

## Final Exam

ECON 105-D300: Principles of Macroeconomics

Prof. Krauth, Spring 2012

Please put away all materials except for pens or pencils and a non-programmable, non-graphing, non-communicating calculator. Communication with classmates *for any purpose* is forbidden. Raise your hand if you have any questions or needs. The exam will end at exactly 6:30; any student observed writing after the exam ends will be penalized. You do not need to “show your work”; all I care about is your answer to the question. Good luck!

### Multiple choice (1.25 points each)

1. In a recession, compared to the percentage decline in GDP, what happens to investment spending?
  - a. Investment spending falls by a larger percentage than GDP.
  - b. Investment spending falls by about the same percentage as GDP.
  - c. Investment spending falls by a smaller percentage than GDP.
  - d. Investment spending falls, but the percentage change is sometimes much larger and sometimes much smaller.
2. Which of the following best describes the effects of an increase in the price level?
  - a. Real exchange rates and interest rates rise.
  - b. Real exchange rates and interest rates fall.
  - c. Real exchange rates fall, and interest rates rise.
  - d. Real exchange rates rise, and interest rates fall.
3. Which of the following would happen to Canadian net exports and aggregate demand if countries that imported from Canada went into recession?
  - a. Net exports would rise, and aggregate demand would shift right.
  - b. Net exports would rise, and aggregate demand would shift left.
  - c. Net exports would fall, and aggregate demand would shift right.
  - d. Net exports would fall, and aggregate demand would shift left.
4. According to the misperceptions theory of the short-run aggregate supply curve, if the price level increases more than people expect, how do firms change their behaviour?
  - a. They believe that the relative price has decreased, so they increase production.
  - b. They believe that the relative price has decreased, so they decrease production.
  - c. They believe that the relative price has increased, so they increase production.
  - d. They believe that the relative price has increased, so they decrease production.
5. According to the sticky wage theory, which of the following is consistent with an unexpected increase in the price level?
  - a. The real wage rises, and employment rises.

- b. The real wage rises, and employment falls.
  - c. The real wage falls, and employment rises.
  - d. The real wage falls, and employment falls.
6. According to the sticky price theory, which of the following is consistent with a more-than-expected rise in the price level?
- a. Some firms' prices are higher than desired, which increases their sales.
  - b. Some firms' prices are higher than desired, which depresses their sales.
  - c. Some firms' prices are lower than desired, which increases their sales.
  - d. Some firms' prices are lower than desired, which depresses their sales.
7. Which of the following is consistent with the theory of aggregate supply?
- a. An increase in the expected price level shifts the short-run aggregate supply curve to the right, and an increase in the actual price level shifts the short-run aggregate supply to the right.
  - b. An increase in the expected price level shifts the short-run aggregate supply curve to the right, and an increase in the actual price level does not shift the short-run aggregate supply.
  - c. An increase in the expected price level shifts the short-run aggregate supply curve to the left, and an increase in the actual price level shifts the short-run aggregate supply to the left.
  - d. An increase in the expected price level shifts the short-run aggregate supply curve to the left, and an increase in the actual price level does not shift the short-run aggregate supply.
8. Suppose the economy is initially in long-run equilibrium. Which of the following best describes the state of the economy after an increase in aggregate demand?
- a. Prices and output are higher.
  - b. Prices and output are lower.
  - c. Prices are higher and output is the same.
  - d. Prices are the same and output is lower.
9. Which of the following did **NOT** happen during the onset of the Great Depression?
- a. The money supply fell as households took money out of banks.
  - b. The Bank of Canada decreased the bank rate.
  - c. The real GDP per person fell about 30 percent.
  - d. Bankers began holding greater reserves.
10. Suppose the economy is in long-run equilibrium. If there is a sharp decline in the stock market combined with a significant increase in immigration of skilled workers, what would we expect to happen in the short run?
- a. Real GDP will rise, and the price level might rise, fall, or stay the same.
  - b. Real GDP will fall, and the price level might rise, fall, or stay the same.

- c. The price level will rise, and real GDP might rise, fall, or stay the same.
  - d. The price level will fall, and real GDP might rise, fall, or stay the same.
11. According to liquidity preference theory, if the quantity of money demanded is greater than the quantity supplied, what will happen to the interest rate and the quantity of money demanded?
- a. The interest rate will increase, and the quantity of money demanded will decrease.
  - b. The interest rate will increase, and the quantity of money demanded will increase.
  - c. The interest rate will decrease, and the quantity of money demanded will decrease.
  - d. The interest rate will decrease, and the quantity of money demanded will increase.
12. What is the variable that balances the money demand and supply in the liquidity preference and the classical theories?
- a. the interest rate in both theories
  - b. the price level in both theories
  - c. the interest rate in the liquidity preference theory and the price level in the classical theory
  - d. the price level in the liquidity preference theory and the interest rate in the classical theory
13. Which of the following lists of events is consistent with the long-run and short-run economic theories studied?
- a. In the short run, output is determined by the amount of capital, labour, and technology; the interest rate adjusts to balance the supply and demand for money; and the price level adjusts to balance the supply and demand for loanable funds.
  - b. In the short run, output is determined by the amount of capital, labour, and technology; the interest rate adjusts to balance the supply and demand for loanable funds; and the price level adjusts to balance the supply and demand for money.
  - c. In the short run, output responds to the aggregate demand for goods and services; the interest rate adjusts to balance the supply and demand for money; and the price level is stuck.
  - d. In the short run, output responds to the aggregate demand for goods and services; the interest rate adjusts to balance the supply and demand for loanable funds; and the price level adjusts to balance the supply and demand for money.
14. If the Bank of Canada conducts open-market sales, how do the money supply and the aggregate demand change?
- a. The money supply increases, and aggregate demand shifts right.
  - b. The money supply increases, and aggregate demand shifts left.

- c. The money supply decreases, and aggregate demand shifts right.
  - d. The money supply decreases, and aggregate demand shifts left.
15. The economy is in long-run equilibrium. Suppose that automatic teller machines become cheaper and more convenient to use, and as a result the demand for money falls. Other things equal, what would we expect will happen to the price level and real GDP in the short and long run?
- a. In the short run, the price level and real GDP would rise, but in the long run they would both be unaffected.
  - b. In the short run, the price level and real GDP would rise, but in the long run the price level would rise and real GDP would be unaffected.
  - c. In the short run, the price level and real GDP would fall, but in the long run they would both be unaffected.
  - d. In the short run, the price level and real GDP would fall, but in the long run the price level would fall and real GDP would be unaffected.
16. If the interest rate is below a central bank's target, what should the central bank do?
- a. buy bonds to increase the money supply
  - b. buy bonds to decrease the money supply
  - c. sell bonds to increase the money supply
  - d. sell bonds to decrease the money supply
17. How does a stock market boom affect household spending, and how would the Bank of Canada offset the effects on the price level and real GDP?
- a. Household spending increases; the Bank of Canada would increase the money supply.
  - b. Household spending increases; the Bank of Canada would decrease the money supply.
  - c. Household spending decreases; the Bank of Canada would increase the money supply.
  - d. Household spending decreases; the Bank of Canada would decrease the money supply.
18. In a small open economy with a flexible exchange rate, a monetary injection causes which of the following?
- a. It causes the dollar to appreciate.
  - b. It causes net exports to decline.
  - c. It causes an additional decrease in demand for Canadian-produced goods that is not realized in a closed economy.

- d. It causes a shift of the aggregate demand curve farther to the right than in a closed economy.
19. If the Bank of Canada allows the exchange rate to vary freely, which of the following effects will an expansionary fiscal policy have?
- a. It will cause a large and permanent rightward shift of the AD curve.
  - b. It will cause a large and permanent leftward shift of the AD curve.
  - c. It will have no permanent effect on the position of the AD curve, but it will cause interest rates to permanently increase.
  - d. It will have no permanent effect on either the position of the AD curve or the interest rate.
20. If there are automatic stabilizers but no deliberate action by policymakers, how would government expenditures change as output changes?
- a. They would rise as output rises.
  - b. They would remain unchanged as output rises.
  - c. They would rise as output falls.
  - d. They would fall as output falls.
21. For what reason are production possibilities frontiers usually bowed outward?
- a. The more resources a society uses to produce one good, the fewer resources it has available to produce another good.
  - b. It reflects the fact that the opportunity cost of producing a good falls as one produces more and more of it.
  - c. It is because of the effects of technological change.
  - d. Resources are specialized, that is, some are better at producing particular goods rather than other goods.
22. A rancher can produce only hamburgers, while a farmer can produce only French fries. If the rancher and the farmer like both foods, which of the following is most likely?
- a. They cannot gain from trade.
  - b. They could gain from trade under certain circumstances, but not always.
  - c. They could gain from trade because each would enjoy a greater variety of food.
  - d. They could gain from trade only if each were indifferent between hamburgers and French fries.
23. New cars are normal goods. What will happen to the equilibrium price of new cars if the price of gasoline rises, the price of steel falls, public transportation becomes cheaper and more comfortable, auto workers accept lower wages, and automobile insurance becomes more expensive?
- a. price will rise
  - b. price will fall
  - c. price will stay exactly the same
  - d. price change will be ambiguous

24. In a competitive market, why does each seller have limited control over the price of his product?
- because other sellers are offering similar products
  - because in competitive markets, buyers have more influence over price than sellers
  - because the products sold in competitive markets are generally in abundant supply
  - because sellers in competitive markets prefer to meet and set a price that each will profit from
25. Samantha deposits \$2000 into a saving account that pays an annual interest rate of 5 percent. Over the course of a year, the inflation rate is 2 percent. What happens at the end of the year?
- Samantha has \$100 more in her account, and her purchasing power has increased by about \$40.
  - Samantha has \$100 more in her account, and her purchasing power has increased by about \$60.
  - Samantha has \$140 more in her account, and her purchasing power has increased about \$100.
  - Samantha has \$140 more in her account, and her purchasing power has increased about \$40.
26. If a country has business opportunities that become relatively attractive to other countries, which of the following best predicts the effects of this change?
- Both net exports and net capital outflow increase.
  - Both net exports and net capital outflow decrease.
  - Net exports increase, but net capital outflow decreases.
  - Net exports decrease, but net capital outflow increases.
27. The dictator of Turan has recently begun to arbitrarily seize farms belonging to his political opponents, and he has given the farms to his friends. His friends don't know much about farming. The courts in Turan have ruled that the seizures are illegal, but the dictator has ignored the rulings. Other things equal, what would we expect to happen to the growth rate in Turan?
- It will fall temporarily, but will return to where it was when the new owners learn how to farm.
  - It will increase because the total amount of human capital in the country will increase as the new owners learn how to farm.
  - It will fall and remain lower for a long time.
  - It will not be affected unless widespread civil disorder or civil war results.

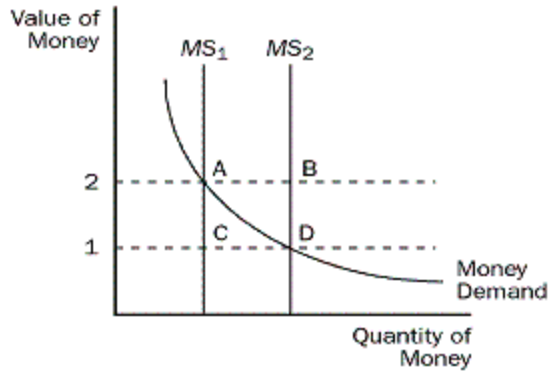
28. Assuming that velocity is stable, if real GDP grows by 10 percent this year, and if the money supply does not change this year, how does the price level or nominal GDP change?
- The price level will not change.
  - Nominal GDP will grow by 10 percent.
  - Nominal GDP will stay the same.
  - The price level will increase by 10 percent.
29. Who determines the amount of money in the economy?
- The Bank of Canada controls the money supply precisely.
  - The amount of money in the economy does not depend on the behaviour of depositors.
  - The amount of money in the economy depends in part on the behaviour of banks.
  - The Minister of Finance determines the amount of money in the economy by law.
30. Under which of the following conditions is wealth distributed from debtors to creditors?
- When inflation is high, but expected.
  - When inflation is low, but expected.
  - When inflation is unexpectedly high.
  - When inflation is unexpectedly low.
31. The market basket used to calculate the CPI in Aquilonia is 4 loaves of bread, 6 litres of milk, 2 shirts, and 2 pairs of pants. In 2005 the price of bread was \$1.00 per loaf, the price of milk was \$1.50 per litre, the price of a shirt was \$6.00, and the price of a pair of pants was \$10.00. In 2006 the price of bread was \$1.75 per loaf, the price of milk was \$2.25 per litre, the price of a shirt was \$7.50, and the price of a pair of pants was \$13.00. What was the inflation rate, as measured by the CPI, for Aquilonia between 2005 and 2006?
- 20 percent
  - 24.4 percent
  - 30 percent
  - 36.67 percent
32. Which of the following is an important difference between the GDP deflator and the consumer price index?
- The GDP deflator reflects the prices of goods and services bought by producers, whereas the consumer price index reflects the prices of goods and services bought by consumers.
  - The GDP deflator reflects the prices of all final goods and services produced domestically, whereas the consumer price index reflects the prices of some goods and services bought by consumers.
  - The GDP deflator reflects the prices of all final goods and services produced by a nation's citizens, whereas the consumer price index reflects the prices of final goods and services bought by consumers.

- d. The GDP deflator reflects the prices of all goods and services bought by producers and consumers, whereas the consumer price index reflects the prices of final goods and services bought by consumers.
33. Last year, real GDP in Oceania was \$620 billion and the population was 2.3 million. The year before, real GDP was \$502.0 billion and the population was 2.0 million. What was the approximate growth rate of real GDP per person?
- 16 percent
  - 13 percent
  - 10 percent
  - 7 percent
34. Suppose that there are diminishing returns to capital. Suppose also that two countries are the same except one has less capital and so less real GDP per person. Suppose that both increase their saving rate from 3 percent to 4 percent. Which of the following will happen in the long run?
- Both countries will have permanently higher growth rates of real GDP per person, and the growth rate will be higher in the country with more capital.
  - Both countries will have permanently higher growth rates of real GDP per person, and the growth rate will be higher in the country with less capital.
  - Both countries will have higher levels of real GDP per person, and the temporary increase in growth in the level of real GDP per person will have been greater in the country with more capital.
  - Both countries will have higher levels of real GDP per person, and the temporary increase in growth in the level of real GDP per person will have been greater in the country with less capital.
35. Suppose that in a closed economy GDP is equal to 10,000, taxes are equal to 2500, consumption equals 6500, and government expenditures equal 2000. What is private saving?
- 1500
  - 1000
  - 500
  - 0
36. Suppose a country has a consumption tax that is similar to a provincial sales tax. If its government eliminates the consumption tax and replaces it with an income tax that includes an income tax on interest from savings, which of the following would most likely happen?
- There would be no change in the interest rate or saving.
  - The interest rate would decrease, and saving would increase.
  - The interest rate would increase, and saving would decrease.
  - The interest rate would increase, and saving would increase.
37. Which of the following does the theory of efficiency wages explain?
- why setting wages at the equilibrium level may increase unemployment

- b. why it may be in the best interest of firms to offer wages that are above the equilibrium level
  - c. why the most efficient way to pay workers is to pay them according to their skills
  - d. why it is efficient for firms to set wages at the equilibrium level
38. On which of the following do the Bank of Canada's policy decisions have an important influence?
- a. both the rate of inflation and the level of employment in the short run
  - b. the rate of inflation in the long run and the level of employment in the short run
  - c. the rate of inflation in the short run and the level of employment in the long run
  - d. both the rate of inflation and the level of employment in both the short run and the long run
39. When the Bank of Canada conducts open market purchases, how do commercial banks' assets most likely change?
- a. Reserves increase and banks increase lending.
  - b. Reserves increase and banks decrease lending.
  - c. Reserves decrease and banks increase lending.
  - d. Reserves decrease and banks decrease lending.
40. If the world real interest rate exceeds the Canadian real interest rate, what would Canadian savers most likely do?
- a. Canadian savers would prefer to buy foreign assets.
  - b. Canadian savers would prefer to buy Canadian assets.
  - c. Canadian savers will prefer to wait until the two real interest rates are again equal.
  - d. Canadian savers will sell their foreign assets and buy Canadian assets instead.
41. When the money market is depicted in a graph with the value of money on the vertical axis, as the price level increases, which of the following happens to the value of money?
- a. It increases, so the quantity of money demanded increases.
  - b. It increases, so the quantity of money demanded decreases.
  - c. It decreases, so the quantity of money demanded decreases.
  - d. It decreases, so the quantity of money demanded increases.

*Use the figure below for the following questions.*

**Figure 1**



42. Refer to Figure 1. What happens when the money supply curve shifts from  $MS_1$  to  $MS_2$ ?
- The demand for goods and services decreases.
  - The economy's ability to produce goods and services increases.
  - The equilibrium price level increases.
  - The equilibrium value of money increases.
43. Country A buys \$150 of wine from country B, and B buys \$30 of wool from A. Which of the following correctly indicates the two countries' net exports (in the order A, B)?
- \$180 and \$0
  - \$150 and \$30
  - \$120 and \$120
  - \$120 and -\$120
44. Which of the following best defines net capital outflow?
- It is the purchase of foreign assets by domestic residents minus the purchase of domestic assets by foreign residents.
  - It is the purchase of foreign assets by domestic residents minus the purchase of foreign goods and services by domestic residents.
  - It is the purchase of domestic assets by foreign residents minus the purchase of domestic goods and services by foreign residents.
  - It is the purchase of domestic assets by foreign residents minus the purchase of foreign assets by domestic residents.
45. Sue, a Canadian citizen, buys stock in a French chain of boutiques. Her purchase counts as which of the following?
- investment for Sue and Canadian foreign direct investment
  - investment for Sue and Canadian foreign portfolio investment
  - saving for Sue and Canadian foreign direct investment
  - saving for Sue and Canadian foreign portfolio investment
46. Which of the following does a trade deficit imply?
- saving is greater than domestic investment and  $Y > C + I + G$
  - saving is greater than domestic investment and  $Y < C + I + G$
  - saving is less than domestic investment and  $Y > C + I + G$

d. saving is less than domestic investment and  $Y < C + I + G$

47. Suppose that a kilogram can of coffee costs about \$6 in Canada. Suppose the exchange rate is about 0.7 euro per dollar and that a kilogram can of coffee in Belgium costs about 2.1 euros. What is the real exchange rate?

- a. 2.45 cans of Belgian coffee per can of Canadian coffee
- b.  $3/4$  cans of Belgian coffee per can of Canadian coffee
- c.  $3/5$  cans of Belgian coffee per can of Canadian coffee
- d. 2 cans of Belgian coffee per can of Canadian coffee

48. What color is this exam?

- a. Blue
- b. Yellow
- c. Green
- d. None of the above

## Short Answer (40 points)

1. (20 points) Table 1 below displays the latest data on the Canadian economy as of April 5, 2012.

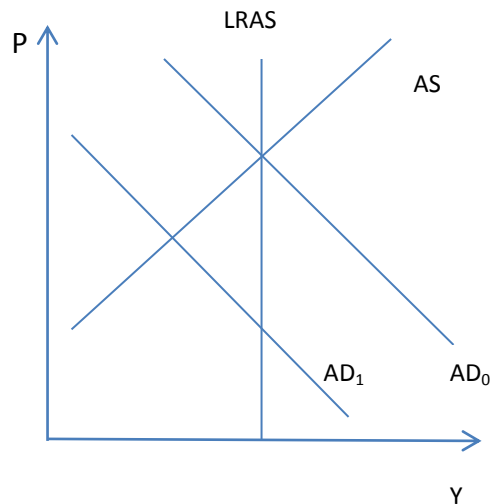
**Table 1: Recent Canadian macroeconomic statistics<sup>1</sup>**

	2011	2012
<b>Population in millions</b>	27,889.2	28,208.1
<b>Employed in millions</b>	17,239.3	17,436.5
<b>Unemployed in millions</b>	1,424.6	1,356.2
<b>CPI, 2002 base year</b>	118.1	121.2
<b>Real GDP, in million 2002 dollars</b>	1,260,394	1,282,288
<b>GDP, in million current dollars</b>	1,661,856	1,752,412
<b>Bank of Canada's target for overnight rate</b>	1%	1%

- What is the current unemployment rate? What was it in 2011?
- What is the current labour force participation rate? What was it in 2011?
- Based on your answers to (a) and (b) above, would you say the labour market is improving or getting worse? Justify your answer in a few sentences that refer to specific statistics in the table and those you have calculated.
- What was the inflation rate over the past year as measured by the CPI?
- What was the inflation rate over the past year as measured by the GDP deflator?
- Based on your answers to (d) and (e) above, did the relative price of consumer goods in Canada increase, decrease or stay the same relative to the price of other elements of GDP (government purchases, investment and exports)?
- What was the growth rate in real GDP over the past year?
- Assuming that expected inflation was equal to actual CPI inflation, what was the real interest rate on overnight interbank loans?
- In the ten years preceding the global financial crisis of 2008 (i.e. from 1997 to 2007) the average unemployment rate was 6.8%, and the growth rate of real GDP was 2.3%. Write a brief comparison of Canadian macroeconomic conditions over the past year to its performance from 1997 to 2007.
- In the ten years preceding the global financial crisis of 2008 (i.e. from 1997 to 2007) the inflation rate was 2%, and the average nominal interest rate on overnight interbank loans was 3%. Write a brief comparison of Canadian monetary policy over the past year relative to policy from 1997 to 2007.

<sup>1</sup> Notes: Labour force statistics are for March of that year, CPI is for February of that year, real GDP is for January of that year, GDP in current dollars is for 4<sup>th</sup> quarter of previous year, and target for the overnight rate is as of February 1<sup>st</sup> of that year. Both real and nominal GDP are seasonally adjusted and reported in annual units (i.e., monthly GDP is multiplied by 12 and quarterly GDP is multiplied by 4 so they are comparable).

2. **(20 points)** The 2009 global recession can be characterized as (1) a large permanent fall in consumption demand because the collapse in real estate prices permanently reduced consumer perceptions of their own wealth and (2) a large permanent fall in investment demand because the resulting financial market crisis permanently increased investor perceptions of risk. We can model this in the AS/AD framework as a shift in the AD curve from  $AD_0$  to  $AD_1$  below.



- In the absence of stabilization policy, what will happen to inflation and output growth?
- Central banks worldwide have responded to this recession by instituting an aggressive expansionary monetary policy. One important limitation on monetary policy is the *zero lower bound*: the fact that nominal interest rates cannot<sup>2</sup> go below zero. If the expected inflation rate is equal to the central bank's announced inflation target of 2%, what limit does the zero lower bound imply for the real interest rate?
- Suppose that post-crisis investment demand is lower than pre-crisis level even at a nominal interest rate of zero. Can the conventional monetary policy tool of cutting interest rates return aggregate demand to its pre-crisis level?
- Some macroeconomists have argued that the central bank should increase its announced inflation target from 2% to 5%. Why might this help?
- Some macroeconomists argue that the zero lower bound is an important limitation, and so monetary expansion should be supplemented by expansionary fiscal policy in the form of increased government spending (with no corresponding increase in current tax revenue; the additional spending will be financed with budget deficits and future tax increases). Use the AS/AD model to derive all short-run and long-run consequences of increased government

<sup>2</sup> The reason that nominal interest rates can never go below zero is that currency pays a nominal rate of zero. For example, if the nominal interest rate were -1% you could make arbitrage profits by simply borrowing a large sum of money, and holding it as cash until it was time to pay back the loan.

spending and explain those consequences in words. State explicitly all assumptions, and be as specific and detailed as possible.

- f. Other macroeconomists argue that the zero lower bound is an important limitation, and so monetary expansion should be supplemented by expansionary fiscal policy in the form of tax cuts (with no corresponding decrease in current spending; the tax cuts will be financed with budget deficits and future tax increases). Use the AS/AD model to depict all short-run and long-run consequences of tax cuts and explain those consequences in words. State explicitly all assumptions, and be as specific and detailed as possible.
- g. *In a maximum of 3 sentences* (everything written after the first 3 sentences will be ignored), tell me what you think should be done and why. This is not a mind-reading exercise – I really want to know what you think, and will give all serious answers full credit.

# Final Exam Answer Key

ECON 105-D300: Principles of Macroeconomics  
Prof. Krauth, Fall 2012

## Multiple choice

- |       |       |
|-------|-------|
| 1. A  | 25. B |
| 2. A  | 26. B |
| 3. D  | 27. C |
| 4. C  | 28. C |
| 5. C  | 29. C |
| 6. C  | 30. D |
| 7. D  | 31. D |
| 8. A  | 32. B |
| 9. B  | 33. D |
| 10. D | 34. D |
| 11. A | 35. B |
| 12. C | 36. C |
| 13. C | 37. B |
| 14. D | 38. B |
| 15. B | 39. A |
| 16. D | 40. A |
| 17. B | 41. D |
| 18. D | 42. C |
| 19. D | 43. C |
| 20. C | 44. A |
| 21. D | 45. D |
| 22. C | 46. D |
| 23. B | 47. D |
| 24. A | 48. A |

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First Name: \_\_\_\_\_

Student ID #: \_\_\_\_\_

MC	
P1	
P2	
Total	

## Short Answer

### 1. (20 points)

- The unemployment rate was 7.6% in 2011 and 7.2% in 2012.
- The labour force participation rate was 66.9% in 2011 and 66.6% in 2012.
- The labour market appears to be mostly improving: the unemployment rate went down substantially, and total employment went up. However, labour force participation still fell because of a growing population.
- The CPI inflation rate over the past year has been 2.6%.
- The inflation rate as measured by the GDP deflator has been 3.6%.
- Since the CPI has grown more slowly than the GDP deflator, the price of consumption goods has decreased relative to other elements of Canada's GDP (investment, government purchases, and exports).
- The growth rate of real GDP has been 1.7%.
- The real interest rate has been -1.6%.
- Unemployment is higher and real GDP growth has been slower in the past year than it was on average over the 1997-2007 period. So while Canada is no longer in a recession (we are observing positive growth and unemployment is falling rather than rising), its recovery from the recession still has a long way to go.
- Canadian monetary policy is much more expansionary now than it was from 1997 to 2007. Nominal interest rates are lower than usual (1% compared to the 1997-2007 average of 3%), and real interest rates are much lower (-1.6% compared to the previous average of 1%). One consequence of this expansionary policy has been a CPI inflation rate above target (at 2.6% compared to a target of 2%).

### 2. (20 points)

- Inflation and output growth will be down relative to trend, and may even be negative (deflation and recession, respectively).
- If the expected inflation rate is 2%, then real interest rates cannot go below -2%.
- No.
- If expected inflation rises to 5%, then real interest rates can go much lower; as low as -5%.
- Increased government spending moves the AD curve back towards  $AD_0$ , which will return inflation and output growth closer to their usual levels. If the increase in government spending is not combined with a corresponding increase in taxes, then the resulting budget deficit will reduce the supply of loanable funds. This will raise interest rates and further reduce investment. Government spending will "crowd out" investment. In the long run, the AS curve will adjust to return output growth to its usual level. Taxes will need to be increased (or spending

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ Student ID #: \_\_\_\_\_

reduced) to pay off the debt incurred as a result of the budget deficit. This will reduce consumption demand. Overall, the increased government spending will in the long run crowd out both investment and consumption. The reduced investment spending in the long run will imply lower productivity growth.

- f. Tax cuts increase consumers' disposable income, and thus raise consumption demand. This will push the AD curve back towards  $AD_0$ , which will return inflation and output growth closer to their usual levels. National savings will decrease, reducing the supply of loanable funds. This will raise interest rates and further reduce investment. The increased consumption expenditure induced by tax cuts will "crowd out" investment. In the long run, the AS curve will adjust to return output growth to its usual level. Taxes will need to be increased (or spending reduced) to pay off the debt incurred as a result of the budget deficit. This will reduce consumption demand.
- g. There are many correct answers to this question.