



## **AP<sup>®</sup> Microeconomics 2005 Sample Student Responses**

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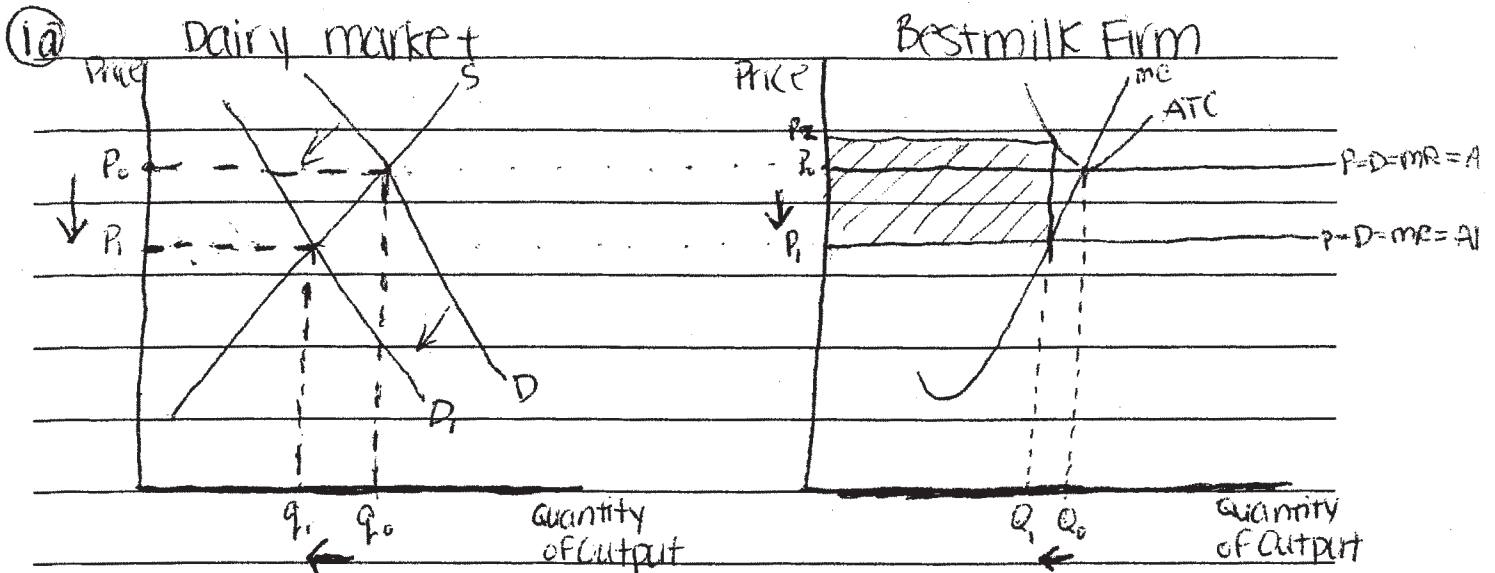
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Write in the box the number of the question you are answering on this page as it is designated in the examination.

1

1A



- (i) The price is  $P_0$  and output is  $Q_0$  in the industry.
- (ii) The price is  $P_0$  and output is  $Q_0$  for Bestmilk.
- (b) (i) The price is  $P_1$  and output is  $Q_1$  for the industry.
- (ii) The price is  $P_1$  and output is  $Q_1$  for Bestmilk.
- (iii) The shaded area is Bestmilk's area of loss.
- (c) Bestmilk must produce at a price that is above its average variable cost. This way, the firm will be able to pay some of its variable costs and all of its fixed costs.
- (d) (i) Because typical firms like Bestmilk face an economic loss, many suppliers will leave the industry. As a result, the price will go back to the initial long-run equilibrium since the supply curve shifts left.
- (ii) At the above price, a typical firm will produce the same quantity of output as it did in the initial long-run equilibrium.
- (iii) The number of firms in the dairy industry will be less than in the initial long-run equilibrium.

1

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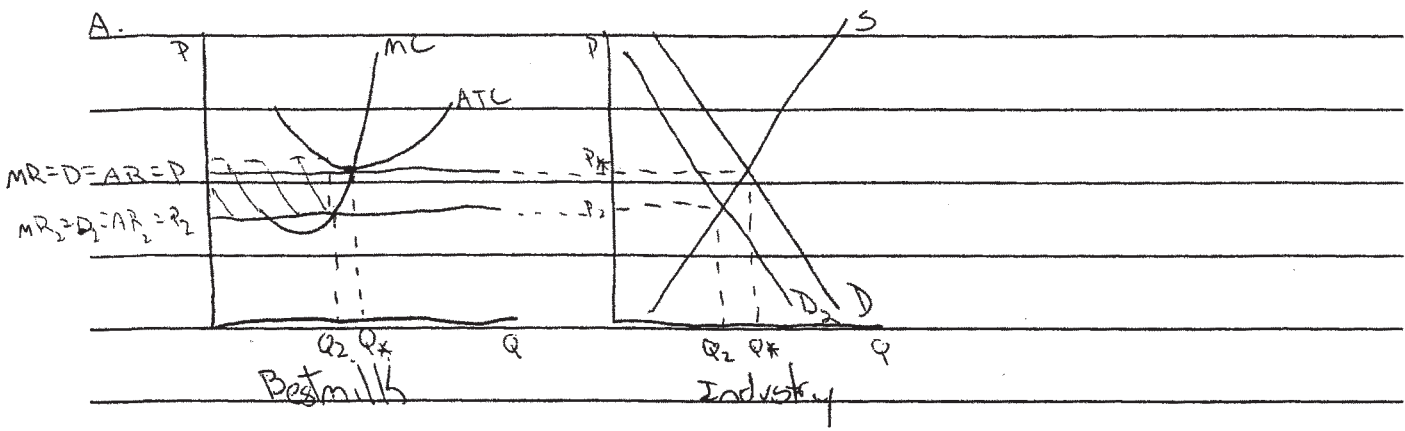
1A

because they were facing economic losses and  
~~the~~ many firms did not want to continue to  
face losses.

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1

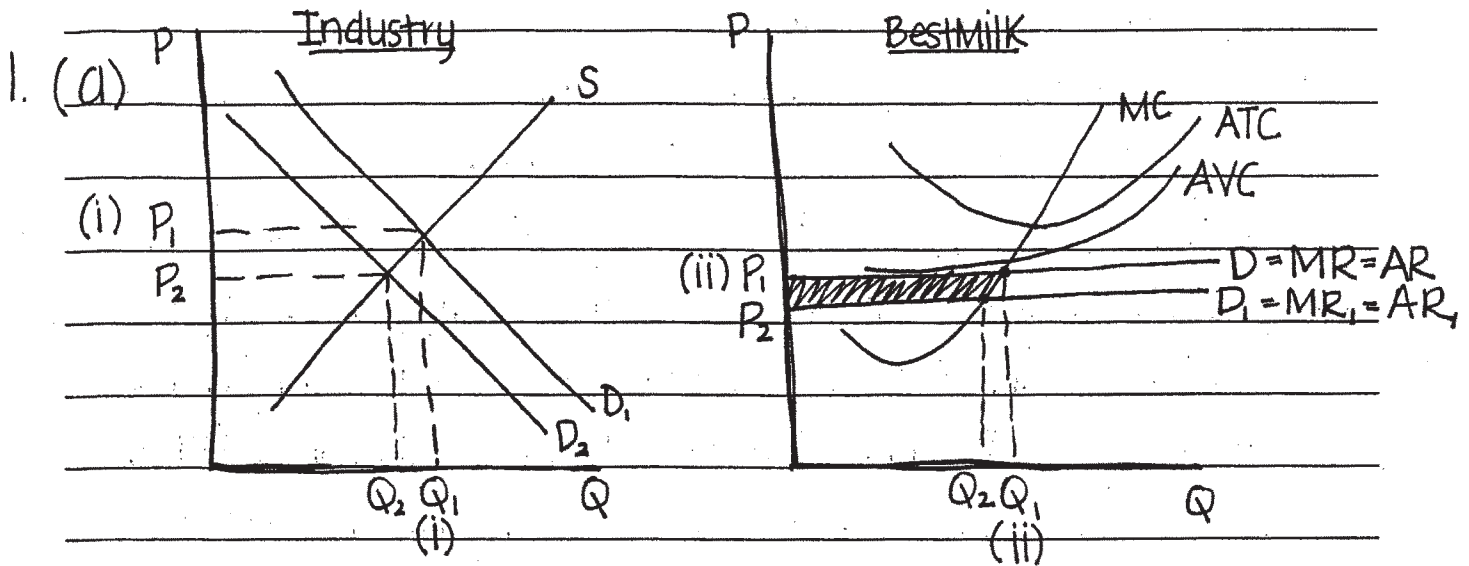
B



B. See graph above.  $\Delta$  = loss for Bestmilk

C. Bestmilk must decrease its price to continue production

D. Price has ↓, output has ↓, the number of firms goes down because firms will seek an industry where there is a profit to be made.



(b) i. Both price and output for the industry decreases after a fall in income. This is shown on the industry graph in part (a) as  $P_2$  and  $Q_2$ .

ii. Again, both price and quantity in the BestMilk firm decrease, shown as  $P_2$  and  $Q_2$  in the BestMilk graph in part (a).

iii. The rectangle shaded in the BestMilk graph represents the losses that the firm will undergo if income decreased.

(c). In order for BestMilk to continue to produce in the short run, marginal revenue per product must exceed the marginal cost per product.

(d) i. Price in the industry will remain at the point where marginal revenue equals marginal cost, in order to reach a point



1

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of profit maximization.

ii. Output of a typical firm will be greater in the long run because fixed costs will be sunk and will not affect any shut down decisions.

iii. The number of firms in the dairy industry will remain the same, because there will be no incentives for new firms to enter the industry.

This will remain true as long as firms currently in the industry do not exit.

2A

Write in the box the number of the question you are answering on this page as it is designated in the examination.

2

a) i) Price = \$12, Quantity = 100

ii) A+B+C+F

iii) D+G+E

b) No. Some of the tax is paid by producers. The consumers pay the \$1 increase in price because of the tax while the producers pay the remaining \$1 of the \$2 tax. This is because the supply curve is not perfectly elastic.

c) i) \$11

ii) B+C+D

iii) A

iv) F+G



2B

2

Write in the box the number of the question you are answering on this page as it is designated in the examination.

a) i)  $P_c = 12$   $Q_c = 100$

ii)  $A + B + C + F$

iii)  $D + G + E$

b) No, it does not. The price paid by buyers rises from \$12 to \$13, and the amount received by sellers falls from \$12 to \$11. Therefore, the full amount of the tax is \$2, but the buyers only pay \$1 more than they were paying before the imposition of the tax.

c) i) net price received by sellers: \$11

ii) amount of tax revenue: \$2

iii)  $CS = A$

iv) deadweight loss:  $G + E$



20

2

Write in the box the number of the question you are answering on this page as it is designated in the examination.

a) The equilibrium price before tax is \$12 and the equilibrium quantity before tax is 100

The area representing consumer surplus is ABCF  
The area representing producer surplus is DGE

b) The new price paid by the buyers does rise by the full amount of the tax because consumers are now paying the new equilibrium price: \$13.

c) The net price received by sellers is \$13  
The amount of tax revenue is represented by ~~CD~~ B  
The area representing the <sup>new</sup> consumer surplus is A  
The area representing the deadweight loss is CF

#3

Write in the box the number of the question you are answering on this page as it is designated in the examination.

- a) perfectly competitive - the firm can sell all it wants at \$20, meaning it's a price taker
- b) perfectly competitive - the firm can ~~all~~ hire all the workers it needs at \$120, meaning they are wage takers
- c) The 3<sup>rd</sup> worker allows the firm to produce an extra 20 shirts per day (45-25). Each can be sold at \$20, for an MRP of  $20 \times 20 = \$400$ .

d) Number of Workers (1)	# Shirts/Day (2)	TR (2) × \$20	MR	MC
0	0	0		
1	10	\$200	\$200	\$120
2	25	\$500	\$300	
3	45	\$900	\$400	
4	60	\$1200	\$300	
5	72	\$1440	\$240	
6	80	\$1600	\$160	
7	85	\$1700	\$100	
8	82	\$1640	-\$60	↓

Profit is maximized when  $MR = MC$ . The closest is when there are 6 workers, with  $MR = \$160$ ,  $MC = \$120$ . The  $MR > MC$ , as opposed to 7 workers when  $MR < MC$ . Since the firm can't hire part of a worker, it should settle on when MR is greater than MC.

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3

3B

(A) Perfectly Competitive. It's a constant price plus they are told how much to sell it for.

(B) Like a Monopoly. As long as  $MRP > MRC$

(C)	MRP	# of Workers	TR	# of Shirts
	300	1	200	= 10 x \$20
	<u>400</u>	2	500	= 25 x \$20
		3	900	= 45 x \$20

\$20 is the price of the shirts. Then you take the TR of the 2<sup>nd</sup> guy minus the first to get the MRP of the 2<sup>nd</sup>. Then you take the TR of the 3<sup>rd</sup> guy minus the 2<sup>nd</sup> to get the MRP of the 3<sup>rd</sup> guy.

(D) 6. Because his  $MRP > MRC$  so he is bringing in more money than they are paying him.

3

Write in the box the number of the question you are answering on this page as it is designated in the examination.

P & L sells its output in a profit-maximizing market structure. It seems to be a perfectly competitive market

c) Revenue product of 2nd worker =  $25 \times \$20 = \$500$

Revenue product of 3rd worker =  $45 \times \$20 = \$900$

The difference in these prices is the marginal revenue product of the third worker which is equal to \$400.

d) The firm should hire 7 workers because after they hire an 8th worker the marginal revenue decreases.