ECONOMICS 101  
COLUMBIA COLLEGE  
QUIZ #1B  
Paul Geddes  
NAME: ANSWERS  
27 September 20

TOTAL 50 Points. You have 55 minutes. Please place answers on test in space provided but you MUST show work either in the space below or on the attached sheets for credit. Please SHOW WORK CLEARLY.

A. Demand and Supply (18 pts)

PRICE:  
3 4 7 11 15 19 etc.,  
4 7 11 15 19 etc.,

QUANTITY DEMANDED:  
66 -12 -54 -12 -42 -12 30 18 etc.,  
30 50 70 90 etc.,

QUANTITY SUPPLIED:  
10 20 30 20 50 70 90 etc.,

3. \[ Q_d = 75 - 3P \] Find the equation for demand (Qd=f(P)).

3. \[ Q_s = -5 + 5P \] Find the equation for supply (Qs=f(P)).

4. \[ P = 10 \] Find equilibrium P and Q.

4. \[ P = 10 \] Find the area of “value” to consumers at equilibrium. \[ @d = 30 = 75 - 3P \]

5. \[ P = 5 \] Find the cost of producing at equilibrium.

5. \[ P = 5 \] Find the producer surplus at equilibrium.

C. Ceiling/Floors (12 pts) Same Demand and Supply as B above, but now the government passes a law to keep the price below \$7.

\[ Q_d = 75 - 3(7) = 54 \] \[ Q_s = -5 + 5(7) = 30 \]

3. \[ \min \left\{ 54, 30 \right\} = 30 \] What is the quantity traded?

3. \[ \min \left\{ 54, 30 \right\} = 30 \] What is the consumer surplus when this law is passed?

3. \[ \frac{1}{2} \left\{ 54 + 30 \right\} \] \[ \frac{1}{2} \left\{ 54 + 30 \right\} \] What is the change in consumer surplus caused by this price ceiling?

4. \[ \frac{1}{2} \left\{ 54 + 30 \right\} \] What is the deadweight cost caused by this price ceiling?

B. (15 pts) Comparative advantage. You are one of three people stuck on a deserted island with only two valuable things to do with your time: catch fish or gather coconuts. Here are the maximum daily capabilities of you and your companions:

<table>
<thead>
<tr>
<th>Units of Fish</th>
<th>Units of Coconuts</th>
<th>Cost per Fish</th>
<th>Cost per Coconut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alan</td>
<td>5</td>
<td>8</td>
<td>( \frac{8}{5} = 1.6 )</td>
</tr>
<tr>
<td>Betty</td>
<td>4</td>
<td>2</td>
<td>( \frac{2}{4} = 0.5 )</td>
</tr>
<tr>
<td>Carl</td>
<td>7</td>
<td>7</td>
<td>( \frac{7}{7} = 1 )</td>
</tr>
<tr>
<td>Denise</td>
<td>4</td>
<td>4</td>
<td>( \frac{4}{4} = 1 )</td>
</tr>
</tbody>
</table>

1. Betty has the comparative advantage in catching fish. Who has the comparative advantage in catching fish? What is his (or her) cost?

2. Draw a marginal opportunity cost curve (the supply curve) for fish. (all four survivors must be in this curve.)

![Diagram of supply curve]

2. Draw a marginal opportunity cost curve (the supply curve) for fish. (all four survivors must be in this curve.)
3. If the survivors want 7 fish per day, what is the most coconuts we can get per day? In a table, show how many fish each survivor will catch to achieve this.

<table>
<thead>
<tr>
<th>Fish</th>
<th>Coconuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
</tr>
</tbody>
</table>

Total: 7 coconuts

2. \(21 - 16 = 5\) coconuts

4. What is the (minimum) cost of catching 7 fish?

\[ B = 5(4) = 20 \]
\[ C/D = 3(1) = 3 \]

5. If the survivors want 18 coconuts per day, what is the most fish we can get per day? In a table, show how many fish each survivor will catch to achieve this.

<table>
<thead>
<tr>
<th>Fish</th>
<th>Coconuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
</tr>
</tbody>
</table>

Total: 18 coconuts

C. Comparative Statics (5 pts)

In the diagram, draw the new curves and use arrows to show the direction of change. Then circle the best answer for each of the following four statements.

1. Most people in the city of Adanac like to eat their sandwiches with both peanut butter and jelly in the sandwich. What happens to the market for jelly in Adanac if there is bad weather which makes it very difficult to harvest food (the main ingredient in jelly)?

Demand will SHIFT RIGHT/SHIFT LEFT/NO SHIFT
Supply will SHIFT RIGHT/SHIFT LEFT/NO SHIFT
Equilibrium PRICE will RISE/FALL/UNCERTAIN CHANGE
Equilibrium QUANTITY will RISE/FALL/UNCERTAIN CHANGE
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You MUST SHOW YOUR WORK clearly either in the margins or on an attached sheet of paper for complete credit.

A. Market Power (40 pts) The market for widgets is: P: 20 40 60 etc.,
                            Qd: 6 4 2 etc.,
                            Qs: 3 7 11 etc.,

3. \[ Q^d = 8 - \frac{1}{10} P \] What is the equation for the demand curve (Qd=f(P))? 
4. \[ Q^s = -1 + \frac{1}{5} P \] What is the equation for the supply curve (Qs=f(P))? 
3. \[ P = 30, Q = 5 \] What is equilibrium P and Q?
5. \[ MR = 80 - 20Q \] What is the equation for the marginal revenue curve (MR=f(Q))? 
6. \[ MC = 5 + 5Q \] What is the equation for the marginal cost curve (MC=f(Q))? 
7. \[ Q = \frac{75}{25} = 3 \] What is the Q that maximizes producer surplus? 
8. \[ P = 50 - 10Q \] What is the P which maximizes producer surplus?

9. Draw a rough diagram, clearly showing equilibrium (#3) and the P & Q for the monopoly (#7 & #8).

10. \[ \frac{20}{9} \leq \frac{3}{2} \leq 20 = (-80) \] What is the change in consumer surplus caused by the monopoly?
11. \[ 45 \leq (\frac{5}{3}0) = 11.25 \] What is the producer surplus for the monopoly?
12. \[ \frac{20}{9} \leq \frac{3}{2} \leq 60 - 10\sqrt{2} = (25) = 625 \] What is the change in producer surplus caused by the monopoly/price searching?
13. \[ 30 \leq \frac{3}{2} \leq -30 \] What is the dead weight loss caused by price searching?

B. Short Answers (10 pts) From class and the textbook.
According to IDC (International Data Corporation), in the first quarter of 2016, Samsung sold 22.8% of cell phones around the world. Apple was next with 11.7% and Huawei was third with 9.3% of the market. All other companies had 56.2% of the market. Is the market for cell phones too concentrated? Should our government put a special tax on phones from these three companies so other companies have a chance of competing in the market? Would you be better off or worse off with such a tax? Explain.

Smartphone Vendor Market Share, 2016 Q2

The worldwide smartphone market grew 0.7% year over year in 2016 Q2, with 344.7 million shipments, according to data from the International Data Corporation (IDC, [http://www.idc.com]) Worldwide Quarterly Mobile Phone Tracker ([http://www.idc.com/tracker/showproductinfo.jsp?prod_id=37]). This slowing growth is primarily due to the decline in developed markets such as United States, Canada, Japan and Western Europe. This quarter’s shipments were slightly lower than forecast and IDC expects to see a noticeable slowdown in smartphone shipments in 2016 with China showing a more mature growth pattern. Android dominated the market with an 87.6% share in 2016 Q2. Samsung reasserted its global leadership with the success of its new flagship devices.

<table>
<thead>
<tr>
<th>Period</th>
<th>Samsung</th>
<th>Apple</th>
<th>Huawei</th>
<th>OPPO</th>
<th>vivo</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015Q3</td>
<td>23.3%</td>
<td>13.4%</td>
<td>7.6%</td>
<td>3.2%</td>
<td>2.9%</td>
<td>49.0%</td>
</tr>
<tr>
<td>2015Q4</td>
<td>20.4%</td>
<td>18.6%</td>
<td>8.2%</td>
<td>3.6%</td>
<td>3.0%</td>
<td>46.2%</td>
</tr>
<tr>
<td>2016Q1</td>
<td>23.8%</td>
<td>15.4%</td>
<td>8.4%</td>
<td>5.9%</td>
<td>4.4%</td>
<td>42.1%</td>
</tr>
<tr>
<td>2016Q2</td>
<td>22.8%</td>
<td>11.7%</td>
<td>9.3%</td>
<td>3.0%</td>
<td>5.9%</td>
<td>40.2%</td>
</tr>
</tbody>
</table>

Source: IDC, Aug 2016
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Paul Geddes

You MUST SHOW YOUR WORK clearly either in the margins or on an attached sheet of paper for complete credit.

A. Market Power (40 pts)

The market for widgets is:
P: 20 50 80 110 etc., \( \frac{\Delta P}{\Delta Q} = \frac{30}{30} = 1 \)
Qd: 22 16 10 4 etc., \( \frac{\Delta Qd}{\Delta P} = \frac{-6}{-6} = 1 \)
Qs: 14 4 7 10 etc., \( \frac{\Delta Qs}{\Delta P} = \frac{3}{3} = 1 \)

1. \( Qd = 26 - \frac{1}{5} P \)

What is the equation for the demand curve (Qd=f(P))?\n
2. \( Qs = -1 + 0.5 P \)

What is the equation for the supply curve (Qs=f(P))?\n
3. \( P = 90 \quad Q = 8 \)

What is equilibrium P and Q?\n
4. \( 12 \frac{1}{2} = -\frac{36}{8} = 4.5 \)

What are the total gains from trade at equilibrium? \( P = 130 - 5Q \)

5. \( MR = 130 - 10Q \)

What is the equation for the marginal revenue curve (MR=f(Q))?\n
6. \( MC = 10 + 10Q \)

What is the equation for the marginal cost curve (MC=f(Q))?\n
7. \( Q = 6 \)

What is the Q that maximizes producer surplus?\n
8. \( P = 100 \)

What is the P which maximizes producer surplus?\n
9. Draw a rough diagram, clearly showing equilibrium (#3) and the P & Q for the monopoly (#7 & #8).\n
<table>
<thead>
<tr>
<th>Change in Consumer Surplus caused by the monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P = 130 - 5Q )</td>
</tr>
<tr>
<td>( \Delta CS = 160 )</td>
</tr>
</tbody>
</table>

10. \( 10 \frac{1}{2} = -\frac{6}{8} = -0.75 \)

What is the change in producer surplus for the monopoly?\n
11. \( 90 \frac{1}{2} = 360 \)

What is the change in producer surplus caused by the monopoly/price searching?\n
12. \( 12 \frac{1}{2} = -10 \frac{1}{2} = 60 - 20 = 40 \)

13. \( 30 \frac{1}{2} = -30 \)

What is the dead weight loss caused by price searching?\n
B. Short Answers (10 pts)

From class and the textbook. According to IDC (International Data Corporation), in the first quarter of 2016, Samsung sold 22.8% of cell phones around the world. Apple was next with 11.7% and Huawei was third with 9.3% of the market. All other companies had 56.2% of the market. Is the market for cell phones too concentrated? Should our government put a special tax on phones from the three companies so other companies have a chance of competing in the market? Would you be better off or worse off with such a tax? Explain.

Consumers want good products at low prices. Competition in cell phone production seems to be increasing the quality of cell phones and keeping prices reasonable. There seem to be no legal barriers to new firms entering this market. The world isn't perfect (mistakes will be made) but consumers of cell phone products should be grateful as various providers fight against technological barriers as they compete with each other. In other words, concentration doesn't seem to be holding back innovation and engineering progress. A tax on the leading firms will restrict their efforts to innovate. There may be more companies offering products, but the continual improvements we have seen over the past 30 years may slow down. Most likely we will be worse off over time for slowing down the rate of innovation.
You MUST show work clearly for the calculation problems.

1. (8 pts) Choose C, I, G, X, M or N (for none of the above) to show how the following transactions will be recorded in Canada's GDP. Some transactions may require more than one answer.

A. N The local barber hires some new workers (because it is so busy).
B. G The government hires some new workers (because it is so busy).
C. I A barber buys some new chairs from a Canadian factory.
D. M A local barber buys some hair gel and shampoo from a factory in the United States.

2. (24 pts) Our economy produces only three final goods. Use 2014 as the base year.

| YEAR | Good A | | Good B | | Good C |
|------|--------|--------|--------|--------|
|      | Price  | Quantity | Price  | Quantity | Price  | Quantity |
| 2012 | 9      | 2       | 6      | 10      | 10     | 5        |
| 2013 | 8      | 4       | 7      | 9       | 9      | 9        |
| 2014 | 10     | 3       | 5      | 10      | 8      | 6        |
| 2015 | 11     | 2       | 4      | 11      | 7      | 7        |

A. Calculate the nominal GDP and the nominal growth rate for each of the above four years.
B. Calculate the real GDP and the real growth rate for each of the above four years.
C. Calculate the GDP deflator and the inflation rate for each of the above four years.
D. Calculate the CPI and the inflation rate for each of the above four years.

E. Which year had the highest price level? What number did you use to determine this?
F. Which year had the highest increase in the standard of living? What number did you use to determine this?

3. (8 pts) Suppose the GDP in current dollars increases by 8.4% while the GDP in 2008 prices went from $288.6 bn to $318.4 bn. What is the EXACT inflation rate?

\[
\text{Inflation Rate} = \frac{\text{Current GDP} - \text{Base GDP}}{\text{Base GDP}} \times 100\%
\]

4. (10 pts) Suppose the population is 68.4 million, the participation rate is 67.9%, the labor force is 35.6 million and the unemployment rate is 9.3%.

A. How many people are not able to work?

\[
\text{Unemployed} = \text{Population} \times \text{Unemployment Rate}
\]

B. How many people are employed?

\[
\text{Employed} = \text{Labor Force} - \text{Unemployed}
\]
<table>
<thead>
<tr>
<th>Year</th>
<th>Value 1</th>
<th>Value 2</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>18 + 60 + 50 = 128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>32 + 63 + 81 = 176</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>30 + 50 + 48 = 128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>22 + 44 + 49 = 115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Value 1</th>
<th>Value 2</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>( \frac{128}{10} \times 10 = 116.4 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>( \frac{176}{157} = 112.1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>100</td>
<td></td>
<td>-10.8%</td>
</tr>
<tr>
<td>2015</td>
<td>( \frac{115}{131} = 87.8 )</td>
<td></td>
<td>-12.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Value 1</th>
<th>Value 2</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>20 + 50 + 40 = 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>40 + 45 + 72 = 157</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>128</td>
<td></td>
<td>-18%</td>
</tr>
<tr>
<td>2015</td>
<td>20 + 55 + 56 = 131</td>
<td></td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>27 + 60 + 60 = 147</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>24 + 70 + 59 = 148</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>128</td>
<td></td>
<td></td>
<td>-13%</td>
</tr>
<tr>
<td>2015</td>
<td>( \frac{33 + 40 + 42}{3} = 115 )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>114.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>115.6</td>
<td></td>
<td></td>
<td>-0.7%</td>
</tr>
<tr>
<td>2014</td>
<td>100</td>
<td></td>
<td></td>
<td>-13%</td>
</tr>
<tr>
<td>2015</td>
<td>89.8</td>
<td></td>
<td></td>
<td>-10.2%</td>
</tr>
</tbody>
</table>
1. Plot show your work clearly for full credit.

Monetary Policy—Keynesian vs. New Classical (8 pts)

1. Draw a graph showing Yr and Ys over time. In that graph, indicate what a “bubble” looks like.

2. Draw a Phillips curve. In that graph indicate what you expect to see during a “bubble”.

3. If you are a Keynesian, what policies should you use to get out of the bubble?

4. If you are a New Classical economist, what policies should you use to get out of a bubble?

5. Deficits and Debts (6 pts) In 2015, tax revenue is $400, Non-interest spending is $450 and the current interest rate on debt is 4%. At the beginning of 2015, government debt is $1000.

   - What will the debt be at the end of 2015?
   - If tax revenue increases by 10% and non-interest spending rises by 15%, what will the deficit be in the next year? If interest rates don’t change?

6. Interest rates and Present Value (10 pts)

   - If the interest rate is 8% should you pay A. ($1000 today) for a TV or B. ($1500 in four years)? Which is better (A or B)? By how much?

   - What is the present value of a three year, $1 million bond which promises to pay 5% annual when today’s interest rate is 8%?

7. Money (6 pts) In our country, consumers have deposits in near banks (credit unions, etc.) of $500. They have credit card balances outstanding of $1000. Consumers have $550 in their checking accounts and $900 in their savings accounts. They also have $350 of cash in their pockets and at home as well as $150 worth of gold. Businesses have $200 of cash in their cash registers, checking accounts of $850 and savings accounts of $600. Banks have $800 of cash. Consumers own $450 worth of shares (stocks) in companies and $1200 worth of bonds.

   - How much M2 is in this economy?
   - How much M3 is in this economy?

8. Open market operations. (20 pts) The demand for loanable funds is 200-600r and the supply is 100+200r (Q in billions).

   - What is the current interest rate?
   - What is the price of a three month, $1 million T-bill?

9. The central bank thinks the interest rate should be 8%.

   - Will the central bank be printing money or “eating” money?
   - How many dollars worth of T-bills with the central bank buy or sell?
   - What will happen to the inflation rate (increase or decrease)?

C. Start from your answer to A. The central bank thinks the “reserve bid price” for a three month $1m T-bill should be $974,247,40.

   - Will the central bank be printing money or “eating” money?
   - How many dollars worth of T-bills with the central bank buy or sell?
   - What will happen to the inflation rate (increase or decrease)?
ECONOMICS 101  QUIZ #4 A  25 November 2016

You MUST show your work clearly for full credit.

1. Macro Policy—Keynesian vs. New Classical (8 pts)
   a. Draw a rough graph showing Y and Y* over time. In that graph, indicate what a “recession” looks like.
   b. Draw a “Phillips curve”. In that graph indicate what you expect to see during a “recession”.
   c. If you are a Keynesian, what policies should you use to get out of the recession?
   d. If you are a New Classical economist, what policies should you use to get out of a recession?

2. Deficits and Debts (6 pts) In 2015, tax revenue is $600, Non-interest spending is $550 and the current interest rate on debt is 12%. At the beginning of 2015, government debt is $1000.
   a. -1070
   b. -100.9

3. What will the debt be at the end of 2015?
   If tax revenue increases by 10% and non-interest spending rises by 15%, what will the deficit be in 2016 (the next year) if interest rates don’t change?

4. Interest rates and Present Value (10 pts)
   A. B by 46.72
   If the interest rate is 12% should you pay A. ($1000 today) for a TV or B. ($1500 in four years?
   Which is better (A or B)? By how much?

5. $831,871.81
   What is the present value of a three year, $1 million bond which promises to pay 5% annual when today’s interest rate is 12%?

4. Money (6 pts) In our country, consumers have deposits in near banks (credit unions, etc.) of $450, They have credit card balances outstanding of $1100. Consumers have $500 in their chequing accounts and $1000 in their savings accounts. They also have $300 of cash in their pockets and at home as well as $100 worth of gold. Businesses have $3 of cash in their cash registers, chequing accounts of $900 and savings accounts of $550. Banks have $550 of cash. Consumers own $600 worth of shares (stocks) in companies and $800 worth of bonds.

3. How much M2 is in this economy?
3. How much M3 is in this economy?

5. Open market operations. (20 pts) The demand for loanable funds is 200-600r and the supply is 136+200r (Q in billions).

3. What is the current interest rate?
4. What is the price of a three month, $1 million T-bill?

5. The central bank thinks the interest rate should be 12%.

C. Start from your answer to A. The central bank thinks the “reserve bid price” for a three month $1m T-bill should be $983,227.59

What will this economy’s interest rate be?
What will the central bank be printing money or “eating” money?
How many dollars worth of T-bills with the central bank buy or sell?
What will happen to the inflation rate (increase or decrease)?