Answers to Text Questions and Problems Chapter 6

Answers to Review Questions

1. Largely because of productivity increases in manufacturing, wage rates have risen steadily over the past decades. Thus, the cost of repairing a radio is now higher than the price of a new one.

2. If the owner of a business supplies valuable resources to the firm, he may earn an extremely large normal profit yet still earn zero economic profit.

3. Entry to and exit from a market shift supply curves and cause price changes that eliminate economic profit. No similar process affects the rent to factors of production that are not easily duplicated.

4. In the short run, existing firms can produce more only if compensated by higher prices. But in the long run, if the prices of factors of production remain constant, the entry of new firms can allow for increasing supply without higher prices.

5. Individual firms can experience diseconomies of scale while long-run market supply simultaneously is horizontal. In the short run, individual firms have some fixed factors of production, so producing more will increase average cost. But in the long run, an increase in quantity supplied can result from the entry of new firms, allowing for higher supply without higher prices.

Answers to Problems

1a. False. The maxim tells us that there are no unexploited economic opportunities when the market is in long-run equilibrium, but there might still be opportunities when the market is out of equilibrium.

b. False. Firms in long-run equilibrium have to make an accounting profit in order to cover the opportunity cost of resources supplied by their owners.

c. True. These firms can earn an economic profit until other firms adopt their innovations. As the innovations spread, the industry supply curve will shift right, causing the market price of the good to fall and eroding the short-term economic profit.

2. The reason these firms’ shares are valuable is that once their products have established a market niche, the firms will cease to give them away. The anticipated future profits of such companies lead investors to bid for their shares now.

3a. John’s accounting profit is his revenue minus his explicit costs, or $750 per month.

b. Yes: his opportunity cost of his labour to run the café is $1000 – $275, or $725 per month. Adding this implicit cost to the explicit costs implies that the café is making an economic profit of $25 per month. And since $25>0, John should stay in business.

c. John’s opportunity cost rises by $100, to $825 per month. The café is thus now making an economic loss of $75 per month.

d. The accounting profit would now be $1750 per month. The answer to part (b) would not change. By using his own money rather than borrowing, John is forgoing the interest he would be earned by not putting the money in a savings account. That amount is an opportunity cost that must be included when calculating economic profit.

e. To earn a normal profit, the café would have to cover all its implicit and explicit costs. The opportunity cost of John’s time is $1000 per month, whereas the café’s accounting profit is only $750 per month. Thus, the café would have to earn additional revenues of $250 per month to make a normal profit.
4a. Jacobs will earn $600,000 per year, the normal salary for a designer plus the economic rent he collects for his special talent. $\frac{5}{6}$ of his salary is economic rent.

b. If Jacobs’s employer withholds some of the additional revenue it takes in as a result of hiring him, some other advertising company will offer him a higher salary and still manage to earn an economic profit. Bidding for Jacobs will continue until firms are indifferent between paying him $600,000 and hiring any other designer for $100,000.

5. Assuming that all tofu firms initially earn zero economic profit, the innovation will cause one tofu factory’s costs to fall. The firm that owns the factory will make an economic profit in the short run, because the market price of tofu will not change. As other firms adopt the innovation, they too will make an economic profit. This economic profit will attract new firms into the industry, and so the supply curve for tofu will begin to shift to the right, causing the market price of tofu to fall. The decline in price will continue as more firms enter, until there is no more economic profit to be made.

6. If the import licences were free and could not be transferred, owners of each licence would make an economic profit of $20,000 per year. When the annual interest rate is 10 percent, the most a buyer will be willing to pay for a stream of economic profits of $20,000 per year is the amount of money she would have to put into a savings account to earn that much interest each year. This sum of money is $200,000. If the import licences are auctioned, they will sell for this price, and the government will earn an economic rent of $200,000 per licence. The buyers of the licences will make no economic profit.

7a. A cotton farmer would make a short-run economic profit of $60,000 revenue – $10,000 rent – $4000 marketing cost – $6000 opportunity cost, or $40,000 per year. In the long run, factory workers would want to move into cotton farming, and would thereby bid up the rent on cotton farms. The rent would continue to rise until it reached $50,000 per farm. At that point the incentive to leave a factory job would no longer exist, because cotton farmers would again be making zero economic profit.

7b. Landowners would reap the long-term benefits of the scheme. Their income would rise by $40,000 per year per 120-hectare plot.

8. The question you should ask is: How much money would your friend need to put in the bank at 20 percent interest to generate annual earnings of $30,000? To find out, simply let $X$ denote that amount in the equation $X(0.2) = 30,000$ and solve: $X = \frac{30,000}{0.2} = 150,000$.

9. If you pay $X$ for the orchard, the opportunity cost of your investment is $(0.10)(X)$ per year. The opportunity cost of your time is $50,000 per year. The highest value of $X$ for which you would be willing to own and manage the orchard is the value that yields zero economic profit. To find that value, solve $125,000$ per year – $(0.10)(X)$ per year – $50,000$ per year $= 0$: $X = 750,000$.

10a. The most Louisa would be willing to pay in experimental costs is $500,000. She could charge all 100,000 patrons $5 more, but only for one night. After the first night, other producers would figure out the recipe and compete the price back down to $5 per plate.

b. With a patent that lasts one year, Louisa would be willing to pay up to $182.5 million dollars ($500,000/day)(365 days/year). She could charge an additional $5 per meal each night of the year before the other producers could copy her recipe.

Sample Homework Assignment

1. Assume you own and manage your own fruit stand. The financial information for the stand is given below (all values are monthly).
Answer each of the following, based on the information provided.

a. Calculate your accounting profit.

b. If your other employment opportunity is to earn $1000 per month working at a t-shirt stand (and you are equally happy selling fruit or t-shirts), what is your economic profit? Should you continue selling fruit? Explain.

c. What happens to your economic profit if you enjoy selling t-shirts and would be willing to forgo up to $250 per month to work selling t-shirts rather than fruit? Should you continue selling fruit? Explain.

2. Assume you are currently working in a government job that pays $20,000 per year and you have $40,000 in an account earning 10% interest. You have the opportunity to buy a fruit orchard that produces $23,000 per year in revenue for a price of $50,000. You have always wanted to work in the fruit industry. Should you buy the orchard? Explain.

3. Assume you have an idea for a new fruit picking machine that will cost the same as current fruit picking methods but will yield 10% more revenue because it will pick more fruit and damage less. To develop the new machine you would have to take two years off from your $25,000 per year job managing the fruit company. Other fruit companies would figure out the new technology in time to use it after only one season. Should you take the time off to develop the new machine if annual fruit revenue is $500,000? Explain, assuming an interest rate of zero.

**Multiple Choice Quiz**

1. According to Adam Smith, we get our dinner from the butcher and baker due to their
   a. invisible hands.
   b. benevolence.
   c. humanity.
   d. self-interest.
   e. knowledge of our necessities.

2. Which of the following is not a type of profit discussed by economists?
   a. Accounting.
   b. Economic.
   c. Excess.
   d. Normal.
   e. Explicit.

3. Which of the following is the difference between accounting profit and economic profit?
   a. Accounting profit considers all costs.
   b. Economic profit considers only implicit costs.
   c. Normal profit.
   d. Equal to excess profit.
   e. Zero.
4. If accounting profit is less than normal profit, then the firm is earning
   a. an economic loss.
   b. an economic profit.
   c. an excess profit.
   d. a negative accounting profit.
   e. a profit equal to opportunity cost.

5. Assume that you own your own business and your explicit costs are $10,000 per year. You could earn $11,000 in your next-best alternative job. Your revenue is $22,000 per year. What is your accounting profit?
   a. $1000.
   b. $2000.
   c. $11,000.
   d. $12,000.
   e. $22,000.

6. Assume that you own your own business and your explicit costs are $10,000 per year. You could earn $11,000 in your next best alternative job. Your revenue is $22,000 per year. What is your economic profit?
   a. $1000.
   b. $2000.
   c. $11,000.
   d. $12,000.
   e. $22,000.

7. If firms in an industry earn less than a normal profit,
   a. some existing firms will exit.
   b. the price of the industry’s product will eventually fall.
   c. new firms will enter.
   d. the price of the industry’s product will eventually rise.
   e. supply will increase.

8. In the long run, firms will earn
   a. zero accounting profit.
   b. zero economic profit.
   c. negative accounting profit.
   d. positive economic profit.
   e. positive normal profit.

9. Constant returns to scale means that
   a. long-run average cost increases as a firm’s output increases.
   b. long-run average cost decreases as a firm’s output increases.
   c. long-run average cost stays the same as a firm’s output increases.
   d. a doubling of inputs causes output to increase by more than double.
   e. a doubling of inputs causes output to increase by less than double.

10. Which of the following can be a barrier to entry?
    a. Copyright protection.
    b. Patents.
    c. Regulation.
    d. Product compatibility.
Problems/Short Answer

1. Assume that you own, manage, and are the only employee for a t-shirt concession at a university sports arena. The financial information for the business is given below.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail price of shirt</td>
<td>$15</td>
</tr>
<tr>
<td>Number of shirts sold per day</td>
<td>100</td>
</tr>
<tr>
<td>Cost of plain t-shirt</td>
<td>$5 each</td>
</tr>
<tr>
<td>Cost of t-shirt design</td>
<td>$5 each</td>
</tr>
<tr>
<td>Equipment rental fee (per day)</td>
<td>$100</td>
</tr>
<tr>
<td>Stand rental fee (per day)</td>
<td>$200</td>
</tr>
</tbody>
</table>

Answer the following, based on the information provided.

a. What is your accounting profit?

b. Your next-best alternative job is to work as a manager for another local retail business. If your economic profit is zero, how much could you earn as a manager for another business?

c. Assume you enjoy owning and operating the t-shirt stand (you value it at $100 per day). If your total costs increase to $1600, and if you shut down total cost would be zero, should you continue selling t-shirts? Explain.

2. Assume that you have a permanent patent on a new machine for making t-shirts. Using the new machine involves an annual production cost of $300,000 and generates $500,000 in revenue each year. If the annual interest rate is 10%, what is the market value of the patent?

Answer Key to Extra Questions in Instructor’s Manual

Sample Homework Assignment

1a. Accounting profit = TR – (total explicit costs) = $5000 – $3800 = $1200.

b. Economic profit = TR – (total implicit and explicit costs) = $5000 – ($3800 + $1000) = $5000 – $4800 = $200. Yes, because economic profit is positive.

c. Economic profit becomes –$50. $5000 – ($3800 + $1000 + $250) = $5000 – $5050 = –$50. No, because economic profit is negative.

2. The opportunity cost of your investment is (0.10)($50,000) = $5000 per year. The opportunity cost of your time is $20,000 per year. Total opportunity cost equals $25,000 per year. For zero economic profit, the revenue from the orchard plus your enjoyment of working with fruit must equal your opportunity cost. So, enjoyment must equal opportunity cost – revenue. Since revenue = $23,000, your enjoyment must equal $25,000 – $23,000 or $2000 per year. You should buy the orchard if the enjoyment from working with fruit is worth $2000 per year or more to you.

3. The cost of producing the machine is $50,000 (two years of a $25,000 salary). It will earn (0.10)($500,000) in increased profits for 1 year ($50,000), so economic profit is zero. Therefore, either choice yields the same result.

Multiple Choice
Problems/Short Answer

1a. \[ TR = 15 \times 100 = 1500 \]
\[ TC \text{ (explicit)} = 5 \times 100 + 5 \times 100 + 100 + 200 = 1300. \]
Accounting profit = \$1500 – \$1300 = \$200/day.

b. If economic profit is zero, then your next-best alternative (that is, your opportunity cost) must equal \$200 per day. \[ TR – TC \text{ (implicit + explicit)} = 0, \text{ so implicit cost (opportunity cost)} = TR – TC \text{ (explicit)} = 1500 – 1300 = 200. \]

c. No, you should not continue selling t-shirts. Accounting profit now equals \$–100. Even though you value the work at \$100, you should shut down the stand. The \$100 value of working at the stand covers the accounting loss, but you cannot cover your opportunity cost (the income from working in another job).

2. The question is: how much money would you need to put in the bank at 10 percent interest to generate annual earnings of \$200,000 (i.e., \$500,000 – \$300,000)? Let \( X \) denote that amount in the equation \( X(0.1) = 200,000 \) and solve: \[ X = 200,000 / 0.1 = 2,000,000. \]