Econ 601: Basic Economic Analysis
Assignment #2

Topic: Maximization by Households and Firms

Text Questions
1. An individual maximizes his or her economic well-being by making spending and earning
decisions, and a business maximizes its profits by deciding how much of its product to produce
and sell. These decisions are similar in that they involve a balancing process.
a. Generally what is common to the balancing processes in these decisions?
b. How do these decisions differ in terms of what is balanced?
2. The following table gives the utility points received by an individual from each additional hour
of exercise per week, as well as the points that each additional hour costs. Using this table,
answer (a) through (d) below

<table>
<thead>
<tr>
<th>Hrs of Exercise</th>
<th>Marginal Benefit</th>
<th>Total Benefit</th>
<th>Marginal Cost</th>
<th>Total Cost</th>
<th>Net Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>2</td>
<td>40</td>
<td>10</td>
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<td></td>
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<tr>
<td>3</td>
<td>30</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
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<td>10</td>
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<td>6</td>
<td>0</td>
<td>55</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Calculate the total benefit and total cost of exercising for each of the hours in the table.
b. Calculate the net benefit of exercising for each of the hours in the table.
c. How many hours per week should this individual exercise in order to maximize the satisfaction
obtained from exercising? What is the maximum number of net benefit points that can be earned
from exercising?
d. On 3 separate graphs, graph (1) total benefit and total cost, (2) marginal benefit and marginal
cost, and (3) net benefit.

3. Suppose that your aunt has just closed her brooks from her first year in the retail flower
business and is ecstatic with the profit her accountant says that she has earned. The store grossed
$250,000 in sales over the year, and its explicit costs for rent, plants and pots, electricity, and the like were $150,000. Your uncle is not quite as elated, but can’t figure out exactly why. In
discussing the situation with you, he offers the following information. Your aunt and uncle
invested $200,000 of their savings, which was earning an 8% return, to go into business. Your
aunt gave up her job, which was paying $64,000 a year, at a local corporation. Your uncle worked
every evening and most weekends at the store – giving up the opportunity to take on additional
clients or work overtime. In addition to being tired, he figures that he lost $25,000 in additional
income. What was your aunt and uncle’s economic cost of production? How much normal profit
should they have expected to receive? Have they made any economic profits? What kind of
advice would you give them?
4. Using the following cost and revenue information, answer (a) through (c) below the table.

<table>
<thead>
<tr>
<th>Units of output</th>
<th>Total Revenue</th>
<th>Marginal Revenue</th>
<th>Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$0</td>
<td></td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>50</td>
<td>25</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>90</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>120</td>
<td>35</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>140</td>
<td>40</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>150</td>
<td>50</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>150</td>
<td>140</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>140</td>
<td>200</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>120</td>
<td></td>
<td>200</td>
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</tr>
</tbody>
</table>

a. What are the marginal revenue and marginal cost of each unit of output?
b. What is the profit-maximizing level of output?
c. What is total profit at the profit maximizing level of output?

**Multiple Choice Questions**

1) The equal marginal principle of consumer behavior suggests that consumers will make purchase decisions based on comparing the:
   
   a. total benefits of all goods.
   b. additional utility per dollar of each good.
   c. rate of diminishing total utility from successive units of a given good.
   d. all of the above.

2) Assume: (1) that the price of soda is $2 and the price of tacos is $1; (2) that at your current consumption levels the MU of soda is 50 and the MU of tacos is 30; and (3) that you are spending all of your income. The equal marginal principle would imply that you should
   
   a. buy additional units of tacos and less soda
   b. buy additional units of soda and less tacos.

3) Assume you have $5,000 to save. Assume stock in IBM costs $50 per share and pays a yearly dividend of $10 per unit of stock. Assume that stock in TI costs $20 per share and pays a yearly dividend of $5 per unit of stock. (Ignoring all other factors) to maximize your investment return you should:
   
   a. invest $5,000 in IBM.
   b. Invest $5,000 in TI.
   c. Split your investment so that the ratio of your shares in TI relative to IBM is 2.5 to 1.
   d. Split your investment so that the ratio of your shares in IBM relative to TI is 2.5 to 1.

4) Assume you are throwing a party and have $150 to spend. You are considering buying 10 cases of soda and 10 cases of beer. The cost of soda is $5 per case and the cost of beer is $10 per case. The MU from the 10th case of soda is 132 and the MU from the 10th case of beer is 200. To maximize the utility from your purchase: (NOTE: you cannot purchase partial cases)
   
   a. buy more soda and less beer.
   b. Buy more beer and less soda.
   c. Buy more soda and more beer.
d. The answer is indeterminate without knowing the total utility received from the soda and the beer.

5) If the marginal utility per dollar of good X is 4 and the marginal utility per dollar of good Y is 2, then we know that:
   a. the price of Y must be twice the price of X.
   b. the MU of X must equal that of Y.
   c. total utility can be increased by increasing the consumption of X and decreasing the consumption of Y.
   d. all of the above are true.

Use the following table for the next two questions

<table>
<thead>
<tr>
<th># of Sodas</th>
<th>Total Utility</th>
<th># of Burgers</th>
<th>Total Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
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<td>14</td>
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<tr>
<td>5</td>
<td>16</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

6) Which of the two goods demonstrates the law of diminishing marginal utility?
   a. soda only
   b. burgers only.
   c. both soda and burgers.
   d. neither soda nor burgers.

7) If the consumer has only $8 to spend, the price of soda is $1 and the burgers costs $2 each, what would be the optimal consumption of both goods for this consumer?
   a. 4 sodas and 2 burgers.
   b. 5 sodas and 1 burger.
   c. 2 sodas and 3 burgers.
   d. 4 sodas and 4 burgers.

8) The theory behind short run production costs can be narrowed to an assumption that MC is expected to initially fall, but rise at larger levels of output. This assumption follows from:
   a. the laws of supply and demand.
   b. the law of diminishing returns.
   c. the concept of diseconomies of scale.
   d. the law of diminishing marginal utility.
   e.

9) The firm’s average variable cost is at its minimum when:
   a. MP is at its maximum.
   b. MP is at its minimum.
   c. MC=AVC.
   d. all of the above are correct.

10) The mathematical principle that relates MC to AVC is:
a. average rises if marginal falls.
b. average falls if marginal is below average.
c. marginal rises if average is above marginal.
d. marginal falls if average is below marginal.