Concordia University
Department of Economics

ECON 203 - INTRODUCTION TO MACROECONOMICS
Fall 2016

COMMON FINAL EXAMINATION - VERSION 1

FIRST NAME: _____ **LAST NAME:**_____

STUDENT NUMBER: _____

Please, read all instructions carefully:

1. The exam consists of two parts:
   (i) Part I: 50 multiple-choice questions (100 marks);
   (ii) Part II: Choose 4 out of 5 long questions (100 marks).
2. Write your name, student ID and answers for the multiple-choice questions on the computer scan-sheet with a **pencil**. Please, also write the **version** of the exam on the computer scan-sheet. For Part II, write all your answers on this exam. Do not use additional booklets.
3. You are allowed to use a non-programmable calculator and a paper dictionary, provided that they are approved by the invigilator(s). You may use either pen or pencil to provide your answers for Part II.
4. You are not allowed to tear any pages out of this exam.

Grades:

Part I: _____

Part II:

Problem #1: _____

Problem #2: _____

Problem #3: _____

Problem #4: _____

Problem #5: _____

Total: _____

Part I: Multiple Choice Questions. Write your answers on the computer sheet in PENCIL.(Total=100 marks)

1. Which of the following is CORRECT?

   (a) GDP includes all market values of goods and services produced by Canadians working outside of Canada.

   (b) Since GDP measures the value of currently produced goods, second-hand transactions are included in GDP if the re-sale takes place within the current time period.

   (c) Higher prices will always lead to higher real GDP values.

   (d) **In the base year, real and nominal GDP values are identical.**

2. Suppose our current nominal wage is $20 per hour, and the current CPI is 115. Our labour unions are currently negotiating with the firms for a new nominal wage for next year. Our unions want us to be able to afford the same goods and services that we typically buy. If we agree to a new nominal wage of $24 per hour, this implies we believe the CPI for next year to be

   (a) **138.**

   (b) 154.

   (c) 165.

   (d) 180.

3. Changes in which of the following will affect the size of the multiplier?

   (a) **Our own marginal propensity to import.**

   (b) Our own consumer confidence index.

   (c) The GDP of our trade partners.

   (d) Our own consumer confidence index and the GDP of our trade partners.

4. Which of the following is an example of a fiscal policy?

   (a) Businesses begin to layoff employees and increase investment spending during an economic recession.

   (b) **The federal government increases infrastructure spending during an economic recession.**

   (c) The Bank of Canada decreases interest rates during an economic recession.

   (d) Businesses begin to lay off employees and cut back on spending during an economic recession.

5. Suppose the working-age population of a fictional economy falls into the following categories: 30 are retired; 45 are stay-at-home parents; 120 are employed full time; 40 are employed part time; 25 are unemployed but are actively looking for employment; 15 are unemployed and are not actively looking for employment. The official unemployment rate would be

   (a) 9.62%.

   (b) **13.51%.**

   (c) 14.55%.

   (d) 20.0%.

6. What is the difference between the aggregate expenditure (AE) and the aggregate demand (AD) curves?

(a) The AD curve shifts as prices change but the AE curve does not.

(b) The AD curve shifts as government expenditure changes 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.**

7. Based on the information presented below, the equation representing the consumption for the economy is ___ and the equilibrium level of GDP is _____. There is no government and this is a closed economy.

GDP (Y)	Consumption (C)	Investment (I)
0	60	100
100	120	100
200	180	100
300	240	100
400	300	100
500	360	100

(a) C=300; Y=400.

(b) C=60+0.4Y; \$400.

(c) C=40+0.75Y; \$450.

(d) **C=60+0.6Y; 400.**

8. Suppose a country's population grows by 2% while its nominal GDP grows by 6% and the GDP deflator increases from 125 to 127.5, then the standard of living as measured by per capita real GDP

(a) Improves by about 1%.

(b) **Improves by about 2%.**

(c) Is unchanged.

(d) Falls by about 3%.

9. If Canada is 3% below its targeted income of \$9,000 and the slope of the Aggregate Expenditure function is equal to 0.5, using the multiplier model, what changes in government expenditures are required to achieve this target?

(a) 250.

(b) 420.

(c) **135.**

(d) 150.

10. What does natural unemployment refer to?

(a) The relation between the probability of unemployment and a worker's changing level of experience.

(b) How often a worker is likely to be employed during her lifetime.

(c) Year-to-year fluctuations of unemployment around its cyclical rate.

(d) **The unemployment level associated with full employment level of output.**

11. Since 2004, the Central Bank has focused on a core price index that excludes food and energy prices to measure inflation because

(a) Food and energy are necessities, so consumers have no choice but to purchase these.

(b) Food and energy prices tend to remain stable in the short run, so are not relevant to the calculation of inflation.

(c) Including food and energy prices tends to overstate the true inflation rate by 0.5% to 1%.

(d) **Food and energy prices tend to fluctuate up and down for reasons that may not be related to the general causes of inflation.**

12. Suppose GDP is $1,660, consumption expenditure is $1,700, government expenditure is $30, and net exports are -$90. If the capital consumption allowance (CCA) for depreciation is $140 and net indirect taxes are $90 ($T_{IN}$), what is domestic income net of CCA and T_{IN} ?

(a) **$1,430.**

(b) $1,400.

(c) $1,600.

(d) $1,660.

13. 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 0.7, and the government has an outstanding public debt of 900. The autonomous expenditure is $(C_0 + I_0)$ is 600 and government expenditure is 400.What is the debt to GDP ratio?

(a) 15.25%.

(b) **42.75%.**

(c) 23.75%.

(d) 45%.

14. If the structural primary budget balance changes from -$50 billion to -$37 billion, then which of the following is TRUE?

(a) The interest payments on public debt have decreased.

(b) The central bank has conducted contractionary monetary policies.

(c) **The government has conducted contractionary fiscal policies.**

(d) The economy is currently in a temporary recession.

15. For a given fluctuation in autonomous expenditure, economies with a lower 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.**

16. Use the information in Table 1 to calculate the size of the labour force:

(a) 38.

(b) 659.

(c) **351.**

(d) 190.

Table 1:

Total Population	780
Population under 15 years of age or institutionalized	180
Working age population NOT in the labour force	249
Unemployed	23
Part-time workers looking for full-time jobs	15

17. Use the information in Table 1 to calculate the unemployment rate:

    (a) **6.55%.**
    (b) 5.62%.
    (c) 10.82%.
    (d) 8.3%.

18. Now suppose the part time workers become unemployed. Using Table 1 find the new unemployment rate.

    (a) 6.55%.
    (b) 5.62%.
    (c) **10.83%.**
    (d) 8.3%.

19. Bryan withdraws 10$ from his account to pay back his friend. He is using money as:

    (a) Means of transaction.
    (b) Store of value.
    (c) Unit of accounts.
    (d) **Standard of deferred payments.**

20. Which of the following is true:

    (a) In the fractional reserve banking system, the reserve ratio is determined by negotiation between commercial banks.
    (b) The reserve ratio could be greater than unity because banks might need extra reserves.
    (c) The Central bank only monitors commercial banks but not the near-banks.
    (d) **None of the above.**

21. Which of the following is NOT a condition that gives banks the ability to create money:

    (a) Public needs to have confidence in banks.
    (b) Public should be willing to borrow money from banks to finance their expenses.
    (c) **Banks should keep the total deposits as reserve to meet everyday withdrawals.**
    (d) Banks should be willing to give loans to the public.

22. Suppose the reserve ratio and the monetary base are 5% and 1500 respectively, and people do not hold any cash. The Central bank decides to increase the monetary base by 500. As a result money supply increases by:

(a) 30,000.

(b) 20,000.

(c) 40,000.

(d) **10,000.**

23. Which of the following is least accurate regarding the financial panic?

(a) There exists a loss of confidence in banks in society.

(b) **It happens when central banks sets a relatively high reserve ratio.**

(c) During the panic bank depositors attempt to withdraw their deposits.

(d) During the panic banks may require government bailouts.

24. Suppose there exists an excess demand in the money market. As the money market moves towards the equilibrium, we expect:

(a) Bond prices to rise and interest rates to rise.

(b) **Bond prices to fall and interest rates to rise.**

(c) Bond prices to rise and interest rates to fall.

(d) Bond prices to fall and interest rates to fall.

25. Consider a bond with 10% coupon rate and 2000$ as face value. The bond expires in a year and it is currently being traded at 2100$. The interest rate in the market is:

(a) **4.76%.**

(b) 10%.

(c) 6%.

(d) 14%.

26. Which of the following is NOT accurate regarding the transmission mechanism:

(a) A fall in interest rates reduces the cost of financing businesses.

(b) A rise in interest rates reduces consumption through the wealth effect.

(c) **A fall in interest rates creates appreciation in domestic currency.**

(d) A rise in interest rates makes imports more profitable.

27. Which of the following money demands represents the lack of coordination of receipts and payments?

(a) **Transaction demand.**

(b) Precautionary demand.

(c) Speculative demand.

(d) None of the above.

28. Which of the following could result from the effect on the money market of a fall in income ?

(a) **A rise in investment expenditure.**

(b) A rise in interest rates.

(c) A fall in consumption.

(d) A fall in net export.

29. Suppose the central bank of Canada conducts monetary policy by increasing the reserve ratio. Other things equal, which of the following is correct?

    (a) A rise in net export in Canada.

    (b) A fall in interest rates in Canada.

    (c) **Appreciation of Canadian currency.**

    (d) Depreciation of Canadian currency.

30. Which of the following is a result of a fall in overnight interest rate?

    (a) **A rise in banks reserves.**

    (b) A rise in money supply.

    (c) A rise in banks loans.

    (d) All of the above.

31. Suppose the policy of Bank of Canada is to reduce interest rates in the market. Bank of Canada should _____ bonds in the open market and _____ the monetary base.

    (a) Sell; increase.

    (b) Sell; decrease.

    (c) Buy; decrease.

    (d) **Buy; increase.**

32. Which of the following is not considered as a main technique of the central bank for controlling the money supply?

    (a) Using open market operation.

    (b) Setting reserve ratio.

    (c) **Printing money.**

    (d) Adjusting lending rates.

33. Which of the following is most accurate?

    (a) If Bank of Canada desires a high overnight interest rate, money supply should rise.

    (b) If Bank of Canada sets a particular money supply, it should let money supply to determine the overnight interest rate.

    (c) **If Bank of Canada sets a particular overnight interest rate, it should let money demand determine the size of money supply.**

    (d) None of the above.

34. According to the Taylor rule and in the presence of inflationary gap, Bank of Canada ____ interest rates and as a result aggregate demand will _____.

    (a) **Increases; fall.**

    (b) Increases; rise.

    (c) Decreases; fall.

(d) Decrease; rise.

35. In a recessionary gap, if the input cost adjustment process works very slowly so that actual output differs from potential output for a long period of time, then

(a) Active stabilization policies are likely to create hyper-inflation.

(b) Active stabilization policy may widen the output gap even further.

(c) Active stabilization policies are probably not justified.

(d) **None of the answers is correct.**

36. If economists say that monetary policies cannot affect GDP in the long run, what do they mean?

(a) **Workers and firms have no money illusion.**

(b) Workers and firms have money illusion.

(c) Only fiscal policies can affect potential output.

(d) Monetary policy will change potential output and inflation by equal amounts.

37. Suppose a workers' union managed to sign a new wage contract with the employer for a 5% nominal wage increase for the coming year. The union also believes that the inflation rate next year is going to be 5%. Which of the following is CORRECT?

(a) The real wage has increased by 5%.

(b) The real wage has increased by 10%.

(c) The real wage has decreased by 5%.

(d) **None of the answers is correct.**

38. Which of the following statements is CORRECT?

(a) If the inflation rate is unexpectedly high, lenders of money benefit.

(b) **If the nominal interest rate is 5%, while inflation rate is 3%, then real interest rate is 2%.**

(c) The real interest rate is equal to the nominal interest rate plus inflation rate.

(d) The real interest rate cannot be negative.

39. The slope of the ADπ curve is determined by:

(a) The monetary policy of targets and instruments of the central bank.

(b) The changes in aggregate expenditure when interest rates change.

(c) The expenditure multiplier.

(d) **All of the above.**

40. Suppose that the Japanese yen appreciates against the U.S. dollar. We would expect:

(a) Foreign travel by Japanese citizens to the U.S. to decrease.

(b) The level of exports from Japan to the U.S. to increase.

(c) **The level of exports from the U.S. to Japan to increase.**

(d) Both a) and b).

41. A drop in Canadian imports will _____ the value of the Canadian dollar on the foreign exchange market, under flexible exchange rate.

    (a) Depreciate.
    (b) **Appreciate.**
    (c) Will not affect.
    (d) None of the above.

42. The Canadian dollar (C$) can buy around US$0.76. If the Bank of Canada wants the C$ to strengthen further,

    (a) It should reduce taxes.
    (b) It should purchase bonds in the open market.
    (c) **It should raise interest rates.**
    (d) It should do b) and c) only.

43. Given Donald Trump anti-trade stance, what would happen to the value of the Canadian dollar if he was elected president of the United States?

    (a) Increase, since Canada's exports to the US will increase.
    (b) Increase, since Canada's exports to the US will decrease.
    (c) Decrease, since Canada's exports to the US will increase.
    (d) **Decrease, since Canada's exports to the US will decrease.**

44. With a Balance of Payments deficit and a fixed exchange rate, the foreign exchange reserves of the Central Bank must be:

    (a) Increasing.
    (b) **Decreasing.**
    (c) Remain the same.
    (d) None of the above.

45. With a _____ exchange rate, monetary policy is _____ and fiscal policy is _____.

    (a) Fixed, effective, effective.
    (b) Flexible, effective, ineffective.
    (c) **Fixed, ineffective, effective.**
    (d) Flexible, ineffective, ineffective.

46. Research and development (R&D) are _____ undertakings by the firms. To provide incentives for such activities, the government may need to provide _____ when new technology is invented. However, the price of such new technology is likely to be _____ because of this government policy.

    (a) Riskless; subsidies; low.
    (b) **Risky; patents; high.**
    (c) Risky; subsidies; high.
    (d) Riskless; patents; low.

47. If the production function is given by $Y/N = (K/N)^{0.8}$, then doubling K/N will

    (a) Increase Y/N by more than double.
    (b) **Increase Y/N by less than double.**
    (c) Double Y/N.
    (d) Cannot be determined.

48. Capital-widening refers to _____ the existing capital per worker to new extra workers, while capital-deepening refers to _____ capital per worker for all workers.

    (a) Limiting; decreasing.
    (b) Extending; decreasing.
    (c) Limiting; increasing.
    (d) **Extending; increasing.**

49. Suppose the inputs of labor and capital each increase by 8% and output also increases by 8%. The production function exhibits_____ returns to scale technology.

    (a) Decreasing.
    (b) Increasing.
    (c) Zero.
    (d) **Constant.**

50. The zero-growth proposal advocates for

    (a) **Zero growth of GDP, because higher GDP imposes additional environmental costs.**
    (b) Zero addition to capital stock and population.
    (c) Zero pollution emission to maintain sustainable growth.
    (d) All of the answers are correct.

Part II: Answer FOUR of the following FIVE questions. If more than four questions are answered, only the first four attempted will be marked.(Total=100 marks)

1. This table shows the 2015 data for males and females aged 15 and over (in million).

Not in LF	Not in LF	Unemployed	Unemployed	Employed	Employed
Male	Female	Male	Female	Male	Female
47	37	7	7	87	67

   (a) What is the adult female unemployment rate? (5 marks)
   $u_F = \frac{U_F}{LF_F} = \frac{7}{7+67} = 9.46\%$.

   (b) What is the adult male labour force participation rate? (5 marks)
   $P_M = \frac{LF_M}{Pop_M} = \frac{7+87}{7+87+47} = 66.67\%$.

   (c) Now assume that 5 million unemployed workers find employment. What is the unemployment rate? (5 marks)
   $u = \frac{U}{LF} = \frac{7+7-5}{7+7-5+87+67+5} = \frac{9}{168} = 5.36\%$.

   (d) Based on your result from the previous question, calculate the cyclical unemployment rate, assuming that the frictional unemployment rate is 1% and the structural unemployment rate is 2%. (5 marks)
   Since the unemployment rate is the sum of cyclical, frictional and structural, then cyclical is 5.36-1-2=2.36%.

   (e) Given the information in the table and assuming that 0.5 million unemployed workers are discouraged and exit the labour force, what is the new unemployment rate? (5 marks)
   $u = \frac{U}{LF} = \frac{7+7-.5}{7+7-.5+87+67} = 8.06\%$.

2. Consider the following economic model:

   $C = 150 + 0.8Y_d$

   $T = 75 + 0.25Y$

   $I_0 = 310$

   $G_0 = 500$

   $X_0 = 100$

   $IM = 0.1Y$

   (a) Solve for the equilibrium income (GDP) and calculate equilibrium consumption. (5 marks)
   Y=AE
   Y=C+I+G+NX
   Y=150+0.8(Y-75-0.25Y)+310+500+100-0.1Y
   Y=150-60+0.8(1-0.25)Y+310+500+100-0.1Y
   Y=1000+0.5Y
   $Y_e = 2000$
   C=150+0.8(2000-75-0.25*2000)
   $C = 1290$

   (b) Calculate the expenditure multiplier. (5 marks)
   $multiplier = \frac{1}{(1-0.8(1-0.25)-0.1)} = \frac{1}{(1-slope of AE)} = 2$

(c) Suppose potential output is 2100\$. Determine the nature of the gap and calculate it (in percentage). (5 marks)

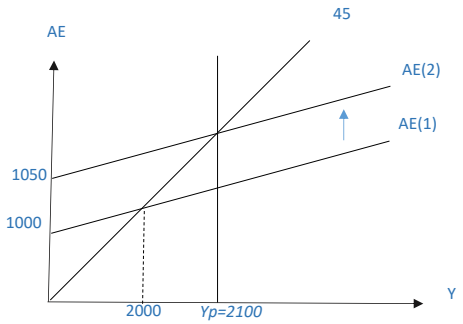
Since $Y_e < Y_p \rightarrow$ Recessionary gap

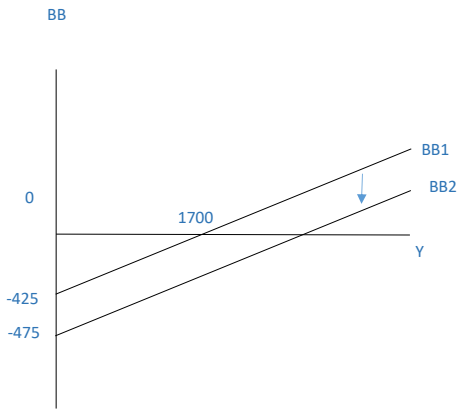
$Outputgap = (Y_e - Y_p)/Y_p * 100 = (2000 - 2100)/2100 * 100 = -4.76\%$.

(d) Suppose government decides to eliminate the gap by changing the government expenditure. How much should the government change G_0? (5 marks)

$\Delta G_0 = \Delta Y/multiplier = 100/2 = 50$

(e) Show the effects of change in G_0 on the AE/Y model and the budget balance line in two separate graphs. (5 marks)





3. The Taylor rule states that a central bank can monitor price stability (low inflation) and output stability (GDP being close to the potential output Yp, implying zero output gap) by an equation that links the interest rate with these two objectives. For Canada, suppose this has been estimated to be as follows:

$$i = i_0 + 1.2(\pi - \pi^*) + 0.5(Y - Y_p)$$

For this question, suppose the following:

- the inflation target is π* = 2%.
- initially, there is no inflation gap or output gap.
- the equilibrium rate of interest that is compatible with the inflation target and zero output gap is $i_0 = 8\%$.
- the level of inflation π changes with the changes in interest rate according to the following formula:

$$\pi = \pi^* – 1.5\Delta i$$

(a) The initial value of i is __**8%**__. (3 marks)
Consider the following news clip:
Bank of Canada
FOR IMMEDIATE RELEASE
Ottawa, Ontario, 19 October 2016
Looking through the choppiness of recent data, the profile for growth in Canada is now lower than projected in July's Monetary Policy Report (MPR). This is due in large part to . . . a lower trajectory for exports. . .

(b) Now suppose that slower exports leads to an output gap of (Y − Yp) = − 6%. According to the Taylor rule, and putting aside inflation rates for now, the central bank should set a new i of _**5%**__. (5 marks)

(c) Since π = π* − 1.5Δi, the new inflation rate will be equal to __**6.5%**__. (3 marks)

(d) The BOC knows that the inflation rate will change. Replace the expression for π that links π to the change in interest rate (π = π* − 1.5Δi) into the Taylor rule and solve for the new interest rate that will now combine the anticipated increase in inflation as well as the output gap. [Hint: Solve the new i as an unknown]. What is the new interest rate that the BOC should set? __**6.93%**_. (8 marks)

(e) Continue with the previous question: What is the new π value? __**3.61%**_. (3 marks)

(f) In order for the interest to change from the original $i_0 = 8\%$, the BOC has to _**buy**_ bonds in the open market, which will _**increase**_ the price of bonds and _**increase**__ the monetary base. (3 marks)

4. Suppose the central bank's monetary policy sets the interest rate according to the following function:

$$i = 3.0 + 2.0(\pi - \pi*) \text{ with } \pi^* = 4.0,$$

where

- i = nominal interest rate
- π = actual inflation rate
- π* = target inflation rate

The components of aggregate expenditure are as follows:

- C = 200 + 0.75Y
- I = 85 − 2i
- G = 100
- X − IM = 50 − 0.15Y − 3i

(a) Add the components of the aggregate expenditure and determine the equilibrium Y (the aggregate demand) as a negative function of the interest rate. (5 marks)
Y = C + I + G + X − IM
Y = 200 + 0.75Y + 85 − 2i + 100 + 50 − 0.15Y − 3i
Y = 435 + (0.75 − 0.15)Y − (2 + 3)i
Y − 0.6Y = 435 − 5i
0.4Y = 435 − 5i
Y = 1087.5 − 12.5i

(b) Now replace the interest rate function given above for i in the AD found in (a) to create the equation for the ADπ curve (negative relationship between Y and π). (5 marks)
Y = 1087.5 − 12.5i
Y = 1087.5 − 12.5 [3.0 + 2.0(π − π*)]
Y = 1087.5 − 12.5 [3.0 + 2.0(π − 4.0)]
Y = 1087.5 − 37.5 − 25 π + 100
Y = 1150 − 25π

(c) Using a rough graph, plot the ADπ curve marking the points of intersection with the vertical axis (inflation rate) and the horizontal axis (output). (5 marks)
π intercept is 46, Y intercept is 1150.

(d) In the diagram above, draw a horizontal line at the target inflation level. Also draw a line at the output to which the target inflation corresponds, according to the ADπ curve. (3 marks)
Y = 1150 − 25π
Y = 1150 − 25*4 = 1050

(e) Suppose that the BOC's research department estimates that the potential output Yp = 1,000. Plug this number in the ADπ function in (b) above to determine the equilibrium inflation rate that is compatible with this output level. (2 marks)
Y = 1150 − 25π
1000 = 1150 − 25π
− 150 = − 25π and π = 6

(f) Now substitute the inflation rate you have found in (e) above to determine the interest rate that the BOC must set to defend its inflation target of 4.0. (5 marks)
i = 3.0 + 2.0 (π − π*)
i = 3.0 + 2.0 (6 − 4)
i = 3.0 + 2.0 (2)
i = 3.0 + 4.0 = 7.0

5. Suppose that in 1996, the price levels in United States and Canada were 100. By 2000, the price level in United States has increased to 230, while the price level in the Canada rose to 220. Suppose the exchange rate between two countries in 1996 was $1USD = $1.7CAD Note: Please round your answers to 2 decimal places.

(a) What was the 1996 real exchange rate? (5 marks)
The real exchange rate was E = e × PUnited States ÷ PCanada = 1.7 × 100 ÷ 100 = 1.7

(b) What must the new nominal exchange rate have been in 2000 if the real exchange rate remained constant? (5 marks)

We know that real exchange rate (E) = e $\times$ PUnited States $\div$ PCanada Now, we want E = 1.7, so 1.7 = e $\times$ (230 $\div$ 220), so e = 1.63

(c) Suppose, United States has a fixed exchange rate system against the Canadian dollar. The initial nominal exchange rate is fixed. As a result, did Canada's real exchange rate appreciate or depreciate? Explain. (5 marks)

The actual E = 1.7 $\times$ 230 $\div$ 220 = 1.78. This means Canada has a real exchange rate depreciation.

(d) Would you expect Canada's net exports to rise or fall as a result? Explain. (5 marks)

Canada's net exports would rise. Intuitively, since one USD could still buy only 1.7CAD and the Canada's price levels have increased, Canada's exports are in fact now less expensive. If this relatively low inflation rate had been offset by allowing one USD to buy 1.63CAD, Canada's exports would not have gained any competitiveness. Since a fixed exchange rate system does not allow the nominal rate to change, its net exports have been increased.

(e) Is the Canadian dollar overvalued or undervalued? Explain. (5 marks)

Undervalued, because it should have taken 1.63 CAD to buy one USD, not just 1.7 CAD. The value of the CAD is too high.