Concordia University
Department of Economics

ECON 203 – INTRODUCTION TO MACROECONOMICS

Winter 2016

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. This exam consists of four parts:
   (i) Part I: 15 multiple-choice questions (30 marks);
   (ii) Part II: Conceptual questions, transformed into 15 multiple-choice questions, (30 marks);
   (iii) Part III: Five algebraic questions, transformed into 25 multiple-choice questions, (50 marks), and
   (iv) Part IV: Multipart policy questions, answer all parts (40 marks).

3. Write your name, student ID and answers to the multiple-choice questions (parts I, II and III) on the computer scan-sheet with a **PENCIL**. For Part IV, write all your answers on this exam with pen or pencil. Do not use additional booklets.

4. You are allowed to use a non-programmable calculator and a paper dictionary.

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

Grades:

Parts I+II+III: ______________________________________

Part IV: ______________________________________

Total: ______________________________________

Part I: Multiple Choice Questions (Total=30 marks).

1. Which of the following is (are) CORRECT?
   A) A discouraged worker is no longer in the population.
   B) A lump-sum tax has no effect on the goods market multiplier.
   C) The unemployment rate associated with Yp is the frictional unemployment rate.
   D) Consumer Price Index tends to underestimate the true rise in the cost of living.
   E) All of the answers are correct.

2. In the economy of Pluto, everyone is above the age of 15. In Pluto, 750 people have jobs, 50 people are not working but are searching for work, and 100 people do not work or seek work. The unemployment rate is _____ and working age population is _______.
   A) 5.55%; 900
   B) 6.25%; 900
   C) 6.67%; 800
   D) 11.11%; 800
   E) 12.5%; 800

3. Which of the following is (are) CORRECT?
   A) GDP excludes how much Canadians spend on imported goods and services.
   B) GDP includes how much foreign tourists spend in Canada.
   C) Prices do not affect the values of real GDP.
   D) In the base year, real and nominal GDP values are identical.
   E) All of the answers are correct.

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

5. Consider this quote from Person A: "I am worried that Donald Trump will become the next President of the United States. I have been planning to purchase a new house in the US but I will wait until the election results are in. In the meantime, I will cut back on my spending by saving a bigger portion of my income in case I need to find a job outside of the US." This statement can be captured by the AE model by having a(n) ______ shift in the AE curve and a(n) ___ in the slope of the AE curve. For simplicity, assume that lump sum tax is equal to zero.
   A) Downward; increase (steeper)
   B) Downward; decrease (flatter)
   C) Upward; increase (steeper)
   D) Upward; decrease (flatter)
   E) None of the answers is correct.

6. Which of the following best describe(s) automatic built-in stabilizers in Canada?
   A) Income tax revenues automatically fall as GDP falls.
   B) Imports automatically fall as GDP falls.
   C) The size of the crowding-out effect varies positively with the level of GDP.
   D) Only A and B are correct.
   E) All of the answers are correct.

7. Suppose the government raises its revenue by a net tax of 25 percent on income, $t = 0.25$, the marginal propensity to consume out of disposable income is 0.8, and the government has an outstanding public debt of 1,500. The autonomous expenditure is ($C_0 + I_0$) is 600 and government expenditure is 400.What is the debt to GDP ratio?
A) 15%.
B) 30%.
C) 50%.
D) 60%.
E) 67.5%.

8. Assume that the tax rate *t* is 0.4, Yp is 5,000 and G is 1,600. Which of the following statements is (are) CORRECT?
A) The structural budget balance is 400.
B) With negative GDP gap of 20%, the budget balance is -200.
C) With positive GDP gap, the structural budget balance will be smaller than 400.
D) There will be zero budget balance when Y is 1,800.
E) All of the answers are correct.

9. Suppose consumption (C) is $20,000 when income is $15,000, and the marginal propensity to save (MPS) is 0.20. An increase in income causes C to rise to $22,000. What is the new income?
A) $18,500
B) $22,000
C) $25,500
D) $30,000
E) None of the answers is correct.

10. An equilibrium income in an open economy with government occurs when:
A) Current account + capital account = 0 under a flexible exchange rate.
B) Private saving equals investment (Sp=I).
C) Private saving equals investment, and tax revenue equals government spending (Sp=I and T=G).
D) Private savings minus investment plus tax revenue minus government spending equal zero [(Sp-I)+(T-G)=0].
E) None of the answers is correct.

11. Monetary base or "High-powered" money may best be described as:
A) Always larger than M2.
B) The reserves of the Bank of Canada.
C) Cash held by the public and reserves of the commercial banks.
D) Loans issued by commercial banks.
E) All of the answers are correct.

12. Suppose that an excess supply of money exists in the economy. As the money market moves toward an equilibrium interest rate, we can expect
A) Bond prices to rise and the interest rate to rise.
B) Bond prices to rise and the interest rate to fall.
C) Bond prices to fall and the interest rate to fall.
D) Bond prices to fall and the interest rate to rise.
E) Bond prices to remain constant and the interest rate to rise.

13. In the presence of a short run aggregate supply shock, _____ policies can be used to bring the economy back to its initial price and output combination.
A) Only fiscal
B) Only monetary
C) Either fiscal or monetary
D) Both fiscal and monetary
E) Neither fiscal nor monetary

14. Consider an economy with a production function $Y = A*N^{2/3}*K^{1/3}$, where Y is real GDP, A is technology, N is labour supply and K is capital supply. Assume that growth rate of Y is 4%. If both K and N grow at 3%, the growth of total factor productivity will be:
A) 1%.
B) 2%.
C) 3%.
D) 4%.
E) 5%.

15. Suppose the purchasing power parity holds. The consumer price index in the U.S. is 110 and the consumer price index in Canada is 125. If the nominal exchange rate of the Canadian dollar, from Canada's perspective, is currently equal to 1.5, we expect that there will be an excess demand for _____ and the nominal exchange rate will eventually _____.
A) Canadian dollar; fall
B) Canadian dollar; rise
C) US dollar ; fall
D) US dollar; rise
E) None of the answers is correct.

<u>Part II: Conceptual Questions (Total=30 marks).</u>

Questions 16–18 refer to the Canadian economy:

16. The current Canadian federal government is run by the Liberal party, and one of the plans of the party is to fully legalize the use of marijuana. If this happens, our GDP value will _____ and our _____ will shift to the right, causing a ____ in our inflation rate.
A) Rise; AD curve; rise
B) Rise; AS curve; rise
C) Rise; AD curve; fall
D) Fall; AS curve; fall
E) Fall; AS curve; rise

17. Continue with the previous question: In the absence of fiscal or monetary policy response, the Canadian economy will soon experience a shift in the ______ curve to the left because wages are going to _____.
A) Short run AS; fall
B) Short run AS; rise
C) AD; fall
D) AD; rise
E) LAS; fall

18. Suppose the Bank of Canada knows that if it does not intervene, the results from the previous question will arise. This violates the Bank's inflation target. As a result, the Bank has to _____ money supply and let the Canadian dollar _____. This monetary policy will _____ our potential GDP, Yp.
A) Decrease; depreciate; decrease
B) Decrease; appreciate; increase
C) Decrease; appreciate; not affect
D) Increase; depreciate; decrease
E) Increase; appreciate; not affect

Questions 19–21 refer to Canada and the global economy:

19. Recent economic news has revealed that economies in China, Brazil and other emerging economies seem to be slowing down. These economies are importers of Canada's natural resources. In the short run when both goods and input prices are fixed, our _______ curve will shift _____ and unplanned inventory will be _______.
A) AE; down; larger
B) AE; down; smaller
C) AE; up; larger
D) AE; up; smaller
E) Short run AS; up; larger

20. If we want this external shock coming from the emerging economies to have a small effect on the Canadian economy, the Canadian marginal propensity to save (MPS) should be ______, our marginal propensity to import should be _____ and our taxes should be _______.
A) High; high; lump-sum
B) High; high; a percentage of income
C) High; low; lump-sum
D) Low; high; a percentage of income
E) None of the answers is correct.

21. In the short run, the higher the MPS, the ___ is the AE curve. In the long run, the higher the MPS, the ____ is the growth rate in potential GDP because MPS affects the size of ______.
A) Steeper; higher; capital accumulation
B) Steeper; higher; the labour force
C) Flatter; lower; capital accumulation
D) Flatter; lower; the labour force
E) Flatter; higher; capital accumulation

Questions 22–24 refer to Balance of Payments:

22. Suppose the exchange rate is flexible and the current account (CA) = -$10 billion and the capital account (KA) is = $8 billion. To achieve balance of payments equilibrium, the currency of this country will _____ so that net capital inflow will ______.
A) Appreciate; fall
B) Appreciate; rise
C) Depreciate; fall
D) Depreciate; rise
E) Depreciate; stay constant

23. Suppose the exchange rate is fixed and the current account (CA) = -$10 billion and the capital account (KA) is = $8 billion. To achieve balance of payments equilibrium, the central bank of the country has to ______ its foreign exchange reserves and its currency (at the fixed nominal exchange rate) will be ______.
A) Sell; overvalued
B) Sell; undervalued
C) Buy; overvalued
D) Buy; undervalued
E) Buy; correctly valued

24. Which of the following is (are) CORRECT?
A) Under a flexible exchange rate, fiscal policies are very effective in changing GDP.
B) Under a fixed exchange rate, fiscal policies are less effective in changing GDP.
C) Under a flexible exchange rate, the nominal exchange rate acts as an automatic stabilizer for GDP.
D) Under a fixed exchange rate, if the central bank is depleting its foreign currency reserves, it is also increasing the money supply of its domestic currency.

E) All of the answers are correct.

Questions 25–27 refer to GDP, Aggregate Demand and Aggregate Expenditure:

25. Which of the following is measured in GDP?
A) The money you earn from selling your used textbooks to your friend.
B) The two-hour decline in the length of your work week from your part-time job at a supermarket.
C) The purchase of 100 existing shares of Petro-Canada common stocks.
D) The rent you pay on the apartment you rent from Concordia University residence.
E) The monthly allowance you receive from your parents who live in Canada.

26. Which of the following is (are) CORRECT?
A) The income approach to GDP measurement states that a high value for subsidies means a high value for GDP.
B) The higher is the value of capital consumption allowance or depreciation, the lower is the value of GDP.
C) If there are many Canadians who work abroad and earn high incomes, the more likely is Canada's GDP larger than Canada's GNP.
D) If a country has a problem with severe tax evasion, it is likely that this country's GDP is an underestimation of its total economic activities.
E) All of the answers are correct.

27. What is (are) the difference(s) between the aggregate expenditure (AE) and the aggregate demand (AD) curves?
A) The AD curve captures the effects of fiscal and monetary policies but the AE curve does not.
B) The AD curve captures the effects of the nominal exchange rate but the AE curve does not.
C) The AD curve captures changes in our savings habits but the AE curve does not.
D) The AD curve captures changes in the goods and input prices but the AE curve does not.
E) All of the answers are correct.

Questions 28–30 refer to Canada's aging population:

28. According to the AD/AS/LAS model, as more Canadians leave the labour force and retire, wages in Canada will _____ and our potential GDP will _______.
A) Fall; shift left
B) Fall; shift right
C) Rise; shift left
D) Rise; shift right
E) Rise; stay constant

29. Continue with the previous question: In the absence of fiscal policy changes, our structural budget balance will _____ and our long run inflation rate will ______.
A) Improve; fall
B) Improve; rise
C) Worsen; fall
D) Worsen; rise
E) Improve; stay constant

30. Continue with the previous question: According to the concept of constant returns to scale, as more Canadians retire, the capital stock in Canada has to __ if per-worker GDP were to remain constant. According to the concept of diminishing returns, as more Canadians retire, the marginal product of each remaining worker will _____.
A) Increase; increase
B) Increase; decrease
C) Decrease; increase
D) Decrease; decrease
E) Decrease; remain constant

Part III: Analytical Questions (Total=50 marks).

Questions 31–35 refer to the Taylor Rule:

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: $i = i_0 + 1.2(\pi - \pi^*) - 0.3(UR - UR_n)$, where the unemployment rate UR difference from its natural level substitutes for the output gap.

For this question, suppose the inflation target is $\pi^* = 2\%$, the natural rate of unemployment is $UR_n = 7.5\%$, and the equilibrium rate of interest that is compatible with these two is $i_0 = 8\%$. Also, suppose that the level of inflation π changes with the changes in interest rate according to the following formula: $\pi = \pi^* - \Delta i$.

Assume that we start with $\pi=\pi^*$ and $UR=UR_n$. The value of $i = 8\%$.

31. Suppose a drop in investment confidence leads to an increase in Unemployment Rate to 9.5%. Let us put aside inflation rates for now. According to Taylor rule, what interest rate should the Bank of Canada (BOC) now set?
A) 3.6%.
B) 4.2%.
C) 5.1%.
D) 6.5%.
E) 7.4%.

32. The central bank knows that the inflation rate will change. 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. What is the new interest rate that the BOC should set?
A) 4.82%.
B) 5.28%.
C) 5.95%.
D) 7.73%.
E) 7.84%.

33. Continue with the previous question: What is the new π value?
A) 1.88%.
B) 2.27%.
C) 2.88%.
D) 3.22%.
E) 3.67%.

34. Compare your new interest rate with $i_0 = 8\%$: The value of the Canadian dollar is likely to ____ and the capital account of Canada is likely to ____.
A) Rise; fall
B) Rise; remain constant
C) Fall; fall
D) Fall; rise
E) Fall; remain constant

35. Compare your new interest rate with $i_0 = 8\%$: In order for the interest to change, the BOC has to _____ bonds in the open market and ____ the monetary base.
A) Buy; increase
B) Buy; decrease
C) Sell; increase
D) Sell; decrease
E) Sell; keep constant

Questions 36–40 refer to Fiscal and Monetary Policies:

A simplified economy is specified as below, with all values in billions of US$.

Consumption expenditure: C = 290 + 0.8(Y-T)	(Net) Taxes: 0.2Y
Investment expenditure: I = 350	Exports: 170
Government expenditure: G = 510	Imports: 0.4Y

36. What is equilibrium Y?
A) $1,445.67.
B) $1,600.
C) $1,636.60.
D) $1,736.84.
E) $3,300.

37. The goods market multiplier is equal to ___.
A) 1.32
B) 1.67
C) 2.50
D) 2.78
E) 5.00

38. Suppose that potential Yp is equal to $2,447. What is the change in G that is required to close this output gap?
A) $145.27.
B) $169.40.
C) $538.00.
D) $758.58.
E) $1,001.33.

39. Continue with the previous question: Suppose the government can also choose to change taxes in order to close the output gap. In this case, the government should ____ taxes and the amount of tax changes will be _______ the amount of change in G you have found in the previous question.
A) Cut; larger than
B) Cut; equal to
C) Raise; larger than
D) Raise; equal to
E) Raise; smaller than

40. Instead of fiscal policies, the central bank of the country can use monetary policies to close the output gap. This central bank should ___ its target overnight interest rates by _______ bonds and letting its currency_____.
A) Increase; buying; depreciate
B) Increase; selling; appreciate
C) Increase; buying; depreciate
D) Decrease; buying; depreciate
E) Decrease; selling; appreciate

Questions 41–45 refer to Real Exchange Rates:

Suppose that in 2003, the price levels in the United States and Canada were 100. By 2007, the price level in the United States has increased to 160, while the price level in Canada has risen to 180. Suppose the nominal exchange rate between the two countries in 2003 was US$1 = C$1.4. The 2003 real exchange rate, from Canada's perspective, is 1.40. Round all numerical answers to three decimal places, if applicable.

41. What is the new nominal exchange rate in 2007 if the real exchange rate had remained constant at the 2003 level (from Canada's perspective)?
A) 0.804.
B) 0.889.
C) 1.125.
D) 1.575.
E) 2.520.

42. If Canada had fixed its nominal exchange rate against the US dollar at the 2003 level, Canada would have experienced a real exchange rate ____ because its real exchange rate would be ____.
A) Appreciation; 0.635.
B) Appreciation; 1.244.
C) Appreciation; 2.212.
D) Depreciation; 1.125.
E) Depreciation; 3.087.

43. Continue with the previous question: Because the Canadian dollar is ________, our Canadian exports are becoming _____ over the years. Canada has a(n) ______ gap.
A) Overvalued; cheaper; inflationary
B) Overvalued; more expensive; recessionary
C) Undervalued; cheaper; inflationary
D) Undervalued; more expensive; recessionary
E) Undervalued; more expensive; inflationary

44. Continue with the previous question: In order to defend the fixed nominal exchange rate, the Bank of Canada has to _______ US$ and _____ C$.
A) Buy; buy
B) Buy; sell
C) Sell; buy
D) Sell; sell
E) None of the answers is correct.

45. If Purchasing Power Parity holds, the correct (flexible) nominal exchange rate in 2007 should be equal to _______.
A) 0.804.
B) 0.889.
C) 1.125.
D) 1.575.
E) 2.520.

Questions 46–48 refer to the Inflation rate and the Interest rate:

Consider the year-to-year inflation rates in Atlantis for the following years. All the data have been measured at the end of each year.

Year	Inflation Rate	CPI	Nominal Wage	Real Wage
2010	---	100	$ 20	$20.00
2011		102	$ 20.75	
2012	?	103.836	$ 21.25	?

46. The inflation for the year 2012 is ___ and the real wage for 2012 is ______.
    A) 1.800%; $20.465
    B) 1.836%; $21.640
    C) 2.000%; $20.833
    D) 3.836%; $20.465
    E) 4.222%; $22.065

47. Consider the years 2010 and 2012: Given the nominal wages in 2010 and 2012, what must be the value of the CPI in 2012 so that the real wage in 2012 remains at $20?
    A) 102.41.
    B) 103.75.
    C) 106.25.
    D) 108.45.
    E) 110.00.

48. Suppose you borrowed $100 from a commercial bank in the beginning of 2012 and have to pay back $105 in the end of 2012. What is the real interest rate on your loan?
    A) 0.778%.
    B) 1.164%.
    C) 3.000%.
    D) 3.164%.
    E) 3.200%.

Questions 49–50 refer to the Labour Market:

Suppose the economy represented by the table below had a working-age population of 25,400 (in thousands) in 2017:

Year	Labour Force (in thousands)	Employment (in thousands)
2017	15,150	14,350

49. What is the participation rate in the economy in the year 2017?
    A) 56.50%.
    B) 59.65%.
    C) 62.67%.
    D) 76.10%.
    E) 84.72%.

50. Suppose in the year 2017 there is a mild recession. As a result, the recession discouraged some unemployed workers and they stop looking for work. The new participation rate becomes 58.85%. The new unemployment rate becomes ____.
    A) 3.99%
    B) 4.22%
    C) 4.67%
    D) 5.28%.

E) 6.11%.

Questions 51–53 refer to the Money Demand:

The demand for money is given by $M^d = 2{,}100 - 90i$, where M^d is the quantity of money demanded and i is the interest rate in percentage points. For example, if $i = 2\%$, leave $i = 2$. The supply of money is set at \$750. Suppose the fractional reserve ratio is equal to 25% and the currency drain ratio is 0.

51. What is the equilibrium interest rate?
A) 12%.
B) 15%.
C) 18%.
D) 22%.
E) 31.67%.

52. Suppose the central bank wants the interest rate to be 20% and hence it intervenes in the open market. The central bank should ____ bonds in the amount of ____.
A) Buy; \$100
B) Buy; \$112.5
C) Buy; \$262.5
D) Sell; \$100
E) Sell; \$112.5

53. Continue with the previous question: Now suppose the currency drain ratio is 25%. The central bank still wants the interest rate to be 20%. The central bank should ____ bonds in the amount of ____.
A) Buy; \$180
B) Buy; \$225
C) Buy; \$1,125
D) Sell; \$180
E) Sell; \$225

Questions 54–55 refer to Interest Parity:

Consider the situation where you can buy a Canadian asset that pays 8% after one year, or a US asset that pays 11% after one year. Both assets are equally safe, and it is certain that you would receive your invested money plus interest payments a year from now. The exchange rate between the C\$ and the US\$ is flexible, and the current $e = 1.8$, that is, it costs C\$1.8 to buy US\$1.

54. What is the expected future exchange rate?
A) 1.513.
B) 1.746.
C) 1.854.
D) 2.142.
E) 2.206.

55. Suppose you buy the US asset now. If the actual future exchange rate in one year turns out to be 1.872 instead, you would have _____ due to this forecasting error because the actual payoff of the US asset is _____.
A) Lost; 2.36%
B) Lost; 3.78%
C) Lost; 7.22%
D) Gained; 12.13%
E) Gained; 15%

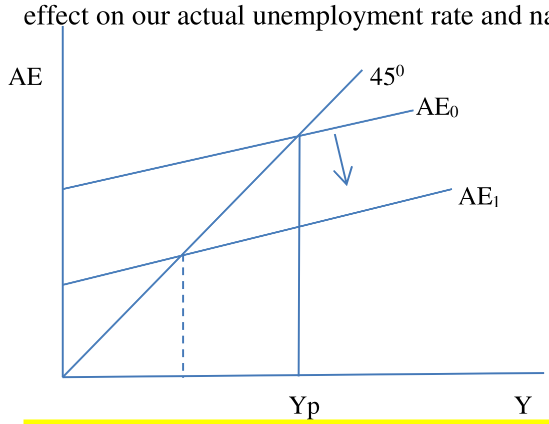
Part IV: Answer the following question. ANSWER ALL PARTS (Total = 40 marks).

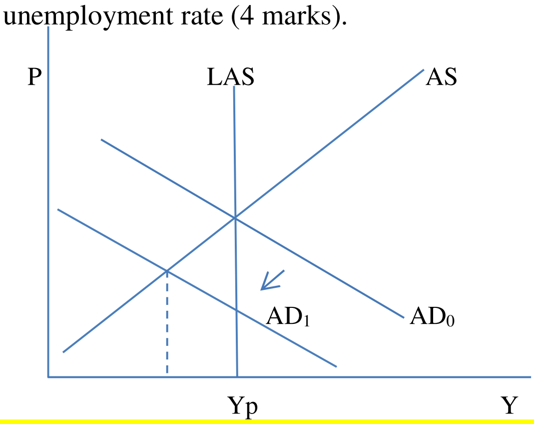
Since January 2016, the value of the global stock markets has been falling significantly. For this multi-part question, we will examine how this global shock will affect the Canadian economy and what we can do in response to this shock.

> ***Article 1: Stock market's terrible start to 2016 just got worse***
> Matt Egan, February 10, 2016, http://money.cnn.com/2016/02/08/investing/stocks-dow-jones-super-bowl-hangover/
>
> The stock market's terrible start to 2016 got even worse on Monday, with the Dow shedding 178 points and the S&P 500 losing 1.4%. The Nasdaq tumbled 1.8% and got closer to sinking into its first bear market since the one sparked by the financial crisis. The index is now down 14.5% this year.
>
> "It's just a stampede of selling," said Art Hogan, chief market strategist at Wunderlich Securities.
>
> The markets are also expressing alarm about European banks. Stock markets in Europe continue to slump badly, with Germany's DAX and France's CAC 40 dropping over 3% apiece.

(i) Article 1:

(a) Suppose this plunge in the global stock markets cut into the consumer confidence of Canadian consumers. Use the Y=AE and AD/AS/LAS models to demonstrate how the Canadian economy will be affect. Also explain the effect on our actual unemployment rate and natural unemployment rate (4 marks).





Ans: Consumer confidence fall, so AE falls, eventually AD falls, creating an economic recession, higher actual unemployment and constant natural unemployment rate.

(b) You are an economist working for the Canadian government and you would like to see the effect on the Canadian GDP to be minimal. Which of the following would you wish to observe?

- A small or large value for our goods market multiplier? **Explain** (2 marks).

Ans: Smaller, so that for every $\Delta CC=1$, if the multiplier is small, the drop in Y will be small.

- A money demand that is sensitive or insensitive to income changes? **Explain** (2 marks).

Ans: Sensitive, so that for every $\Delta Y= -1$, money demand will fall, and hence interest rates will fall, which will in turn encourage more investment spending, depreciate this currency and encourage net exports and also increase consumption (if consumption depends on interest rates).

- A tax system that is set as a percentage of income $T=tY$ or a lump-sum tax system? **Explain** (2 marks).

Ans: Percentage tax, so that for every $\Delta Y= -1$, people are taxed less, and therefore the fall in total consumption will be smaller than if taxes were collected as a constant lump-sum.

Article 2: Crippled Canadian dollar in free-fall, plunges below 69¢
MICHAEL BABAD, The Globe and Mail, Jan. 15, 2016

The loonie is in free-fall, sinking below 69 cents (U.S.) today (or US$1=C$1.4493) . Watch out if the Bank of Canada cuts its benchmark interest rate again next week. It sat below the 69-cent mark at the close, having closed out yesterday at 69.6 cents (or US$1=C$1.4368).

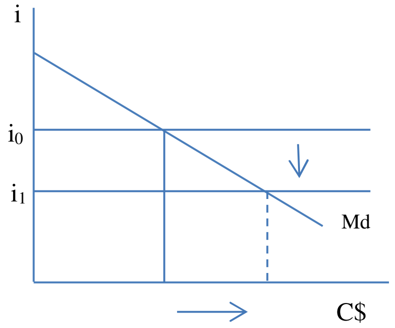
The loonie was again pressured by falling oil prices […] and the mounting expectations of a rate cut next week by Bank of Canada Governor Stephen Poloz.

"If they do cut, we could be well through $1.45 next week," said Royal Bank of Canada currency strategist Adam Cole. This would mean the loonie tumbling well below 69 cents.

"Conversely, if they don't, I don't see much of an [economic] recovery."

(ii) Article 2:

(a) Explain in words why the financial markets expected the Bank of Canada (BOC) to cut interest rates. Use the money demand/money supply diagram to demonstrate how this can be accomplished. Assume that the money supply is horizontal. Also explain how bond prices will be affected (4 marks).



Ans: The oil sector (such as in Alberta) is facing very low prices, and hence it is recessionary. The financial markets expect the BOC to cut the target overnight interest rate in order to stimulate the economy. To do so, the BOC can inject money into the financial market by buying bonds and assets of the banks and in return pump the banks with cash. This will push down interests and push up bond prices.

(b) Continue with part (a): Define SPRA and SRA. **Explain briefly** which tool the BOC is more likely to use if the new interest rate is facing pressure to go up (2 marks).
Ans: To keep this ONR from rising, the BOC may have to intervene in the overnight money market to keep *i* from rising. The BOC can conduct SPRA, special purchase and resale agreements, by buying assets from commercial banks for one night, inject them with money, and then sell them back the assets the following day. SRA stands for sale and repurchase agreements, which corresponds to the BOC selling bonds to banks and buying them back the next day. This is equivalent to decreasing money supply and raising interest rates.

(c) Write down the equation for the money market multiplier and explain which component(s) of the multiplier can the BOC directly control (2 marks).
Ans: The money multiplier is (1+cr)/(rr+cr), where cr is the currency drain ratio and the rr is the reserve ratio. The BOC cannot directly control either of these two variables.

(d) Explain in words why a cut in the interest rate is likely to lead to a further depreciation of the Canadian dollar (2 marks).
Ans: Interest rates offered by Canadian assets are now lower than the interest rates offered by US assets, which will lead to a higher demand for US assets by Canadians. This increases demand for US$ in order to buy US assets. This will lead to a higher value for the US$ and relatively a lower value for the C$.

(e) Explain how the weaker Canadian dollar will affect Canada's current account and capital account (2 marks).
Ans: With a weaker C$, our exports become cheaper and imports become more expensive, hence our current account improves ($\Delta CA>0$). As more Canadians buy US assets, we have more capital outflow, and hence our capital account deteriorates or worsens ($\Delta KA<0$).

Article 3: Canada's economy could sink to $90B deficit, report says
The Canadian Press, Feb 10 2016

The country's dampened economic prospects could put the Liberal government on pace for $90 billion in deficits over its four-year mandate, a new report said Wednesday.

Research by the National Bank of Canada predicts the public books will sink deeper into the red due to the combination of a hobbled (weakened) economy and Liberal promises of billions in fiscal stimulus. The Liberals' first budget is expected late next month.

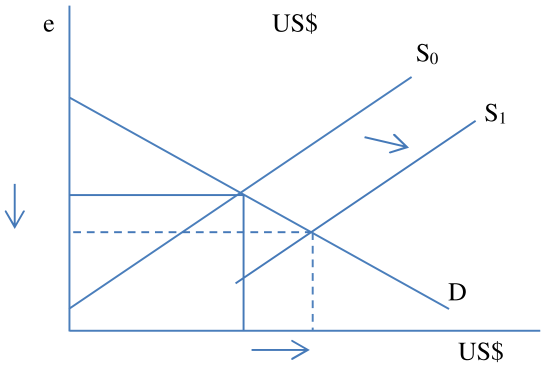
"Repeated downgrades to the national growth outlook have . . . dealt a heavy blow to the federal budget balance," wrote Warren Lovely, the bank's managing director of public sector research.

(iii) Article 3:

(a) Write down the equations for structural budget balance (SBB) and budget balance (BB). Which of these two equations is Article 3 referring to? Explain (2 marks).
Ans: BB=t*Y- G, SBB=t*Yp – G. Given that this is a short run situation for only four years, we expect BB to experience negative change such that ΔBB<0.

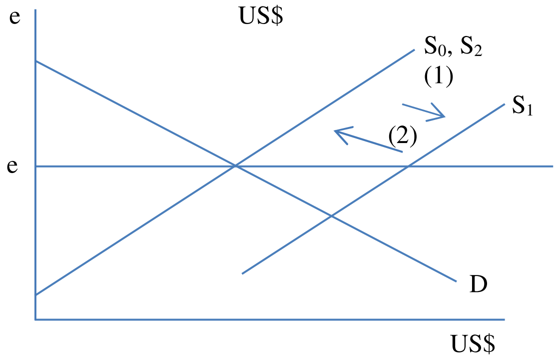
(b) Assume that money demand depends on income and we have a **flexible** exchange rate:
- Explain how the fiscal stimulus will work through the Canadian economy (2 marks).
Ans: The increase in G will lead to higher Y via the goods market multiplier, which will increase demand for money as people hold more cash when they get richer. The higher money demand will lead to higher interest rates and investment expenditure will fall. This is the so-called crowding-out effects arising from increase in G. Therefore, the rise in Y will not be a lot due to the crowding-out effect.

- Use the foreign exchange diagram to show the effects on the nominal exchange rate (from Canada's perspective) (2 marks). Is it mandatory for the BOC to intervene? Explain (2 marks).



Ans: As our interest rates rise due to higher money demand, our financial assets offer a higher rate of return compared to foreign (US) assets. With ic > ius, this will increase the Americans' demand for C$ to buy Cdn assets. Supply of US$ increases, causing an appreciation in the C$.

(c) Same fiscal stimulus, money demand depends on income but we have a **fixed** exchange rate:
- Use the foreign exchange diagram to show the effects on the nominal exchange rate (from Canada's perspective). Is it mandatory for the BOC to intervene? Explain and demonstrate in the diagram (4 marks).



Ans: With ic > ius, this will increase the supply of US$ to buy C$ and Cdn assets. The supply of US$ increases and causes appreciation pressure on the C$. The BOC has to supply the amount of C$ demanded and buy in the amount of US$ supplied in order to keep the same fixed exchange rate.

Article 4: Scientists may have found cancer's 'Achilles heel'
CTVNews.ca Staff, March 5, 2016

An international team of researchers believes it has made an important discovery about the genetics of cancer tumours that they say could offer a new way to deliver customized cancer-killing therapies.

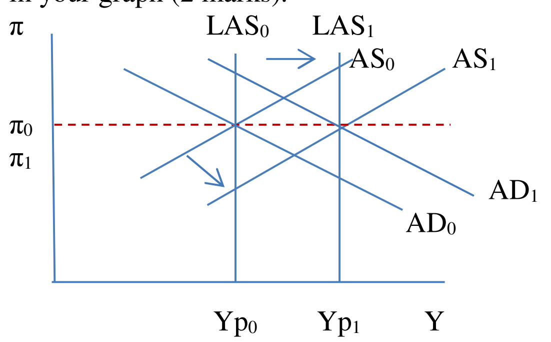
"It's incredibly exciting," Swanton said in a statement, "and although it's early days, it offers hope that we might just be able to turn the tide against advanced cancer – something we desperately want for our patients."

(iv) Article 4:

(a) Suppose this new found treatment can extend the life expectancy of Canadians as well as increase the retirement age of Canadian workers: Use the potential GDP equation %ΔYp to explain how this policy will affect %ΔYp and the components of %ΔYp (2 marks).
Ans: $\%\Delta Y_p = \%\Delta A + \%\Delta N + \%\Delta K$, and the article says N is rising.

(b) Explain the concept of constant returns to scale. According to this concept, what needs to happen in order for our per-capita GDP to remain constant? Explain (2 marks).
Ans: For per-capita GDP to remain constant, K and N have to rise by the same scale (via the concept of constant returns to scale). The government needs to increase K by the same proportion as N. The government can encourage current savings in order to increase future capital accumulation.

(c) Use the AD/AS/LAS diagram to demonstrate the effects on the Canadian economy. If the BOC wants to maintain the same price level (or same inflation rate), what does it have to do? Explain in words and show this in your graph (2 marks).



Ans: After the short run and long run AS curves shift to the right due to a larger labour force, on impact, the price level or inflation rate will fall. This violates the BOC's goal of maintain a constant inflation rate of around 2%. In order for the price level or inflation rate to rise, the BOC should encourage AD by cutting interest rates and increasing money supply. This will bring the economy back to the same inflation rate at the higher Yp.

The End… Have a Great Summer!