Concordia University
Department of Economics

ECON 203 – INTRODUCTION TO MACROECONOMICS
Fall 2010

COMMON FINAL EXAMINATION VERSION 1 AND ANSWERS

FAMILY NAME: _____ **GIVEN NAME(S):**_____

STUDENT NUMBER: _____

Please read all instructions carefully.

1. This is a three-hour exam (180 minutes). The questions are worth 150 marks altogether. It is a good strategy to spend one minute per mark for your answers (150 minutes) and spend the remaining time (30 minutes) to review your answers.

2. The exam consists of four parts:
   (i) Part I: 25 multiple-choice questions (25 marks);
   (ii) Part II: Choose 5 out of 7 "true-false" questions (25 marks);
   (iii) Part III: Choose 4 out of 6 long questions (60 marks), and
   (iv) Part IV: One "current events" question (40 marks).

3. Write your name, student ID and answers for the multiple-choice questions on the computer scan-sheet with a **PENCIL**. For Parts II to IV, write all your answers on this exam. Do not use additional booklets.

4. You are allowed to use a non-programmable calculator and a dictionary. You may use either pen or pencil to provide your answers for Parts II to IV.

5. You are not allowed to tear any pages out of this exam.

Grades:

Part I: _____

Part II: _____

Part III: _____

Part IV: _____

Total: _____

Part I: Multiple Choice Questions. Write all answers on the computer sheet with a PENCIL (Total=25 marks).

1. Suppose that you hold your money balances in cash (the most liquid asset) rather than hold some other less liquid assets (such as bonds). Assume that the general price level is fixed. The opportunity cost of holding cash is:
   A) Zero.
   B) The consumption that you give up by holding your money rather than spending it.
   C) The foregone interest income that you could have earned if you have held your financial assets in bonds.
   D) Loss of purchasing power due to inflation.
   E) Both C) and D) are correct.

2. The demand for US dollars in the foreign exchange market slopes _____ because Canadian consumers spend _____ on US goods when the Canadian dollar price of the US dollar _____.
   A) Upward; less; increases
   B) Upward; more; increases
   C) Downward; less; falls
   D) Downward; more; falls
   E) None of the above is correct.

3. If nominal GDP grows by 7% and the GDP deflator increases from 110 to 117.7, then real GDP:
   A) Is constant.
   B) Falls by 2%.
   C) Falls by 1%.
   D) Rises by 2%.
   E) Rises by 5%.

4. Assume that the unemployment rate last year was 7%. Further assume that the growth in potential GDP is zero. If the GDP this year is 6% lower than the GDP last year, then according to Okun's Law:
   A) The unemployment rate is 13%.
   B) The unemployment rate is 10%.
   C) The unemployment rate is 7%.
   D) The unemployment rate is 4%.
   E) The unemployment rate is 1%.

5. Flexible exchange rates _____ to affect the economy, and fixed exchange rates _____ to affect the economy.
   A) Limit the ability of monetary policy; limit the ability of fiscal policy
   B) Limit the ability of monetary policy; strengthen the ability of monetary policy
   C) Limit the ability of fiscal policy; strengthen the ability of monetary policy
   D) Strengthen the ability of fiscal policy; limit the ability of monetary policy
   E) Strengthen the ability of monetary policy; strengthen the ability of fiscal policy

6. An increase in Canadian real GDP will:
   A) Increase Canadian exports of goods and services.
   B) Increase US imports of Canadian goods and services.
   C) Lower real GDP in Canada's major trading partners.
   D) Reduce Canadian net exports.
   E) Both A) and B) are correct.

7. If the reserve ratio of all commercial banks is 0.3 and the currency deposit ratio of the public is 0.2, then an open market purchase of bonds by the central bank of $100 million will result in
   A) $240 million decrease in money supply.
   B) $240 million increase in money supply.
   C) $333.33 million decrease in money supply.
   D) $333.33 million increase in money supply.
   E) None of the above is correct.

8. Other things equal, the multiplier effect of a change in government spending is:
   A) The same as the multiplier effect of a change in tax rates.
   B) The same as the multiplier effect of a change in autonomous investment.
   C) Less than that associated with a change in autonomous investment.
   D) Greater than that associated with a change in autonomous investment.
   E) None of the above is correct.

9. For a given fluctuation in autonomous expenditure, economies with higher income tax rate *t* will:
   A) Experience no business cycle fluctuations in real GDP and employment.
   B) Experience smaller business cycle fluctuations in real GDP and employment.
   C) Experience some business cycle fluctuations in real GDP and employment but the fluctuations are independent of *t*.
   D) Experience larger business cycle fluctuations in real GDP and employment.
   E) Experience larger business cycle fluctuations in real GDP and employment only if the government runs a balanced budget.

10. Suppose X - Z = net exports; T - G = government sector surplus or deficit; and S - I = private sector surplus or deficit. What relationship exists among these variables?
   A) (X - Z) + (T - G) + (S - I) = 0.
   B) (T - G) + (X - Z) = (S - I).
   C) (X - Z) = (T - G) + (S - I).
   D) (T - G) = (X - Z) + (S - I).
   E) (T - G) - (X - Z) = (S - I).

11. Suppose a closed economy without government has total autonomous expenditure of 150 and a change in household behaviour increases the slope of the AE function from 0.6 to 0.7. The initial equilibrium income was _____ and the new equilibrium income will be _____.
   A) 200, 275
   B) 750, 800
   C) 250, 500
   D) 400, 500
   E) None of the above is correct.

12. The New Democratic Party (NDP) wants the Conservative government to spend more money on building low-income housing. If the NDP wants the spending to have maximum effect on economic growth, which of the following consumption equations would it prefer to see?
   A) C=90+0.4(Y-T)
   B) C=80+0.5(Y-T)
   C) C=150+0.75(Y-T)
   D) C=100+0.9(Y-T)
   E) C=250+0.5(Y-T)

13. According to the consumption function, as real disposable income increases:
   A) Consumption will rise by the same amount as the increase in disposable income.
   B) Consumption will fall but saving will rise.
   C) Consumption will rise but saving will remain constant.
   D) Consumption will rise but saving will fall.
   E) Both consumption and saving will rise.

14. The wealth, interest rate and foreign trade effects all help explain:
   A) Why the aggregate demand curve is downward sloping.
   B) Why the aggregate supply curve is upward sloping.
   C) Shifts in the aggregate demand curve.
   D) Shifts in the aggregate supply curve.
   E) All of the above are correct.

15. If equilibrium output is less than potential output, eventually the short-run aggregate supply curve will shift:
   A) Left and eliminate the recessionary gap.
   B) Right and eliminate the recessionary gap.
   C) Left and eliminate the inflationary gap.
   D) Right and eliminate the inflationary gap.
   E) Aggregate supply curve will not shift but rather the aggregate demand curve will shift to close the output gap.

16. Three main indicators of macroeconomic activity and performance are:
   A) Balance of payments, interest rates and government expenditure.
   B) Investment, taxes and interest rates.
   C) Output, prices and employment.
   D) Investment, inflation and unemployment.
   E) Trade deficits, interest rates and employment.

17. If funds in the overnight loans market are trading above the overnight target rate, then the Bank of Canada will _____ to _____ and _____ the overnight interest rate. Conversely, if overnight funds are trading below the overnight target rate, then the Bank of Canada will _____ to _____ and _____ the overnight interest rate.
A) Conduct an SPRA, decrease the monetary base, lower; conduct an SRA, increase the monetary base, raise
B) Conduct an SPRA, increase the monetary base, lower; conduct an SRA, decrease the monetary base, raise
C) Conduct an SRA, increase the monetary base, lower; conduct an SPRA, decrease the monetary base, raise
D) Conduct an SRA, decrease the monetary base, lower; conduct an SPRA, increase the monetary base, raise
E) None of the above is correct.

18. Under _____ exchange rates, a fiscal contraction that pushes interest rates ____ will crowd _____ net exports through _____.
A) Flexible; up; out; an appreciation of the domestic currency
B) Flexible; down; in; an appreciation of the domestic currency
C) Flexible; up; out; a depreciation of the domestic currency
D) Flexible; down; in; a depreciation of the domestic currency
E) Fixed; up; in; an appreciation of the domestic currency

19. A newspaper headline reads: "The Bank of Canada Reduces the Target Overnight Rate for a Second Time This Year." This headline indicates that the Bank of Canada is most likely trying to:
A) Stimulate the economy.
B) Decrease the money supply.
C) Keep the *bank rate* constant.
D) Reduce inflationary pressures in the economy.
E) Both A) and C) are correct.

20. If the structural primary budget balance changes from -$50 billion to -$25 billion, then which of the following is/are TRUE?
A) The central bank has conducted contractionary monetary policies.
B) The government has conducted contractionary fiscal policies.
C) The interest payments on public debt have decreased.
D) The economy is currently in a temporary recession.
E) All of the above are correct.

21. Suppose the Bank of Canada conducts its monetary policies by following the equation $M = M_0 - \gamma(Y - Y_P)$, where γ is a positive parameter, we can deduce that:
A) M is equal to M_0, if Y is less than Y_P.
B) M is greater M_0, if Y is greater than Y_P.
C) M is less than M_0, if Y is less than Y_P.
D) M is greater than M_0, if Y is less to Y_P.
E) M is less than M_0, if Y is equal to Y_P.

22. Suppose that the government decreases spending by 15% and decreases autonomous or lump sum taxes by 15%. We would expect this to:
A) Have no effect on the level of national income.
B) Have a contractionary effect on national income.
C) Have an expansionary effect on national income.
D) Make the AE function steeper.
E) Both B) and D) are correct.

23. Suppose that planned spending for consumer goods (AE) is greater than the level of total output produced by the economy, then:
A) The resulting reductions in inventories will cause producers to increase their level of output and national income will rise.
B) An unplanned build-up in inventories that will result in a rise in national income.
C) A decline in national income because planned spending is less than actual spending.
D) Either an increase or decrease in national income, it depends on the relative size of the marginal propensity to consume.
E) None of the above is correct.

24. Capital account deals with all of the following EXCEPT:
A) Canadians buying foreign bonds.
B) Foreigners buying Canadian bonds.
C) Canadians buying foreign goods.
D) Foreigners buying Canadian goods.
E) Both C) and D) are correct.

25. Suppose it costs C$1.2 to buy one US$, and the price level or index in the US is 115. The price level or index in Canada is 112. The real exchange rate from Canada's perspective is:
A) 1.30
B) 1.23
C) 1.14
D) 1.10
E) None of the above is correct.

Part II: Answer FIVE of the following seven questions in the allotted space. If more than five questions are answered, only the first five will be marked. State whether each statement is true or false and explain. Use graphs to support your answers when applicable. No marks will be awarded to simply stating "true" or "false" without explanation (Total=25 marks).

1. The US Federal Reserves (central bank) recently purchased US$600 billion worth of US treasury bills (short-term bonds) in the open market. This will lead to a rise in interest rates, a fall in money supply and a fall in bond prices.
Ans: False → This will put more $$ into the hands of the public → money supply ↑, interest rate will ↓ and PV will ↑ since interest rates and PV are inversely related.

2. The crowding-out effect refers to the fact that when government expenditure rises, the goods market autonomous expenditure multiplier becomes larger, which in turn magnifies the decrease in private investment spending.
Ans: False → Multiplier stays constant → ↑G, ↑Y, ↑Md, ↑interest rates, ↓I, ↓AE, ↓AD, but there is no effect on the multiplier.

3. Under a fixed exchange rate regime, if CA=$40 billion and KA= - $55 billion, this implies that this country's central bank is accumulating $95 billion in foreign exchange reserves. This accumulation of reserves is required; otherwise, this country's currency will face the pressure to appreciate.
Ans: False → BP=0 = CA+KA+ORT, so ORT= $15 billion. The net inflow of $$ into this country from the CA side is $40, but the net outflow of $$ from the KA side is $55. The central bank has to supply the remaining $15 in order to keep e constant, which means it is selling or depleting $15 billion in reserves. Otherwise, there will be an excess demand for foreign $, and this country's currency will depreciate.

4. According to the Interest Rate Parity theory, if Canadian interest rates are lower than US interest rates, then we expect the Canadian dollar to appreciate in the future. [Hint: Use the Interest Rate Parity equation to support your answer.]
Ans: True → If ic = ius + expected %Δe, and ic < ius, then expected %Δe has to be negative. We expect an appreciation in the C$ in the future.

5. Interest rates affect investment expenditure if firms finance such expenditure by obtaining business loans; however, if the expenditure were self-financed, then interest rates do not affect such expenditure.
Ans: False → When borrowed, the higher the interest rate, the higher the cost of borrowing; if self-financed, the opportunity cost of investment expenditure is the foregone interest income. If interest rates rise, firms may have incentives to leave the money in the bank, earn the interest, rather than withdraw it and spend it on a project.

6. Under the Y=AE (45-degree diagram) model, prices are assumed to be flexible and hence price changes move to equate Y=AE.
Ans: False → Prices are fixed, and we rely on inventory changes to ensure Y=AE. If Y>AE, inventory rises and Y falls, and vice versa.

7. Canada has been running a trade deficit in 2009 and part of 2010. In order to eliminate this trade deficit, the Canadian government should cut taxes and discourage private savings [Hint: Use the leakage and injection equation(s) to support your answer.]
Ans: False → NX = (S-I) + (T-G), so need to ↑T and/or ↑S.

Part III: Answer FOUR of the following six questions. If more than four questions were answered, only the first four will be marked (Total=60 marks).

Question 1: Money Creation Process (15 marks)

Suppose that Person A deposits $180 (cash) at Bank A. Complete the following questions. Round your answers to two decimal places, if applicable.

(i) Suppose Bank A realizes that, on average, its customers only withdraw a portion of their deposits, and so it can lend out some money to other customers. Bank A now chooses the reserve ratio to be 20% or 0.2. Bank A lends out the remaining amount of money as loans to Person B. Record this transaction on the balance sheet below: (2 marks)

Assets		Liabilities	
Reserves	**$ 36.00**	**Deposits**	**$180.00**
Loans	**$144.00**		

(ii) Person B borrows this money as loans and pays to Person C. Suppose Person C deposits this amount with Bank B. Bank B, similar to Bank A, also chooses a reserve ratio of 0.2 and issues the remaining cash as loans to Person D. Record this transaction on the balance sheet below: (2 marks)

Assets		Liabilities	
Reserves	**$ 28.80**	**Deposits**	**$144.00**
Loans	**$115.20**		

(iii) Person D borrows this money as loans from Bank B and pays to Person E. Suppose Person E deposits this amount with Bank C. Bank C also chooses a reserve ratio of 0.2 and issues the remaining cash as loans to Person F. Record this transaction on the balance sheet below: (2 marks)

Assets		Liabilities	
Reserves	**$ 23.04**	**Deposits**	**$115.20**
Loans	**$92.16**		

(iv) What is the money multiplier given that cash or currency ratio is zero? (1 mark)
Ans: The money multiplier is Reserves/Deposits = 1/rr = 1/0.2 = 5.

(v) Find the new money supply and the amount of money (or loans) created (2 marks).
Ans: The New money supply =Initial deposit * Money multiplier = $180 * 5 = $900
Amount of money (or loans) created = Initial loan * Money multiplier = $144 * 5 = $720

(vi) Now suppose the cash or currency ratio is 0.1. Find the new money multiplier, new money supply and the amount of money (or loans) created (3 marks).
Ans: The New money multiplier = (1+ cr)/(cr+rr) = (1+0.1) / (0.1+0.2) = 3.67
The New money supply = Initial deposit * Money multiplier = $180 * 3.67 = $660
Amount of money (or loans) created = Initial loan * Money multiplier = $130.91 * 3.67 = $480, or simply $660-$180 (the initial amount) = $480.
An alternative way of looking at this: The initial loan is $130.91. This is because $180 is divided by 1.1 (since cash ratio is defined as 10% of deposits), so reserves=$32.73, loans=$130.91 and deposits=liabilities=$163.64. Cash is 10% of $163.64 = $16.364, and total $180=$163.64+$16.364.

(vii) Suppose commercial banks believe that in an economic recession the likelihood of collecting loans decreases. Discuss intuitively how this would affect the money supply, interest rate and real GDP (3 marks).
Ans: Commercial banks can mitigate default risk by charging a higher interest rate to borrowers who are more likely not to pay back the loans, by reducing the amount of credit extended either to all or to certain borrowers, or to diversify the borrower pool. These actions would contract the money supply and increase interest rates. Investment I(i), consumption C(i) and NX(i) will decrease. Through the multiplier effect, GDP will decrease.

Question 2: Unemployment and Inflation (15 marks)

Part I: Unemployment

Consider the following data collected from a country. Leave all answers to 2 decimal places, if applicable.

Total population	1128
Population **UNDER** 15 years of age	191
Not in the labour force	377
Unemployed	36
Part-time workers looking for full-time jobs	26

(i) Calculate the unemployment rate (2 marks).
Ans: Unemployment rate= #unemployed/labour force=36/560=6.43%

(ii) Now suppose **10** of the unemployed workers are so discouraged that they have given up looking for work. They decide to go back to school full-time. Calculate the new unemployment rate (3 marks).
Ans: In the case, both the number of unemployed and the labour force will decrease by 10, as full time students are not considered in the labour force. The new unemployment rate = (36-10)/(560-10)=26/550 = 4.73%.

(iii) Explain whether this statement is true or false: "Low unemployment rates imply more people are working" (3 marks).
Ans: FALSE. Unemployment rates change if the number of unemployed population or the labour force changes, or both change. As the example above shows, when discouraged workers exit the labour market, the unemployment rate decreases but the number of employed population remains the same: 524.

Part II: Inflation

Consider the year-to-year inflation rates in Atlantis for the following years:

Year	Inflation Rate
2000	10%
2001	20%
2002	15%
2003	10%

(i) Fill in the table below. All the data have been measured at the end of each year (4 marks).
Ans: CPI for 2001 is 1.2*(CPI 2000=110) = 132 because the inflation rate between these two years is 20%.

Year	Nominal Wage	CPI (base 1999)	Real Wage
1999	$ 15.00	100	$15.00
2000	$ 17.60	**110**	**$16**
2001	$ 19.80	**132 (=1.2*110)**	**$15**
2002	$ 20.10	**151.8 (=1.15*132)**	**$13.24**
2003	$ 22.21	**166.98 (=1.1*151.8)**	**$13.30**

(ii) Consider the years 1999 and 2003: Given the nominal wages in 1999 and 2003, what must be the value of the 2003 CPI so that the workers earn the same real wage in 1999 and 2003? (3 marks)
Ans: CPI in 2003 needs to be 148.06 since $22.21/148.06*100 = $15. OR, if nominal wage in 2003 were $25.07, then real wage $25.07/166.98*100 = $15.

Question 3: Economic Growth (15 marks)
Suppose you have the following information about an economy:

Average annual rates of growth from 1995 to 2005:
- Potential GDP (Yp) 4.41%
- Labour force (L or N) 2.1%
- Capital stock (K) 1.2%

The share of labour income in national income is 2/3 and the share of capital income is 1/3. Round your answers to 2 decimal places, if applicable.

Using growth accounting, find the contributions to the annual growth in potential GDP that came from:

(i) The growth in the labour force (4 marks):
Ans: The growth accounting equation is: Y = A + 2/3L + 1/3K
L = Labour force, and as 2/3 of L is contributed to the GDP (Y), that means:
Contribution from growth in labour force = 2/3 × 2.1% = 1.4%

(ii) The growth in the capital stock (4 marks):
Ans: The growth accounting equation is: Y = A + 2/3L + 1/3K
K = Capital stock, and as 1/3 of K is contributed to the GDP (Y), that means:
Contribution from growth in capital stock = 1/3 × 1.2% = 0.4%

(iii) The Solow residual (4 marks):
Ans: The Solow residual measured by A is founded by rearranging the growth accounting equation as follows: A = Y - 2/3L - 1/3K
Y is given in the question (Potential GDP = 4.41%), we found 2/3L in part (i) to be = 1.4%, and 1/3K in part (ii) to be = 0.4%, therefore:
A = Y - 2/3L - 1/3K = 4.41% - 1.4% - 0.4% = 2.61%

(iv) You are the Finance Minister of Canada and you would like to design economic policies that would encourage long term, sustainable (long-lasting) economic growth for years to come. If you had a choice, which of these three sources of growth would you prefer to see as the main engine that drives Canadian economic growth [(i), (ii) or (iii)]? Explain the significance of your chosen variable and what factors could affect it (3 marks).
Ans: Prefer technological improvement as measured by (iii) → Solow residual is the portion of growth left unaccounted for by increases in K or L. The Solow residual is a measure of the contributions to economic growth made by improvements in technology, improved skills and literacy of the labour force, improved efficiency of government regulations. For example, higher government spending on public education may raise the workers' productivity, output may rise, and this results in a higher total factor productivity. On the other hand, government regulations may require firms to limit pollution (by purchasing capital or improving their technology) or increase safety for their workers. Output will not change (it may decrease) with the additional capital stock. This implies lower total factor productivity.

Question 4: Taylor Rule (15 marks)

The Taylor rule states that a central bank can monitor price stability (low inflation) and output stability (GDP being close to the potential output Y_p) by an equation that links the interest rate with these two objectives. For Canada, suppose this has been estimated to be as follows: $i = i_0 + 1.6(\pi - \pi^*) - 0.4(UR - UR_n)$, where the unemployment rate difference from its natural level substitutes for the output gap.

Suppose the inflation target is $\pi^* = 3\%$, the natural rate of unemployment is $UR_n = 5.5\%$, and the equilibrium rate of interest that is compatible with these two is $i_0 = 7\%$. Also, suppose that the level of inflation π changes with the changes in interest rate according to the following formula $\pi = \pi^* - (i - i_0)$. Round your answers to 2 decimal places, if applicable.

(i) Assume that we start from a situation where $\pi = \pi^*$, and $UR = UR_n$. Find the value of i (2 marks).
Ans: $i = i_0 + 1.6(\pi - \pi^*) - 0.4(UR - UR_n) = 7\% + 1.6(3\%-3\%) - 0.4(5.5\% - 5.5\%) = 7\% + (0) - (0) = 7\%$

(ii) Now suppose a drop in investment confidence leads to an increase in Unemployment Rate to 8.5%. Let us put aside inflation rates for now. According to Taylor rule, what interest rate should the Bank of Canada now set? (2 marks)
Ans: $i = i_0 + 1.6(\pi - \pi^*) - 0.4(UR - UR_n) = 7\% + 1.6(3\%-3\%) - 0.4(8.5\%-5.5\%) = 7\%-1.2\%=5.8\%$

(iii) How would you expect π to change when i drops? Explain what happens to AE and AD (3 marks).
Ans: Even though firms may feel less certain about the future and hence have lower confidence, the drop in interest rates makes loans cheaper. They would now have more incentives to begin more investment projects. As the interest rate drops, firms will spend more on investment, so AE and AD will rise, therefore creates upward pressure on inflation.

(iv) Replace the expression for π shown above (that links π to the change in interest rate) into the Taylor rule and solve for the new interest rate that will now combine the anticipated increase in inflation as well as the increase in the unemployment rate (4 marks).
Ans: $i = i_0 + 1.6(\pi - \pi^*) - 0.4(UR - UR_n) = i_0 + 1.6(\pi^* - \Delta i - \pi^*) - 0.4(UR - UR_n) = 7\% + 1.6[3\% - (i - i_0) - 3\%] - 0.4(8.5\% - 5.5\%) = 7\% + 1.6(-i + 7\%) - 0.4(8.5\% - 5.5\%)$
$i = 7\% - 1.6i + 11.2\% - 1.2\%$ and $i + 1.6i = 7\% + 11.2\% - 1.2\% = 17\%$ or $i = 17\% / 2.6 = 6.54\%$. Note that you have to solve this interest rate as a complete unknown – do not substitute the interest rate from (ii) into here. See Lyxyx lab question for more examples.

(v) Find the new π (2 marks).
Ans: The new $\pi = \pi^* - 1\Delta i = \pi^* - (i - i_0) = 3\% - (6.54\% - 7\%) = 3.46\%$

(vi) Discuss intuitively why the interest in (iv) is different from the one you had calculated in (ii) (2 marks).
Ans: The initial drop in interest rate from 7% to 5.8% was designed to increase AD to reach the potential output. A rightward shift of the AD closes the recessionary gap but also raises prices (creates an upward pressure on inflation). The Taylor rule demonstrates that the Bank adopts a middle road to reach both objectives of output stability and price stability. So, instead of lowering the interest rate from 7% to 5.8% it lowers it from 7% to 6.54% (a higher interest rate in order to keep inflation under control).

Question 5: Contrasting Fiscal and Monetary Policies in the AE Model (15 marks)

A simplified economy is specified as below. Round your answers to 2 decimal places, if applicable.

A. Goods market, all values of C, I, G and NX are in billions of C$:

Consumption expenditure:	C = 130 + 0.8(Y-T)	Lump-sum constant taxes:	T = 250
Investment expenditure:	I = 1,200 – 420*i*	Exports:	80
Government expenditure:	G = 250	Imports:	10

B. Money market, all M^d values are in billions of C$:

Interest rate: *i* = 0.1 (which is 10%) Money demand: $M^d = 760 - 1{,}900i$

(i) Find the equilibrium Y, money supply, C and I. Define interest rate *i* as 0.1, not 10 (4 marks).

Ans: C will become 130+.8 (Y-250).
AE=C+I+G+NX=130+.8 (Y-250)+1,200-420*0.1+250+80-10=1,408+.8Y
At equilibrium, planned expenditure becomes actual expenditure on domestically produced goods and services, so AE=Y and the equation above becomes Y=1,408+.8Y. From here, Y (1-.8)=1,408 therefore, Y =1,408/.2=7,040.

C=130+.8(7,040-250)=5,562, I=1200-420*0.1= 1,158, The money supply equals the money demand at equilibrium, therefore the money supply is 760-1,900*0.1= 570.

(ii) Fiscal Policies: Now suppose there is an impending federal election, and the government promises to use fiscal policies to stimulate the economy.

(a) If the economy is 12% below its targeted income Yp = 8,000, calculate the change in government expenditure required to achieve Yp (3 marks).

Ans: The needed increase in government spending is given by the output gap devided by the multiplier. The output gap is 0.12*8,000=960 and the increase in G needed to close it is 960/5 = 192, where the multiplier is 1/(1-MPC)=1/(1-0.8)=5.

(b) Find the values of the government budget balance (BB) before and after the fiscal stimulus (2 marks).

Ans: The BB before the fiscal stimulus action was 0 (G=T=250). As a result of the increase in G, other things equal, BB is negative 250-(250+192) = - 192. The budget is in deficit.

(iii) Monetary Policies: Now consider monetary policies only. Suppose the BOC wants to drop the *i* to 0.05 (or 5%), with G still at $250.

(a) Solve for the ΔI compared to when *i* = 0.1. How much would you expect Y to rise by? (2 marks)

Ans: The investment function at the new interest rate i=5% is I=1,200-420*0.05=1,200-21=1,179. Therefore, the change in investment as a result of the decrease in i, is ΔI = 1,179-1,158=21. (faster answer: ΔI=420(0.1-0.05)=21).The expected change in income ΔY = ΔI*multiplier=21*5=105.

(b) Find the new equilibrium Y and money supply (2 marks).

Ans: The new equilibrium Y=7,040+105=7,145.
The new money supply is: 760-1,900*0.05=665.

(iv) Contrast fiscal and monetary policies: Briefly discuss one problem associated with fiscal policies and one problem associated with monetary policies, respectively (2 marks).

Ans: The expansionary fiscal policy described at (ii), with higher government spending at the initial level of taxes, results in a budget deficit. Higher aggregate demand (higher output) is accompanied by higher prices and tight monetary policy, consistent with the central banks' inflation target, is needed. Higher interest rates resulting from a decrease in money supply will cause private expenditures (C, I, NX) to decrease (the crowding out effect).
Monetary policies are limited because the lowest effective ONR is 0.25%, which Canada has reached in the past couple of years. Once this has been reached, interest rates can no longer be cut to affect Y.

Question 6: Real Exchange Rate and Purchasing Power Parity (15 marks)

Suppose that in 2002, the price levels in the United States and Australia were 100. By 2006, the price level in the United States has increased to 190, while the price level in Australia has risen to 150. Suppose the nominal exchange rate between two countries in 2002 was \$1USD = \$1.6AUD. Round your answers to 2 decimal places, if applicable.

(i) Find the inflation rate of the United States and the inflation rate of Australia, respectively (2 marks).
Ans: The inflation rate of the US is (190-100)/100 = 90%
The inflation rate of Australia is (150-100)/100 = 50%
The US experienced higher inflation as their prices increased by 90%, while the Australian prices increased by 50%.

(ii) Find the 2002 real exchange rate, from the perspective of Australia (1 mark).
Ans: The 2002 real exchange rate = $er*P_{USD}/P_{AUD}$=1.6*100/100= 1.6

(iii) What must be the new nominal exchange rate in 2006 **if** the real exchange rate had remained constant at the 2002 level (from the perspective of Australia)? (2 marks)
Ans: The 2006 real exchange rate is fixed at 1.6 . In order to get the nominal exchange rate, we use the formula above and solve for er.
1.6 = er*190/150 and er=1.6*150/190, so er=1.26

(iv) Suppose Australia had a fixed exchange rate system against the US dollar. The initial nominal exchange rate in 2002 was fixed. Did Australia experience a real exchange rate appreciation or depreciation? Explain (2 marks).
Ans: The 2006 real exchange rate is $er*P_{USD}/P_{AUD}$=1.6*190/150= 2.03.
Since P_{USD}/P_{AUD}=190/150 >1, Australia's real exchange rate with the US has depreciated (the Australian dollar experienced a real reduction in its value).

(v) Explain why you would expect Australia's net exports to rise or fall as a result of (iv) (2 marks).
Ans: Australia's net exports would rise. Intuitively, a real reduction in the value of the Australian dollar makes Australian goods less expensive for foreigners and imports more expensive for domestic consumers, thus stimulating more exports and bringing in less imports, leading to an increase in NX.

(vi) Explain why the Australian dollar is overvalued or undervalued (2 marks).
Ans: The Australian dollar is undervalued, because it should have taken 1.26 AUD to buy one USD, not 1.6 AUD. The value of the AUD is too low.

(vii) Consider your answer in (ii): Explain whether the Purchasing Power Parity holds or does not hold (2 marks).
Ans: Based on the data from 2002, the PPP does not hold because 100 USD can buy 160 AUD and this pays for 60% (er=1.6) more goods and services in Australia than in the US. E needs to be = 1 for PPP to hold.

(viii) Briefly discuss two reasons why the Purchasing Power Parity may not hold when tested with data (2 marks).
Ans: In part it is because of tariffs, non-tariff barriers, transportation costs, measurement problems. Also, importers and exporters cannot respond quickly to price differences between countries, by engaging in arbitrage (buying at the low price and selling at a high price). Traders may not be aware of the price differences between countries. Their prices may be set though long-term contracts and the traders must wait until those contractual arrangements expire before they change their prices.

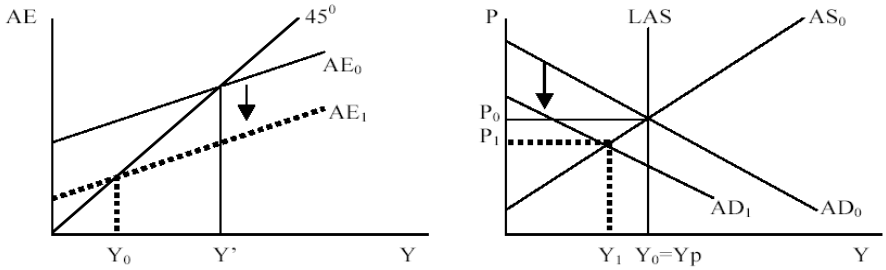
Part IV: Answer the following question. ANSWER ALL PARTS (Total = 40 marks).

In 2008, the inflated housing markets in the U.S. and Europe created a liquidity crisis for the banking industry. This credit crunch has driven the world into a global recession. In this multiple-part question, we want to explore what has been happening in Canada since then. Assume that Y=Yp in 2008, immediately before this banking crisis. Notice that Yp is the horizontal intercept of the vertical LAS curve.

> ***Article 1: National small business confidence in 'low gear'***
> Ted Mallett, Financial Post, October 8th 2010
>
> Confidence among Canada's small- and mid-sized business owners fell in September, continuing a declining trend since May. Canadian Federation of Independent Business (CFIB)'s Business Barometer® Index fell more than a full point to 63.6, from August's mediocre level of 64.9. According to past results, index levels normally range between 65 and 75 when the economy is growing.

(ii) Article 1: Explain and illustrate using the Y=AE and the AD/AS/LAS diagrams how a drop in business confidence would affect the economy in the short run. Also describe the effects on unemployment and inflation rates (5 marks).

Ans: This would result in a fall in investment. In the SR, the consequence of it will be a reduction in AD and output, and increase in unemployment (a recessionary output gap).



> ***Article 2: Canada's Finance Minister Highlights Tax Breaks for Canadians***
> Press Release, Ottawa, October 18, 2010
>
> The Minister of Finance today highlighted the tax measures that the Government of Canada has implemented to reduce the tax burden on Canadians. "Tax reductions are an essential part of our Government's effort to stimulate the economy and create or maintain jobs," he said. "The tax reductions taken by the Government since 2006, including those in Canada's Economic Action Plan, will reduce taxes on individuals, families and businesses by an estimated $220 billion over 2008–09 and the following five fiscal years".

(ii) Article 2: Explain which measurement, government budget balance (BB) or government structural budget balance (SBB), will have a larger absolute value. Which of these two types of deficits is more troublesome? Explain (5 marks).

Ans: BB will have a larger deficit or absolute value because BB = tY – G, and Y has dropped. SBB will have a smaller deficit or absolute value because SBB = tYp – G and Yp has not changed significantly. BB deficits not a big concern because Y will eventually recover, but SBB deficits are more troublesome because they reflect reckless G and t policies.

> ***Article 3: Latest release from the Labour Force Survey***
> Friday, October 8, 2010
> There was little change in employment in September, as the part-time employment decline of 44,000 was mostly offset by an increase of 37,000 in full time. The unemployment rate edged down 0.1 percentage points to 8.0%, as fewer people, particularly youth, participated in the labour market.
>
> ***Article 4: Latest release from the Consumer Price Index***
> Friday, October 22, 2010
> Consumer prices rose 1.9% in the 12 months to September, following a 1.7% increase in August.
>
> ***Article 5: Consumer confidence index rises***
> CBC News, Last Updated: Thursday, October 28, 2010 | 1:04 PM ET
> Consumer confidence rose in October, according to data released Thursday by the Conference Board of Canada. However, on the questions about major purchases, only 41% of respondents said it's a good time to put money into high-priced items, while 47.9% said it was a bad time. "The balance of opinion on this question has completely reversed since the beginning of the year, when positive responses outweighed negative ones by a significant margin," the Board said. "This trend could indicate weaker consumer spending going forward."

(iii) Articles 3+4+5: Are we well on the path of recover to Y=Yp? Illustrate this on your graph in (i) and explain (5 marks).

Ans: The economy is improving but we have not passed the critical point yet. Unemployment is falling but it is mostly because of fewer people are looking for work (youth going back to school). However, the increase in full time jobs is a good sign. Consumer prices increased, which implies a revival of the demand. However, consumers do not feel confident enough to commit into buying big-ticket items.

AD shifts right, but not back to the original AD=AS=LAS intersection before the crisis.

Article 6: Bank of Canada maintains overnight rate target at 1 per cent
http://www.bankofcanada.ca, October 19th 2010

The Bank of Canada today announced that it is maintaining its target for the overnight rate at 1 per cent. Inflation in Canada has been slightly below the Bank's July projection. The recent moderation in core inflation is consistent with the persistence of significant excess supply and a deceleration in the growth of unit labour costs. The Bank judges that the output gap is slightly larger and that the economy will return to full capacity by the end of 2012 rather than the beginning of that year, as had been anticipated in July. The inflation outlook has been revised down and both total CPI and core inflation are now expected to converge to 2 per cent by the end of 2012, as **"excess supply"** in the economy is gradually absorbed and inflation expectations remain well-anchored.

(iv) Article 6: What does "excess supply" mean? (2 marks). Suppose the growth rate in actual Y is 2% lower than the growth rate in Yp, find the change in the unemployment rate (3 marks).

Ans: Operating in an excess supply environment means that the economy is in a situation of a recessionary gap therefore there is unused capacity (not all available resources are employed). Therefore, the economy produces below the "full-employment or potential" output level.

From Okun's law, $\Delta u = -0.5\ (\%\Delta Y - \%\Delta Yp)$, so $\Delta u = -0.5(-2)$, so u rises by 1 (or 100 basis points) or $\Delta u = 1$.

Article 7: Inflation rate rises to 1.9 per cent in September
CTV.ca News Staff, Date: Fri. Oct. 22 2010 7:52 AM ET

Canada's annual inflation rate rose two-tenths of a point to 1.9 per cent last month, driven largely by the cost of energy and new cars. Statistics Canada said much of the gain came from energy prices, which were 5.6 per cent higher than a year earlier. Gasoline was 3.1 per cent more expensive, and electricity was up 7.7 per cent from a year earlier.

(v) Article 7: If the Bank of Canada is concerned that the inflation rate may rise above 1.9%, should it raise or cut the target overnight interest rate (ONR)? Explain how this would affect GDP (3 marks). Suppose the target ONR is 1%. What are the limits of the band within which this target ONR must be found? (2 marks)

Ans: Raise ONR, I, C and NX decrease and Y decreases → The band is 50 basis points wide, 25 basis points on each side of the ONR: 0.75% (the deposit rate) and 1.25% the Bank Rate.

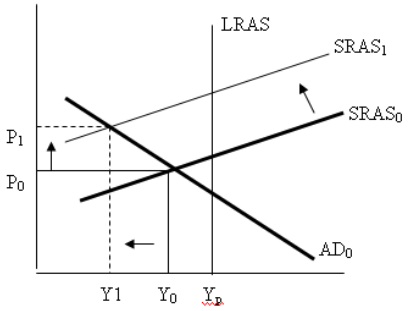
Article 8: Tentative public sector wage offer
http://www.cfib-fcei.ca/english/advocacy/canada/26-labour_policy/2143-open_letter_re_tentative_public_sector_wage_offer.html, Toronto, October 5, 2010

In a letter addressed to Prime Minister Stephen Harper and Ministers Stockwell Day and Jim Flaherty; the Canadian Federation of Independent Business (CFIB) is calling on the federal government to reconsider their tentative agreement with some major federal public service unions to increase wages by 5.3 per cent over the next three years. "We are stunned to learn of this tentative deal which is completely contradictory to the messages the federal government has been giving - warning Canadians that we are in an era of modest growth and that we all need to tighten our belts," stated CFIB's president, Catherine Swift.

(vi) Article 8: Why do you think that CFIB would like the salary increase to be lower? Using an AD/AS/LAS diagram (with Y=Yp), illustrate how a general increase in labor cost would affect the economy. To conclude whether this 5.3% is too high or too low, what should you compare it with? (5 marks)

Ans: CFIB probably thinks that the agreement with the public sector unions could set the stage for a similar salary increase in the private sector, which under the current conditions of low consumer demand may hurt the independent business (small and medium sized business)

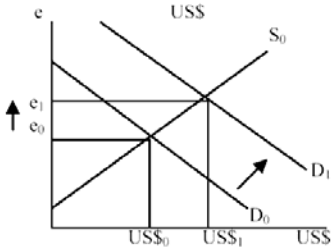
A general increase in labor cost in the private sector would shift SRAS to the left forcing the economy to equilibrate at lower output and higher prices (stagflation). The salary increase should be compared to the cost of living. A 5.3% increase over the next three years corresponds to an annual average of 1.73%, which sounds reasonable.



Article 9: Canada's Trade Deficit Widens in July
Published: 9/14/2010 3:09:02 PM By: TradingEconomics.com, AFP
Canada's trade deficit rose to C$2.7 billion (US$2.6 billion)… Exports to the United States, which account for three-fourths of Canadian exports, fell 2.2%.

Article 10: Loonie not so high-flying: economist
CBC News, Last Updated: Tuesday, October 26, 2010 | 9:25 PM ET
The Canadian dollar touched parity with the U.S. currency almost two weeks ago and has hovered near that level since then. The apparent appreciation of the Canadian dollar has, in fact, been a story of a depreciating U.S. dollar. "Currency traders are looking at the Canadian economy — and it's doing OK — but we are very connected to the U.S. economy, and they're seeing the U.S. economy weakening, which implies that the Canadian economy is going to be weakening," Hirsch of *ATB Financial* said. "The Bank of Canada has not signalled that it is going to get into this currency war," Hirsch said. "It is not going to actively engage in [trying to depreciate] the Canadian dollar", and he said.

(vii) Articles 9+10: What would be the effect on the Canadian economy if the BOC does not engage in depreciating the C$? (2 marks) If it wants the Canadian dollar to depreciate, use a graph to show how it would be done (3 marks).
Ans: The value of the dollar is quite high, which hurts our exports. To reduce the value of the dollar, the BOC could intervene in the foreign exchange market and buy foreign exchange (American dollars) thereby raising the value of the American dollar and lower the value of the Canadian dollar. This would imply an increase in the Money Supply unless the BOC used sterilized funds.



Article 11: Canadian Dollar Slumps After Govt Rejects BHP-Potash Bid
The Wall Street Journal, November 3, 2010

The U.S. dollar rose sharply against the Canadian unit immediately after the announcement from Industry Minister Tony Clement, rising to C$1.0123 from C$1.0049 just before the announcement. Clement said the offer did not meet the test of being a net benefit to Canada under legislation regulating foreign takeovers of Canadian companies. He also said the country remains open for foreign investment as long as transactions can meet that threshold.

(viii) Article 11: The exchange rates reported here show what Canadians would pay to buy one American dollar. Transform these two exchange rates into the amount Americans would have to pay in order to buy Canadian dollars (2 marks). Why did the Canadian dollar fall when the government rejected the takeover of the Potash company in Saskatchewan? (3 marks)
Ans: Americans used to pay 99.5 American cents to buy one Canadian dollar and now they will have to pay only 98.8 cents.

Foreign investors that would consider bringing capital to be invested in Canada would look elsewhere for investment projects, if they thought that their capital is not "welcome" here. The implication would be a drop in the supply of foreign currency as well as a drop in the demand for Canadian dollars. The combined effect would result into a drop in the value of our currency.

The End