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. Short Answer (8 pts) (You may want to use a D & S diagram to answer these questions):
1. Can there be a growing scarcity without a growing shortage? Explain with an example.
2. Can there be a growing shortage without a growing scarcity? Explain with an example.

B. Demand and Supply (21 pts)

<table>
<thead>
<tr>
<th>PRICE</th>
<th>QUANTITY DEMANDED</th>
<th>QUANTITY SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>-9</td>
<td>+6</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>10</td>
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</tbody>
</table>

1. \( Qd = -3p + 36 \) Find the equation for demand \( Qd=f(P) \).
2. \( Qs = 2p - 4 \) Find the equation for supply \( Qs=f(P) \).
3. \( p = 8 \) \( Qd = Qs \) is 12 Find equilibrium P and Q.
4. \( \frac{dQ}{dp} = \frac{(12+8)}{2} = 120 \) Find the area of "value" to consumers at equilibrium.
5. \( \frac{dQ}{dp} = \frac{(4+2)}{2} = 2 \) Find the consumer surplus at equilibrium.
6. \( \frac{dQ}{dp} = \frac{(2+2)}{2} = 6 \) Find the cost of producing at equilibrium.
7. \( \frac{dQ}{dp} = \frac{(2+2)}{2} = 36 \) Find the producer surplus at equilibrium.

C. Ceiling/Floors (9 pts) Same Demand and Supply as B above, but now the government passes a law to keep the price below $5.

1. \( \min \{ 6.21 \} = 6 \) What is the quantity traded?
2. \( \int \frac{dQ}{dp} = \frac{(7+5)}{2} = 36 \) What is the consumer surplus when this law is passed?
3. \( \int \frac{dQ}{dp} = \frac{(2+2)}{2} = 21 \) What is the cost of producing when this law is passed?

D. Evaluation (12 pts) Draw a rough diagram showing equilibrium and what this new law (part C) does to this market. First, calculate the two areas and then clearly show in your diagram the area that corresponds to the two questions below.

\( \Delta P = \frac{36+9}{6} = \frac{(12+6)}{2} = -27 \)
\( \text{New RS} = 30 = 9 \)
\( \text{Old PS} = 36 \)

\( 9-36 = -27 \)

What is the change in producer surplus caused by this law? Show this area CLEARLY.

What is the dead weight loss (waste) caused by this law? Show this area CLEARLY.
A. Market Power (40 pts) The market for widgets is:

<table>
<thead>
<tr>
<th>P</th>
<th>Qd</th>
<th>Qs</th>
<th>Δp = +4.1</th>
<th>Δq = -1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>72</td>
<td>25</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>48</td>
<td>82</td>
<td>47</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>72</td>
<td>23</td>
<td>70</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

What is the equation for the demand curve (Qd=f(P))?

What is the equation for the supply curve (Qs=f(P))?

What is equilibrium P and Q?

What are the total gains from trade at equilibrium?

What is the equation for the marginal revenue curve (MR=f(Q))?

What is the equation for the marginal cost curve (MC=f(Q))?

What is the Q that maximizes producer surplus?

What is the P which maximizes producer surplus?

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

What is the change in consumer surplus caused by the monopoly?

What is the producer surplus for the monopoly?

What is the change in producer surplus caused by the monopoly price searching?

What is the dead weight loss caused by price searching?

B. Some Answers (10 pts) From class and the textbook.

- What is "collusion"?
- Why do some economists believe that government should make collusion illegal?
- Why do other economists think that over time, collusion will not be that harmful to an economy?

![Graph showing competition vs monopoly changes in consumer surplus (CS), producer surplus (PS), and total gains (TG) with Δ values for each.]
ECONOMICS 101 QUIZ #3A
Columbia College Paul Geddes

NAME: ANSWERS 5 November 2015

You MUST show work clearly for the calculation problems.
A. (12 pts) Present Value/ Future Value

1. \( \frac{3000(1.10)^6}{1 - (1.10)^{-1}} = 7781.23 \)

If you put \$3000 in your bank account and it pays 10% interest compounded each year, how much will you have in your account at the end of 10 years?

A > B by 52.59

B. Suppose the interest rate is 10%. Which is better: A: \$10,000 today or B: \$4000 at the end of each year for the next three years? By how much?

C. What is the present value of a \$1 million, 3 year bond if the coupon rate (what the bond promises to pay) is 8%, when the current interest rate is 10%? (Assume the bond pays interest at the end of each year)

B. (4 pts) Which of the following transactions are recorded in Canada’s GDP as an expenditure on final goods?

1. A bookstore hires workers for the busy Christmas season.

2. The government hires extra workers because of the busy end-of-the-year tax season.

3. A grocery store buys fresh tomatoes from a local farmer.

4. A grocery store buys a new cash register (because after 10 years, the old one wore out).

C. (20 pts) Our economy produces only three final goods. Use 2012 as the base year.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Good A</th>
<th>Good B</th>
<th>Good C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Quantity</td>
<td>Price</td>
</tr>
<tr>
<td>2010</td>
<td>8</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2011</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2012</td>
<td>9</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2013</td>
<td>8</td>
<td>3</td>
<td>6</td>
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</table>

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. Which year had the highest increase in the standard of living? Which number did you use to determine this?

E. Which year had the highest price level? What number did you use to determine this?

D. (6 pts) Suppose the deflator went from 123.4 to 134.2 which the GDP in current dollars increased by 6.5%.

What is the real growth rate?

\[
\frac{1.065}{1.08} = 0.979 \quad (97.9\%)
\]

\[
\frac{1.065}{1.058} = -2.02\%
\]

E. (8 pts) Suppose the population is 85.4 million, the participation rate is 64.2%, the unemployment rate is 5.5% and there are 48.2 million who are employed.

\[
\frac{85.4 - 79.4}{85.4} = 6.0\% \quad \text{How many people are not able to work?}
\]

\[
\frac{51.0 - 48.2}{51.0} = 5.2\% \quad \text{How many people are unemployed?}
\]

NAME: Paul Geddes
<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>R</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>24+40+30 = 94</td>
<td>27+40+54 = 121</td>
<td>XXX</td>
</tr>
<tr>
<td>2011</td>
<td>20+20+30 = 70</td>
<td>18+50+45 = 113</td>
<td>-6.6%</td>
</tr>
<tr>
<td>2012</td>
<td>36+45+54 = 135</td>
<td>92.9%</td>
<td>19.5%</td>
</tr>
<tr>
<td>2013</td>
<td>24+66+40 = 130</td>
<td>-3.7%</td>
<td>14.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27+55+72 = 154</td>
<td>84.4%</td>
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</tbody>
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<thead>
<tr>
<th>Year</th>
<th>V</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>32+45+30 = 107</td>
<td>74.3</td>
</tr>
<tr>
<td>2011</td>
<td>40+18+36 = 94</td>
<td>64.6</td>
</tr>
<tr>
<td>2012</td>
<td>135</td>
<td>100</td>
</tr>
<tr>
<td>2013</td>
<td>32+54+30 = 116</td>
<td>85.9</td>
</tr>
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</table>
In a certain country, people own $40 worth of gold. They own $200 worth of shares cash in their cash registers and the banks keep $250 of cash as reserves. Consumers have checking accounts with balances of $400 and businesses have checking accounts with balances of $300. People have savings accounts with balances of $800, while businesses have savings accounts with balances of $700. Consumers also have deposits in near banks (credit unions & trust companies) of $500. How much M2 is in this economy?

Our government has a debt of $500. Taxes will raise $120 this year. Non-interest government expenditures are $100 and the interest rate is 6%.

What is the deficit this year?

If taxes increase by 5% and non-interest expenditure increase by 8%, what will the deficit be next year?

Write a short paragraph. In Vancouver, we pay for our garbage collection with our taxes. People pay according to the value of their houses, not according to the amount of garbage they produce. Why? Why don’t we let them bargain with competing collection companies?

Comparative Advantage

On island A, workers can make up to 60 TVs and up to 240 chairs. (Assume constant opportunity costs). On island B, workers can make up to 60 TVs and up to 20 chairs. Assume people like to have equal numbers of chairs and TVs.

Before trade, how many TVs and chairs are produced on island A?

Before trade, how many TVs and chairs are produced on island B?

Draw a world production possibility curve (TVs on the Y-axis)

If people on the two islands are going to trade with each other, how many TVs and chairs will be produced on island A?

On island B?

After trade, how many TVs and chairs will be consumed on island A?

After trade, how many TVs and chairs will be produced on island B?

What do trade and tariffs do? Use the diagram at the right to evaluate the effect of a tariff on this product.

What area shows the GAIN in consumer surplus when we allow free trade.

What area shows the GAIN in local producer surplus when we bring in a tariff (tax on imports)
6. (10 pts) Let the international market for Canadian dollars be: \( Q_d = 500 - 200e \), \( Q_s = 110 + 100e \) (\( e \) is US $ per Canadian dollar). Find the equilibrium exchange rate. 

a. What is equilibrium exchange rate? 
\[
\frac{390}{300} = 1.3
\]

b. (Increase/decrease) What happens to \( e \) if Canadians decide to import much more than before? 

Increase/decrease 

What happens to \( e \) if Canadians decide to borrow a lot more money from foreign banks? 

Increase 

What happens to \( e \) if Canadians decide to borrow a lot more money from foreign banks? 

Buy 

The government thinks that our currency should be at parity \( (e = 1.00) \). Will the central bank buy or sell foreign reserves to get to parity? 

Buy worth 

How many dollars' worth of foreign reserves will the central bank buy or sell to reach parity?