Economics 101.007
Professor Patrick Conway
31 October 2013
Midterm Two

Last Name: Uyen's Key
First Name: with Explanations.
PID Number: ____________________________
TA Name and Recitation Number: ______

During this examination, students may not use notes, books, computers, programmable calculators, cell phones or any electronic device other than a simple calculator. Students may not talk with other students or look at the exam papers of other students. Once the exam begins, students may not leave the room until they finish and turn in their exams.

Honor Pledge: I have neither given nor received unauthorized aid on this examination. I know and have abided by the examination rules and instructions.

Signed: _______________________________________

Instructions

1. On the blue Scantron sheet:
   a. Bubble in your last name, first name and PID.
   b. Bubble in your recitation number in the “sequence number area” as 1017xx where xx is determined by your section number. For example, someone in section 712 would bubble in 101712. See below for a list of section numbers.
   c. **Students who incorrectly bubble their name, PID, or section number are penalized 2 points.**
   d. Write the form color of the examination on the upper left corner of the bubble sheet. The form is “white”, “green”, “blue” or “yellow”.

2. The examination includes 32 equally weighted questions. Answer all questions by marking the bubble sheet and by circling the correct answer on the examination itself. In the case of conflict, the Scantron answer is the official answer.

3. If you believe there is no right answer or more than one right answer to any question, explain your reasoning on the back of this sheet (not the Scantron sheet). We will not consider an appeal unless you have recorded your argument on the exam sheet during the exam period.

4. When you have finished the examination, sign the honor pledge. We will not consider an examination valid unless you sign the pledge.

5. When you are finished, turn in the answer sheet and the examination by putting them on the correct piles at the podium.
1. A dividend is the _________ that a corporation pays each period to each owner of one share of _____________ in the corporation.

a. dollar amount, stock.
b. interest, stock.
c. dollar amount, debt.
d. interest, debt.
e. None of the above.

Generally, a dividend is a payment made by a corporation to its shareholders, usually as a distribution of profits (Please check the book for the exact definition).

2. When Jorge purchased 10 shares of Facebook, he expected to make a profit because he expected that the price of those shares on the stock market would rise from the $30 price he paid for each share. What activity is he practicing?

a. Price discrimination
b. Arbitrage
c. Economic rent
d. Speculation
e. None of the above

Speculation is investment (in stocks or property) with the hope for hope for profits/gain but with risk.

Background information for questions 3, 4 and 5. Amanda has just gotten a sweet deal; she’s secured the exclusive rights to offer “UNC Courses in Bed”. Students contract for the service for the semester, and have video and assignments delivered to them for each class. Amanda has done some demand analysis, as indicated below. Her marginal cost per student per class is $40, and her fixed cost for the semester is $180000.

<table>
<thead>
<tr>
<th>Price (per class)</th>
<th>Demand</th>
<th>Average total cost (including opportunity costs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>3000</td>
<td>100</td>
</tr>
<tr>
<td>100</td>
<td>3000</td>
<td>100</td>
</tr>
<tr>
<td>90</td>
<td>2000</td>
<td>70</td>
</tr>
<tr>
<td>80</td>
<td>9000</td>
<td>60</td>
</tr>
<tr>
<td>70</td>
<td>12000</td>
<td>55</td>
</tr>
<tr>
<td>60</td>
<td>15000</td>
<td>52</td>
</tr>
<tr>
<td>50</td>
<td>18000</td>
<td>50</td>
</tr>
<tr>
<td>40</td>
<td>21000</td>
<td>48.66</td>
</tr>
<tr>
<td>30</td>
<td>24000</td>
<td>47.50</td>
</tr>
<tr>
<td>20</td>
<td>27000</td>
<td>46.66</td>
</tr>
</tbody>
</table>

3. Given her exclusive rights, Amanda is a monopolist. Using the optimal supplier rule, \( MR = MC \) which of the following prices will Amanda charge per class to maximize her profits?

a. $90  
marginal cost (given in question): $40
b. $80
(c) $70
(d. $60  
MR = MC at $70
e. $50

4. Suppose the University regulated Amanda by requiring her to use marginal-cost pricing in her business. What will her price be, and what will be her economic profit?

a. $60, zero
b. $60, $120,000  
This kind of regulation requires her to charge $60 as the price.
c. $50, zero
d. $40, zero
(c) $40, -$180,000

What's wrong? Fixed cost: $180,000.
5. If the University regulated Amanda by requiring her to use average-cost pricing, what will her price be, and what will be her economic profit?
   a. $60, zero
   b. $60, $120,000
   c. $50, zero
   d. $40, zero
   e. $40, -$180,000

6. A patent is a legal right granted to _______ that for a specified time prohibits anyone else from producing or using that invention without the permission of the patent holder. The excess ________ that result provide a reward for innovation.
   a. an inventor, profits
   b. an inventor, litigation
   c. a regulator, litigation
   d. a regulator, profits
   e. none of the above

7. A firm with market power will wish to produce _________ than a perfectly competitive firm will do because supplying that quantity will lead to higher _________ and profit.
   a. More; price
   b. Less; price
   c. More; demand
   d. Less; demand
   e. None of the above

8. A concentration ratio is the _________ of an industry’s output produced by its four _________ firms.
   a. value, smallest
   b. percentage, smallest
   c. value, largest
   d. percentage, largest
   e. none of the above

   A concentration ratio is a way to measure total output produced in an industry by a given number of firms in an industry.

   (See book for more precise definition)
Background for questions 9, 10 and 11. Beverly has a great new idea: Shih-Tzu Shiatsu. She provides massages for Shih-Tzu dogs, and their owners pay well for the service. Here is the number of massages demanded per week in the Triangle area for each price, as well as Beverly's marginal cost (including opportunity cost) of providing the service. She pays no fixed costs when providing this service.

<table>
<thead>
<tr>
<th>Massages</th>
<th>Price</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>60</td>
</tr>
</tbody>
</table>

![Shih-Tzu Shiatsu graph]

9. What is the marginal revenue to Beverly from the third massage in the week?
   a. $40
   b. $20
   c. $0  \(\text{See above.}\)
   d. $-20
   e. none of the above

10. If Beverly were to offer three massages in a week at a price of $40 per massage, what is the consumer surplus? What is the producer surplus?
   a. $30, $90
   b. $90, $90
   c. $30, $45
   d. $90, $45
   e. none of the above

   \[
   \frac{(3-0)(100-40)}{2} = 90 \text{ consumer surplus}
   \]

   \[
   \frac{(3-0)(40-10)}{2} = 45 \text{ producer surplus}.
   \]

11. Since Beverly has market power, she can use the optimal supplier rule to get the greatest profits. What number of massages satisfies the optimal supplier rule in this instance?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5

   \[30 \leq 40 \text{ is the closest option.}\]
12. The tragedy of the commons is the tendency for a resource that has a _________ price to be used until its _________ benefit falls to zero.

a. zero; marginal  

b. zero; social  

c. high; marginal  

d. high; social  

e. none of the above

Same question as practice question.
By definition the price = 0 and is used until MB = MC = 0

13. Percy is a hog farmer in Lenoir County. For each hog that he grows he pays $7 for feed, medicines, water and transport to market. He dumps the hog waste in the river. For each hog that he grows it is estimated that downstream fishermen and women all together earn $2 less from their fishing. What is the marginal private cost of this activity? What is the marginal social cost?

a. $9, $0  
b. $9, $9  
c. $7, $0  
d. $7, $2  
e. $7, $9

Marginal Private cost = $7.
Marginal Social cost = Private + externalities = $7 + $2 = $9

14. The owners of the four companies are interested in maximizing economic profits. How many windfarms will the four companies together have in operation given the revenues and costs given above?

15. The US Fish and Wildlife Service (USFWS) has determined that the propellers on these windfarms are dangerous to endangered bird species, and that only four windfarms from these four companies will be allowed to continue operating. What is the variable cost for the year of the four windfarms together if the USFWS insists that each company keep one windfarm open? What is the variable cost for the year if the USFWS gives each
company a tradable permit that it can either use to keep a windfarm in operation or sell to another company?

a. $210000; $80000
b. $105000; $80000
c. $210000; $60000
d. $105000; $60000
e. none of the above

\[
\text{variable costs} = \$20000 + \$35000 + \$10000 + \$40000 = \$105000
\]

16. Marilyn left high school for her job at Pillowtex in the 1980s, and was laid off from that job in 2001. She hasn’t had a permanent job since 2006. She applies for jobs each week, but she’s told that she doesn’t have the necessary skills. Is she unemployed? If so, what type of unemployment does she represent?

a. No.
b. Yes; discouraged worker
c. Yes; frictional unemployment
d. Yes; cyclical unemployment
e. Yes; structural unemployment

Background for questions 17 and 18. Josiah has created a truly unique outdoors experience: he’s arranged with Blue Ridge property owners to have an extreme endurance walk/run through pristine forest during “leaf color” season. He calls it the Leaf and Mudder Run/Walk, and he’s charging admission for his event. He’s gotten a great deal of interest in the event: here is the schedule of prices and number of applicants he anticipates at each price.

<table>
<thead>
<tr>
<th>Price</th>
<th>Number of participants</th>
<th>Number from Extreme Mudder</th>
<th>Number from Leaf Peeper</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>80</td>
<td>20</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>60</td>
<td>30</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>40</td>
<td>50</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>20</td>
<td>110</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>170</td>
<td>60</td>
<td>110</td>
</tr>
</tbody>
</table>

He found that all his responses of interest came from two magazine: “Extreme Mudder”, a magazine for competitive runners; and “Leaf Peeper”, a magazine for people who enjoy watching the leaves change color in the fall. (There is no overlap in readership at the two magazines.) He has had to pay $300 for the license from property owners and the opportunity cost of his time is $200. He plans to sell tickets through advertisements in the two magazines, and those two ads will be $100. The marginal costs of the event to Josiah are $17 per participant.

17. If Josiah charges just one price for participation, which of these prices will give the greatest profit? \( M C \leq MR \) using aggregated quantities.

a. 100
b. 80
c. 60
d. 40
e. 20

\[
\text{Price} \quad \text{Total Quantity} \quad \text{Rev}
\]

\[
\begin{align*}
100 & \quad 100 & \quad 1000 \\
80 & \quad 80 & \quad 1600 \\
60 & \quad 60 & \quad 1800 \\
40 & \quad 40 & \quad 2000 \\
20 & \quad 20 & \quad 2200 \\
& \quad 10 & \quad 1700 \\
\end{align*}
\]

18. Josiah is thinking of quoting a lower price in one of the magazines to practice price discrimination. The ad will say “To readers of this magazine, you pay only $X if you send in
this ad with your payment”. In which magazine should he put the coupon, and how much should X be?

- a. Extreme Mudder; $20
- b. Extreme Mudder; $40
- c. Leaf Peeper; $20
- d. Leaf Peeper; $40
- e. none of the above

19. Economic rent differs from economic profit in perfect competition in that:
   a. Economic rent is only observed in the short run.
   b. Economic profit is only observed in the long run.
   c. Competition drives economic rent to zero, but not economic profit.
   d. Competition drives economic profit to zero, but not economic rent.
   e. None of the above

Background for questions 20 and 21. It’s fall, and that means that the new 2014 cars are being shipped to dealers. Toyota and Honda sell two cars that are close substitutes: the Honda and the Camry. They have to choose their pricing strategy for the new cars, and each has two choices: List Pricing or Discount. Here are the payoffs to the two carmakers from their choices (Honda’s payoff is the first dollar amount in each cell, and Toyota’s payoff is the second dollar amount). All amounts are in millions of US dollars.

<table>
<thead>
<tr>
<th></th>
<th>Toyota</th>
<th>Honda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discount</td>
<td>$100 vs $120</td>
<td>$140, $110</td>
</tr>
<tr>
<td>List Pricing</td>
<td>$70, $120</td>
<td>$170, $160</td>
</tr>
</tbody>
</table>

20. If Toyota chooses a Discount strategy, what is Honda’s best response strategy? If Toyota chooses a List Price strategy, what is Honda’s best response strategy?
   a. Discount, List Price
   b. Discount, Discount
   c. List Price, List Price
   d. List Price, Discount
   e. None of the above

21. Do Honda and Toyota have dominant strategies? What is the Nash equilibrium that we will observe if the two companies continue to compete (and not collaborate)?
   a. Yes, Toyota chooses List Price and Honda chooses List Price
   b. Yes, Toyota chooses Discount and Honda chooses Discount
   c. No, Toyota chooses Discount and Honda chooses List Price
   d. No, Toyota chooses List Price and Honda chooses Discount
   e. None of the above
22. The gross domestic product is the sum of the ________________ of all ________
goods and services produced in the domestic economy during a specified period of time.
   a. quantity; priced in dollars.
   b. quantity; accounting.
   c. money value; priced-in-dollars
   d. money value; final
   e. none of the above

23. A market is said to operate under conditions of monopolistic competition if it satisfies:
   a. Many small buyers and sellers ✓
   b. Freedom of exit and entry ✓
   c. Perfect information ✓
   d. Heterogenous products ✓
   e. All of the above

* 24. Recessions are fairly infrequent in US history, but the most recent one was quite recent: 2007-2009. What do the text’s authors conclude was the cause of the most recent recession?
   a. Insufficient aggregate demand
   b. Foreign competition
   c. Inflation
   d. Stagflation
   e. None of the above *

25. The real gross domestic product of China is much larger than the real gross domestic
product of Germany. Does this necessarily mean that the Chinese are more productive
workers than the Germans? Why or why not?
   a. Yes; real GDP is a measure of the country’s product.
   b. Yes; inflation is higher in Germany.
   c. No; inflation is higher in China.
   d. No; Germany has more patents than China.
   e. No; China’s population is much greater than Germany’s.

* Renumber GDP = Total country productivity but it does not adjust for population. China is HUGE population wise compared to Germany.
Background for questions 26 and 27. The Runner-up Paper Company (RPC) produces newsprint, but it also produces chemical wastes that it dumps into the nearby river. As a result, we can talk both about the marginal private cost and marginal social cost of its production. RPC is a perfect competitor in selling its newsprint; it receives a price of $1200 per ton for its product. It has no fixed cost in production.

<table>
<thead>
<tr>
<th>Quantity produced</th>
<th>Marginal private cost</th>
<th>External marginal cost downstream</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>300</td>
<td>350 ← 50</td>
</tr>
<tr>
<td>40</td>
<td>600</td>
<td>750 ← 150</td>
</tr>
<tr>
<td>60</td>
<td>900</td>
<td>1200 ← 300</td>
</tr>
<tr>
<td>80</td>
<td>1200</td>
<td>1700 ← 500</td>
</tr>
<tr>
<td>100</td>
<td>1500</td>
<td>2300 ← 800</td>
</tr>
</tbody>
</table>

The table to the left summarizes the costs of production associated with the plant per day. The quantity produced is in tons of newsprint, while the marginal private cost and external marginal cost downstream are in dollars. The external marginal cost downstream is the cost of water pollution to residents along the river downstream from the plant per ton of newsprint produced.

26. Using the optimal supplier rule, derive the quantity that RPC will produce if it ignores the costs of its pollution downstream. \( MR \geq MC \)
   a. 20
   b. 40
   c. 60
   d. 80
   e. 100

27. Which of these quantities will society prefer? How large a per-ton tax should the government place on RPC to ensure that society's preferred outcome occurs?
   a. 20, 50
   b. 40, 150
   c. 60, 300
   d. 80, 500
   e. 100, 800

We need to add up all of society's costs. Private + external.

Then \( MRS \geq MSC \)

We refer to the table above.

28. The interest rate is the amount that borrowers ____________ lenders each period for ____________.
   a. receive from, each dollar borrowed.
   b. pay to, each dollar borrowed.
   c. receive from, fixed costs.
   d. pay to, fixed costs.
   e. none of the above.
29. Intel makes computer chips that are used in assembling Dell computers. The computer chips are produced in the US, and the computers are assembled in the US, both in this year. Which of the following is included in GDP for this year?

- a. The revenue Dell received from consumers and businesses from selling its computers.
- b. The revenue Intel received from Dell for the computer chips.
- c. Both of the above.
- d. The utility that consumers and businesses receive from having these Dell computers.
- e. None of the above.

30. If buffalo near-elimination in the Western US is an example of the tragedy of the commons, then the ___________ marginal cost of hunting buffalo has led to too ___________ buffalo being killed.

- a. high, few
- b. high, many
- c. low, many
- d. low, few
- e. None of the above.

31. CIPLA, the Indian drug manufacturer, has eliminated production of HIV-suppression drugs. The stated reason for this in the readings was:

- a. patent protection on the HIV-suppression drugs.
- b. the market of those with HIV is too small.
- c. the increased competition from generic producers greatly reduced profit margins.
- d. all of the above.
- e. none of the above.

32. The following table presents the average nominal and real hourly wages for private employees in the US for the years given.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal wage</th>
<th>Real wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>7.87</td>
<td>8.12</td>
</tr>
<tr>
<td>1992</td>
<td>10.77</td>
<td>7.79</td>
</tr>
<tr>
<td>2002</td>
<td>14.97</td>
<td>8.51</td>
</tr>
<tr>
<td>2012</td>
<td>19.77</td>
<td>8.74</td>
</tr>
</tbody>
</table>

Which of the following statements about these data are true?

- a. The dollar wage received by private workers more than doubled on average between 1982 and 2012. $7.87 → $19.77
- b. The wage received by employees aged 16-19 fell from 2002 to 2012. No info.
- c. The purchasing power of the average wage in the US rose only slightly between 1982 and 2012. $8.12 → $8.74
- d. All of the above.
- e. Only a. and c.