profits. I.E, the MR from producing the 3rd Unit would be $2, however the MC is $4, so they would lose $2 on this unit.

E) The efficient outcome is the outcome that would occur under Perfect Competition, P = MC. Therefore, the price would be $4, and Quantity demanded would be 4.

(5)

7A)

Price	Quantity	TR		MR
500	0	0	>	400
400	1	400	>	200
300	2	600	>	0
200	3	600	>	-200
100	4	400	>	-400
0	5	0		

If the firm lowers the price sufficiently to sell one more [redacted] unit, it earns extra revenue equal to the price of that one extra unit. This is the quantity effect of lowering the price. There is also a price effect: lowering the price means that the firm also has to lower the price on all other units, and that lowers its revenue. So, the marginal revenue of selling an additional unit is less than the price at which the additional unit can be sold.

B) If the price is $200, then the firm sells to 3 customers. If it lowers the price to $100 then a 4th customer is added. The price effect is that the firm loses $100 from each of its 3 existing customers. (-$300). The quantity effect is that the firm sells one more unit of the good for $100. Thus, MR = $100 − $300 = −$200