You MUST show your work CLEARLY for credit (either below or on a separate lined sheet.)

A. (8 pts) Identify each of the following transactions when measuring Canada’s GDP as C, I, G, X, M or N (for none of the above). Some transactions require more than one answer.

1. ______ You buy some gasoline in order to drive your car to your friend’s house.
2. ______ A pizza store buys some gasoline for their delivery truck.
3. ______ A gasoline stations buys some gasoline from the refinery company (which makes gasoline).
4. ______ An American company (Esso) builds some new gasoline stations in Canada.

B. (24 pts) Use this information from a simple economy to calculate the following answers:

- Income earned overseas by our residents minus income earned here by non-residents: -30 (Negative), GDE=550, GNP=545
- Total Taxes=305, CA=-50 (Negative), S_{PERSONAL}=30, C=250, Corporate Profits=40, Dividends Paid=25, S_{BUSINESS}=135, CCA=130, Indirect Taxes=120

C. (6 pts) Real vs Nominal

1. 1.3% The GDP in current dollars has increased from $1,795.9 bn to $1,862.3 bn. Meanwhile the deflator (2007=100) has increased by 2.4%. What is the exact real growth rate? $1,862.3/1,795.9 = 1.013$

2. 7.5% Johnny borrowed 100 bags of cement. He signed an agreement to pay back 105 bags of cement next year. If the deflator (2007=100) has increased by 2.4%, what is the exact nominal interest rate? $(105/100) = 1.05 = 5%$

D. (12 pts) The economy produces only two products (Coconuts and Fish) and 2012 is the base year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Coconuts</th>
<th>Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRICE</td>
<td>QUANTITY</td>
</tr>
<tr>
<td>2011</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>2012</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>

1. 2013 22.4% Which year had the highest real growth rate? What is the real growth rate that year?
2. 2013 CPI = 118.0 Which year had the highest price level using the CPI? What is that price level?
3. 2012 2.9% Which year had the highest inflation rate using the deflator? What was the inflation rate that year?
MACROECONOMICS 105
COLUMBIA COLLEGE

QUIZ #2A

NAME: ____________________________

ANSWERS 18 June 2014

1. (10 pts) Let P_Y = $5, Y = 16N^{3.4}, r = 2.5\%, and machines last 8 years on average

A. If the wage rate were $30, how many workers would you hire?

\[ 2.5\% = \frac{0.25}{8} \]

B. What is the equilibrium employment and wage rate if \( N_s = \frac{(75(w+5))}{75} \)?

C. At this equilibrium level of employment, how much profit will the employer make?

2. (6 pts) Suppose the population is 48.9 million, 24.8 million are employed, 8.4 million are able to work but have better things to do with their time and the participation rate is 76.3%.

A. How many people are not able to work?

B. What is the unemployment rate?

C. According to Okun’s Law, what would the unemployment rate be if \( \omega \) (the natural rate of unemployment) is 6.2%, and the current level of GDP is $194 bn and the economy’s capacity is $200 bn?

3. (9 pts) Let \( P_Y = $5, Y = 242.5K - 3K^2, P_K = $80, K_0 = 32 \) machines, machines last 8 years on average, \( r = 2.5\% \) and \( N_s = \frac{(75(w+5))}{75} \)

A. What is the user cost of capital?

B. What is the optimal level of \( K \)?

C. How much investment will there be this year (measured in machines)?

4. (7 pts) In our economy: Immigrants move to Canada with $20 of assets, Direct investment in our economy by non-residents $100, Deposits by non-residents into our banks $25, Deposits by our residents into banks in other countries $35, Loans to non-residents by our banks $55, Exports $270, Income earned by our residents in other countries $40, Increase in official reserves $75, Direct Investment in other countries by our residents $60, Retained Earnings by our corporations $125, Purchases of services from other countries $80, Imports $350, Purchases of foreign-owned capital by our residents $105, Foreign owners return (sell) our stocks and bonds to residents $70, Residents sell foreign stocks and bonds to non-residents $140, Loans to our residents from foreign banks $45. Sales of services to non-residents $130, Income earned in our country by non-residents $50, Current transfers from our residents to non-residents $10. Sales of our stocks and bonds to non-residents $115

A. What is the current account balance?

B. What is the capital account balance?

C. What is the statistical discrepancy? (Correct sign is important)

5. (18 pts) Suppose investors become more confident that their investments will become profitable (\( MPK^e \) rises). Under each of the following conditions, draw TWO diagrams (both a Savings/Investment diagram and a “box” diagram) to show what the rise in investor confidence does. (Your diagrams must be complete enough to easily see the results in the table). Then fill in the appropriate space in the table below with a + (for increase), - (for decrease) or 0 (for no change) for how this affects each variable below. (You should combine the I & S diagrams for C & D).

A. We are a closed economy

B. We are a small open economy

C. We are a large open economy

D. What happens to the rest of the world if we are a large open economy (and only our investor confidence rises).
MACROECONOMICS 105  QUIZ #2B  NAME: ____________________________  18 June 2014
COLUMBIA COLLEGE
You MUST SHOW YOUR WORK!!!  

1. (10 pts) Let $P_y = \$3$, $Y = 24N^{3/4}$, $r=2\%$, and machines last 10 years on average

A. $(3)^{10} = (81)$  
B. $\frac{4P Y}{5N} = (96)$  
C. $\frac{5P Y}{4N} = (144)$

If the wage rate were $18$, how many workers would you hire?  
What is the equilibrium employment and wage rate if $N_s = (120/(2w+6))^4$?  
At this equilibrium level of employment, how much profit will the employer make?  

2. (6 pts) Suppose the population is 37.6 million, 16.5 million are employed, 9.8 million are able to work but have better things to do with their time and the participation rate is 65.4%.

A. $37.6 - 25.3 = 8.3$  
B. $52.5 - 10.5 = 42$  
C. $42/8.3 = 4.2$  
According to Okun’s Law, what would the unemployment rate be if $u_o$ (the natural rate of unemployment) is 6.2%, and the current level of GDP is $\$200$ bn and the economy’s capacity is $\$200$ bn?  

3. (9 pts) Let $P_y = \$3$, $Y = 402K - 2K^2$, $P_k = $50, $K_o = 80$ machines, machines last 10 years on average, $r=2\%$ and

$N_s = (120/(2W+6))^4$  

A. $50(1 + r) = 60$  
B. $\frac{K^2}{1 + r} = 60$  
C. $2K - 4W - 28$  
How much investment will there be this year (measured in machines)?  

4. (7 pts) In our economy: Immigrants move to Canada with $\$15$ of assets, Direct investment in our economy by non-residents $\$105$, Deposits by non-residents into our banks $\$20$, Deposits by our residents into banks in other countries $\$40$, Loans to non-residents by our banks $\$50$, Exports $\$275$, Income earned by our residents in other countries $\$35$, Increase in official reserves $\$80$, Direct investment in other countries by our residents $\$55$, Retained Earnings by our corporations $\$130$, Purchases of services from other countries $\$75$, Imports $\$355$, Purchases of foreign-owned stocks and bonds by our residents $\$10$, Foreign owners return (sell) our stocks and bonds to residents $\$10$, Residents sell foreign stocks and bonds to non-residents $\$135$, Loans to our residents from foreign banks $\$60$, Sales of services to non-residents $\$125$, Income earned in our country by non-residents $\$65$, Current transfers from our residents to non-residents $\$5$, Sales of our stocks and bonds to non-residents $\$120$

A. $-5$  
B. $+5$  
C. $-5$  
What is the current account balance?  
What is the capital account balance?  
What is the statistical discrepancy?  (Correct sign is important)

5. (18 pts) Suppose investors become more confident that their investments will become profitable (MPK rises). Under each of the following conditions, draw **TWO diagrams (both a Savings/Investment diagram and a “box” diagram) to show what the rise in investor confidence does**. (Your diagrams must be complete enough to easily see the results in the table). Then fill in the appropriate space in the table below with + (for increase), - (for decrease) or 0 (for no change) for how this affects each variable below. (You should combine the I & S diagrams for C & D).

<table>
<thead>
<tr>
<th>$r$</th>
<th>$S$</th>
<th>$C$</th>
<th>$I$</th>
<th>Absorption</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

A. We are a closed economy  
B. We are a small open economy  
C. We are a large open economy  
D. What happens to the rest of the world if we are a large open economy (and only our investor confidence rises).
1. (8 pts) Use two interconnected diagrams (I/S and Y=f(t)) to show how an IS curve shifts when there is an increase in expected future earnings (Yr). Carefully label two points on the old IS curve (label these points A and B) and show where these points (A and B) are in the other diagram. Then label two new points (C & D) on the new IS curve and show where these points (C & D) are in the other diagram too. (BOTH diagrams will have ALL points A, B, C & D which must line up with each other. Also, label ALL axes with the correct variables.

2. (32 pts) IS/LM/FE (Hint: Use a rough diagram to keep track of what your algebra is showing) Let M=8000, P=2, I=5000 +6000, r, S=0.2Y + 1000 + 4000, G=2000 and Ld=0.4Y+200- 4000r. The FE curve occurs where the IS and LM first intersect. Then I increases so that I'=6344 - .6000r. Show your work (Neatly PLEASE!

Fill in this table Point (Initial General Equilibrium) Point (Temporary Equilibrium) Point (New General Eq)

<table>
<thead>
<tr>
<th>IS equation</th>
<th>LM equation</th>
<th>Equilibrium Y</th>
<th>Equilibrium r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y=20,000 - 5,000r</td>
<td>Y=9,500 + 10,000</td>
<td>Y=11,250</td>
<td>r=17,226</td>
</tr>
<tr>
<td>Y=27,720 -50,000r</td>
<td>Y=9,500 + 10,000</td>
<td>Y=12,370</td>
<td>r=17,226</td>
</tr>
<tr>
<td>Y=27,720 -50,000r</td>
<td>Y=81,500 + 10,000</td>
<td>Y=28,747</td>
<td>r=15,476</td>
</tr>
</tbody>
</table>

Also, find the following points or equations:

a. \( \frac{3}{4} \) Find the equation (with the intercept) for S as a function of r alone at C.

b. \( 3474 + 4000(.247) = 4622 \) Find equilibrium level of savings at C.

c. \( 5748 \) Find the equilibrium level of Consumption at C.

d. \( 4700 - 4000 \) Find equation (with the intercept) for Ld as a function of r alone at C.

e. \( 3462.4 = 0.4Y + 200 - 4000r \) Find the equilibrium level of Ld at C.

3. (10 pts) Assume the economy is in an initial general equilibrium (O). Then after the change below, we move to a new temporary equilibrium (O). Then after the economy adjusts, we move to a final general equilibrium (O). You must show all three points (O, O & O) in all five diagrams — Y=f(N), Nd/NS, I/S, Ld/Ms/P and IS/LM--- making sure they line up and tell a consistent story. Label all axes.

A. What happens when the government changes the rules and it becomes more difficult for consumers to use credit cards (a money substitute)?
1. (8 pts) Use two interconnected diagrams (I/S and Y=f(N)) to show how an IS curve shifts when there is an increase in expected future earnings (Y_t). Carefully label two points on the old IS curve (label these points A and B) and show where these points (A and B) are in the other diagram.

Then label two new points (C & D) on the new IS curve and show where these points (C & D) are in the other diagram too. (BOTH diagrams will have ALL points A, B, C & D which must line up with each other. Also, label ALL axes with the correct variables.

2. (32 pts) IS/LM/FE (Hint: Use a rough diagram to keep track of what your algebra is showing) Let M=6500, P=5 I=4500 -3000r, S=0.5Y + 500 + 2000r, G=1000 and Lt=0.25Y+50-500r. The FE curve occurs where the IS and LM first intersect. Then I increases so that I'=4650 -3000r. Show your work (Neatly PLEASE!)

Fill in this table

<table>
<thead>
<tr>
<th>Point (Initial General Equilibrium)</th>
<th>Point (Temporary Equilibrium)</th>
<th>Point (New General Eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS equation (Y=f (r alone))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y_is = 8000 -10000r</td>
<td>Y_is' = 8300 -10000r</td>
<td>Y_is'' = 8300 -10000r</td>
</tr>
<tr>
<td>LM equation (Y=f (r alone))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y_lm = 5000 + 2000r</td>
<td>Y_lm ' = 5000 + 2000r</td>
<td>Y_lm'' = 4600 + 2000r</td>
</tr>
<tr>
<td>Equilibrium Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r = \frac{3000}{5000} = 10%</td>
<td>r = \frac{5000}{5000} = 10%</td>
<td>r = \frac{1000}{5000} = 13%</td>
</tr>
</tbody>
</table>

Also, find the following points or equations:

a. \[ S = \frac{3}{5} (2000 + 500 r) = 4320 \]

b. \[ Y_s = 4320 \]

c. \[ C = Y_s - G = 7200 - 4320 -1000 = 1880 \]

d. \[ L_d = 25(1000) = 25000 \]

3. (10 pts) Assume the economy is in an initial general equilibrium (\( \bullet \)). Then after the change below, we move to a new temporary equilibrium (\( \star \)). Then after the economy adjusts, we move to a final general equilibrium (\( \bigcirc \)). You must show all three points (\( \bullet, \star, \bigcirc \)) in all five diagrams — Y=f(N), Nd/Ns, I/S, Ld/Ms/P and IS/LM— making sure they line up and tell a consistent story. Label all axes.

A. What happens when the government changes the rules and it becomes more difficult for consumers to use credit cards (a money substitute)?
1. (10 pts) READ CAREFULLY!! Use four diagrams (Id/Sd, IS/LM, Ld/Ms/P and AS/AD) and show how these diagrams are interrelated. All four diagrams must line up for each point and you must ALL three points in ALL four diagrams. (EACH OF THE 4 DIAGRAMS HAS A, B & C)

**POINT A.** An initial equilibrium. (at Pt1)  
**POINT B.** A second point on the same AD curve with a higher price (Pt2).  
**POINT C.** The new temporary equilibrium if there is an increase in Ld (so that the new LM curve is the same as the LM for POINT B). (Use lined sheets for more room)

2. (20 pts) Let Ld=600 - 1000r, S=0.5Y - 300 +600r, Ms=2000, P=10, Ld=50+0.25Y-400r. Compare the Keynesian and New Classical stories about what happens when there is a recession which decreases Y to $840 (For the Keynesian story, investor confidence changes). (Hint: for the YAd equation, you may want to keep the answer in fraction form)

- Initial General Equilibrium $ \text{Ld} = 50 + 0.25 \text{Y} - 400 \text{r} $  
- Keynesian $ \text{Ld} = 50 + 0.25 \text{Y} - 400 \text{r} $  
- New Classical $ \text{Ld} = 50 + 0.25 \text{Y} - 400 \text{r} $  

3. (18 pts) Compare the Keynesian and New Classical stories about what happens when there is an increase in G. For the New Classical story assume there is a wealth effect. Draw ONE set of Four (4) diagrams (Id/Sd, IS/LM, Ld/Ms/P and AD/AS) and in these diagrams, mark O, K & NC. (PLEASE draw large diagrams, so the differences between these points are very clear). You will also want to draw TWO(2) separate diagrams for Y as a function of N & Nd/Ns, one set for the Keynesian story and one set for the New Classical story. In the Keynesian story diagrams, mark O & K. In the New Classical story diagrams, mark O & NC. Make sure that ALL diagrams in each set line up properly and LABEL ALL AXES and curves. (use lined sheets to show larger diagrams)

4. (2 pts) From the above diagrams, what do K and NC say will happen to these variables (increase, decrease or no change) because of the expansionary fiscal policy. Finally, fill in the final blank with a K or NC depending on which theory predicts that this variable will be HIGHEST or LARGEST because of the expansionary fiscal policy. (You must be able to see these answers in the diagrams of #3 for full credit)

<table>
<thead>
<tr>
<th>R</th>
<th>K</th>
<th>NC</th>
<th>Largest?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Equilibrium level of w/P

- C
- K