MACROECONOMICS

Section II

Planning Time—10 minutes

Writing Time—50 minutes

Directions: You have fifty minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes.

1. Assume that the United States economy is operating at less than full employment.

   (a) Using a correctly labeled aggregate demand and aggregate supply graph, show the following.

      (i) Full-employment output

      (ii) Current output

      (iii) Current price level

   (b) Identify an open-market operation that could restore full employment in the short run.

   (c) Using a correctly labeled graph of the money market, show how the open-market operation you identified in part (b) affects the interest rate in the short run.

   (d) Explain how the change in the interest rate you identified in part (c) will affect aggregate demand.

   (e) Show on the graph in part (a) how the change in the interest rate you identified in part (c) will affect output and price level.

   (f) Instead of the open-market operation in part (b), suppose that no policy actions are taken to address the unemployment problem. With flexible prices and wages, explain how each of the following will eventually change.

      (i) Short-run aggregate supply

      (ii) Output and price level

2. (a) Assume that national saving in the United States increases. Explain the effect of this increase on the real interest rate in the United States.

   (b) Suppose that real interest rates in the rest of the world remain unchanged.

      (i) Explain the effect of the real interest rate change in the United States that you identified in part (a) on the demand for the United States dollar in the foreign exchange market.

      (ii) As a result of the effect you identified in (i), what will happen to the international value of the United States dollar?

   (c) Given your answer in part (b), indicate how each of the following will change.

      (i) United States imports

      (ii) United States exports

GO ON TO THE NEXT PAGE.

3. The Federal Reserve buys $5,000 in bonds from Clark Consulting Services, which then deposits the money in a checking account at First Generation Bank.

   (a) As a result of the Federal Reserve's action, what is the change in the money supply if the required reserve ratio is 100 percent?

   (b) If the required reserve ratio is reduced to 10 percent, calculate the following.

      (i) The maximum amount this bank could lend from this deposit

      (ii) The maximum increase in the total money supply from the Federal Reserve's purchase of bonds

   (c) If banks keep some of the deposit as excess reserves, how will this influence the change in the money supply that was determined in part (b)(ii)? Explain.

   (d) If the public decides to hold some money in the form of currency rather than in demand deposits, how will this influence the change in the money supply that was determined in part (b)(ii)? Explain.

END OF EXAMINATION

2004

AP® MACROECONOMICS
2004 SCORING GUIDELINES

Question 1

Correct Answer:

(a) Draw a correctly labeled AS/AD graph illustrating an economy operating below full employment and showing current price level and output as shown below in the rubrics section.

(b) The Fed should purchase government bonds to move the economy towards full employment.

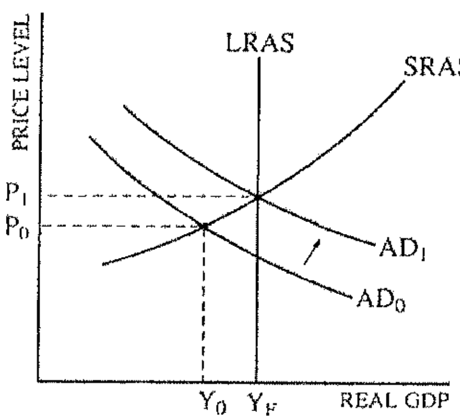
(c) A correctly labeled money market graph is shown in the rubrics section. The purchase of bonds by the Fed would increase the money supply, shifting the money supply curve to the right and resulting in a decrease in the interest rate.

(d) The resulting decrease in the interest rate would cause interest-sensitive expenditures (consumption and investment) to increase. Aggregate demand would increase, resulting in an increase in output and price level.

(e) The increase in AD should be shown as a rightward shift of the AD curve toward full-employment GDP on the original AS/AD graph in part (a).

(f) According to classical economic theory, if no action were taken by the Fed to mitigate the recession, wages or other production costs would eventually fall. As a result, the SRAS curve would shift to the right resulting in an increase in output and a decrease in the price level.

Scoring Guidelines: 13 points (3+1+3+2+1+3)



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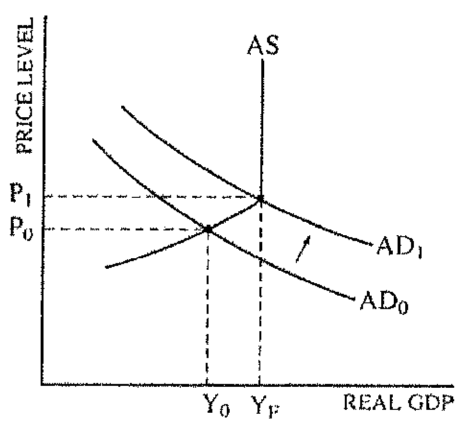


(a) 3 points: 4

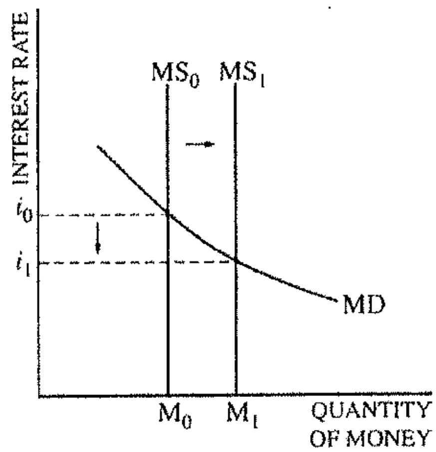
2 1 - AD/AS graph with full-employment output shown

1 - showing below full-employment equilibrium

1 - current price level and output

Question 1 (cont'd.)

(b) 1 point: for identifying correct monetary policy: buy bonds



(c) 3 points: 4

21 - correct graph of the money market

1 - for the rightward shift of the money supply curve

1 - for showing the resulting decrease in the interest rate

(d) 2 points:

1- the decrease in the interest rate causes an increase in I and/or C

1- AD increases as a result of change in C and/or I with a link to the interest-rate change in (c)

2 (e) 1 point: for the increase in the price level and real output as a result of the AD shift

(f) 3 points:

1 - wages or other production costs would fall

1 - AS curve would shift to the right

1 - price level would fall and real output would rise

Question 2

Correct Answer:

(a) An increase in savings increases the supply of loanable funds (shifts the supply of loanable funds curve to the right). An increase in the supply of loanable funds will lead to a reduction in the real interest rate.

(b) Because there is a reduction in the US real interest rate (with real rates in the rest of the world unchanged), US financial assets are less attractive, so there will be a decreased demand for US financial assets. With a decreased demand for US financial assets there will be a decreased demand for (and/or increased supply of) the dollar in the foreign exchange market. The decreased demand for the dollar in the foreign exchange market will cause the international value of the US dollar to depreciate.

(c) A depreciation of the dollar makes US goods relatively cheaper than foreign goods, so imports will decrease and exports will increase.

Scoring Guidelines: 7 points (2+3+2)

(a) 2 points:

1 - the supply of saving (loanable funds) increases, shifting the supply curve for loanable funds to the right

1 - the interest rate falls (assertion w/o prior point is ok)

(b) 3 points:

1 - U. S. financial assets become less attractive investment instruments (not just a repeat of the stem)

- must be consistent with the interest change in part (a)

1 - The demand for the U. S. dollar would decrease

- must be consistent with (b)(i) or if answer to (b)(i) is not present, then it must be consistent with the interest rate change given in (a)

1 - The dollar would depreciate

- must be consistent with shift of demand (and/or supply) of dollar

(c) 2 points:

1 - imports will decrease

1 - exports will increase

- must be consistent with appreciation/depreciation of (b)(ii), or if answer to (b)(ii) is not present, then it must be correct (consistent with the stem of the question)
- note that (c) can be scored without having to refer to (a)

Question 3

Correct Answer:

(a) Since the required reserve ratio is 100%, the increase in the money supply is limited to the $5,000 increase in deposits and reserves that results from the Federal Reserve's purchase of $5,000 of bonds.

(b) If the required reserve ratio is reduced to 10 percent, this bank may now make new loans of $4,500 (or .9 x $5,000 = $4,500). With a required reserve ratio of 10 percent, the money-supply multiplier is equal to 10; thus, the maximum increase in the money supply would be $50,000 (or $5,000 x 10 = $50,000).

(c) If banks maintain excess reserves, the money supply will not increase by the full-multiplied amount or the $50,000 maximum. Banks will not lend out the full amount of those reserves that may legally be lent.

(d) If the public holds some currency rather than demand deposits, the money supply will not increase by the full-multiplied amount or the $50,000 maximum. Banks will not receive the maximum amount of new deposits and reserves from which they would be making loans.

Scoring Guideline: 7 points (1+2+2+2)

(a) 1 point: the money supply would increase by $5,000

(b) 2 points:

1 - for the correct amount, $4,500 (= 0.9 x 5,000)

1 - for the correct amount from the Fed's action, $50,000 (= 10 x $5,000)

(c) 2 points:

1 - the increase in the money supply would be less than $50,000

1 - Maximum expansion assumes that banks use all of their excess reserves. Now banks make fewer loans and create less than the maximum possible.

(d) 2 points:

1 - the increase in the money supply would be less than $50,000

1 - increased cash holdings by the public reduce bank deposits, resulting in fewer reserves for the banks

MACROECONOMICS
Section II
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1. Assume that the country of Rankinland is currently in recession.

   (a) Assume that Rankinland produces only food and clothing. Draw a correctly labeled production possibilities curve for Rankinland. Show a point that could represent the current output combination and label it A.

   (b) Assume that the Central Bank of Rankinland pursues an expansionary monetary policy.

   (i) Identify the open-market operation that the Central Bank would use.

   (ii) Draw a correctly labeled money market graph and show the short-run effect of the expansionary monetary policy on the nominal interest rate.

   (iii) Assuming no change to the price level, what happens to the real interest rate as a result of the expansionary monetary policy? Explain.

   (iv) Given your answer to part (b)(iii) regarding the real interest rate, what happens to the real gross domestic product (GDP) in the short run? Explain.

   (c) Suppose Rankinland has a current account deficit. Rankinland's currency is called the bera.

   (i) What will initially happen to the current account deficit in Rankinland solely due to the change in the real GDP from part (b)(iv) ? Explain.

   (ii) What will happen to the international value of the bera solely due to the change in the real GDP from part (b)(iv) ? Explain.

GO ON TO THE NEXT PAGE.

2. The following is a simplified balance sheet for Mi Tierra Bank in the United States.

Mi Tierra Bank

Assets		Liabilities	
Required reserves	$10,000	Demand deposits	$100,000
Excess reserves	$5,000		
Loans	$85,000	Owner's equity	$ 0

(a) What is the reserve requirement?

(b) Assume that Luis withdraws $5,000 in cash from his checking account at Mi Tierra Bank.

(i) By how much will Mi Tierra Bank's reserves change based on Luis' withdrawal?

(ii) What is the initial effect of the withdrawal on the M1 measure of money supply? Explain.

(iii) As a result of the withdrawal, what is the new value of excess reserves on the balance sheet of Mi Tierra Bank based on the reserve requirement from part (a) ?

(c) Assume that the next day John withdraws from Mi Tierra Bank an amount that exceeds the bank's excess reserves. Assuming that no loans are called in, how can Mi Tierra Bank cover its required reserves?

3. Assume the economy of Andersonland is in a long-run equilibrium with full employment. In the short run, nominal wages are fixed.

(a) Draw a correctly labeled graph of short-run aggregate supply, long-run aggregate supply, and aggregate demand. Show each of the following.

(i) Equilibrium output, labeled Y_1

(ii) Equilibrium price level, labeled PL_1

(b) Assume that there is an increase in exports from Andersonland. On your graph in part (a), show the effect of higher exports on the equilibrium in the short run, labeling the new equilibrium output and price level Y_2 and PL_2, respectively.

(c) Based on your answer in part (b), what is the impact of higher exports on real wages in the short run? Explain.

(d) As a result of the increase in exports, export-oriented industries in Andersonland increase expenditures on new container ships and equipment.

(i) What component of aggregate demand will change?

(ii) What is the impact on the long-run aggregate supply? Explain.

STOP

END OF EXAM

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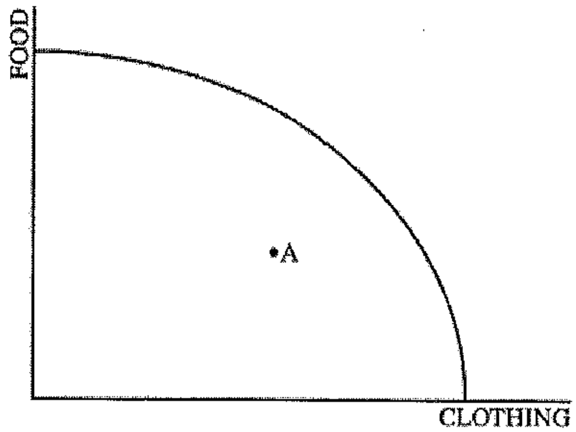
2012 SCORING GUIDELINES

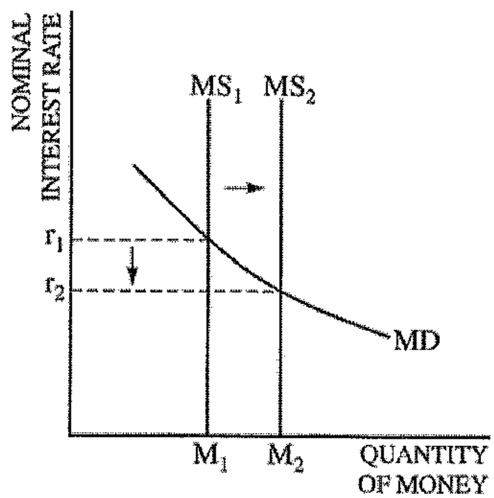
Question 1

12 Points (2 + 6 + 4)



(a) 2 points:

- One point is earned for a correctly labeled graph of the production possibilities curve (PPC).
- One point is earned for showing point A inside the PPC.



(b) 6 points:

- One point is earned for identifying the buying of bonds as the correct open-market operation to use.
- One point is earned for drawing a correctly labeled graph of the money market.
- One point is earned for showing a rightward shift of the money supply curve, resulting in a lower interest rate.
- One point is earned for stating that the real interest rate will fall.
- One point is earned for explaining that with the price level remaining constant, when the nominal interest rate falls, the real interest rate also falls.
- One point is earned for stating that the real GDP will increase in the short run and explaining that investment or consumption increases, causing aggregate demand to increase.

Question 1 (continued)

(c) 4 points:

- One point is earned for stating that the current account deficit will increase.
- One point is earned for explaining that the increase in real GDP increases income, which causes imports to increase and net exports to decrease.
- One point is earned for stating that the international value of the bera will decrease.
- One point is earned for explaining that the decline in the international value of the bera is due to an increase in the supply of the bera.

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2012 SCORING GUIDELINES

Question 2

5 points (1 + 3 + 1)

(a) 1 point:

- One point is earned for calculating the correct reserve requirement of 10 percent ($10,000/$100,000).

(b) 3 points:

- One point is earned for stating that total bank reserves will decrease by $5,000.
- One point is earned for stating that the $5,000 withdrawal has no effect on the M1 measure of the money supply because it only changes the composition of M1 between cash and demand deposits.
- One point is earned for stating that the new value of the excess reserves is $500.

(c) 1 point:

- One point is earned for stating that the bank can borrow from the Federal Reserve or from another bank.

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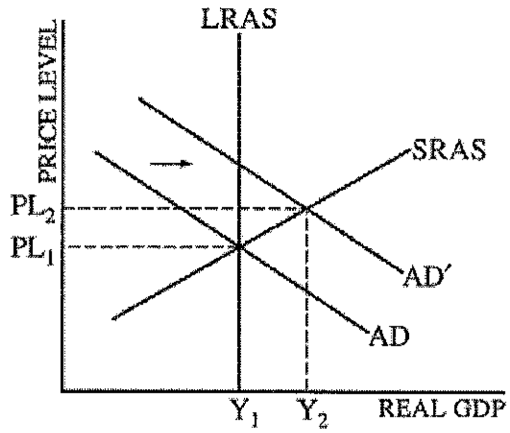
Question 3

6 points (2 + 1 + 1 + 2)



(a) 2 points:

- One point is earned for drawing a correctly labeled graph and showing the AD and SRAS curves and PL_1.
- One point is earned for showing a vertical LRAS curve at the output Y_1 through the intersection of the SRAS and AD curves.

(b) 1 point:

- One point is earned for showing a rightward shift of the aggregate demand curve and showing Y_2 and PL_2.

(c) 1 point:

- One point is earned for stating that real wages will fall because the price level has increased and the nominal wages are fixed in the short run.

(d) 2 points:

- One point is earned for stating that the investment component of AD will change.
- One point is earned for stating that the long-run aggregate supply curve will shift to the right because the capital stock has increased.

MACROECONOMICS

Section II

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1. Assume that the United States economy is operating at full employment.

   (a) Using a correctly labeled graph of the long-run aggregate supply, short-run aggregate supply, and aggregate demand, show each of the following.

      (i) Current price level, labeled PL_1

      (ii) Current output level, labeled Y_1

   (b) Assume that personal savings in the United States increase. Using a correctly labeled graph of the loanable funds market, show the impact of the increase in personal savings on the real interest rate.

   (c) Based on the real interest rate change identified in part (b),

      (i) will interest-sensitive expenditures increase, decrease, or remain unchanged?

      (ii) what will happen to the rate of economic growth? Explain.

   (d) Assume that the real interest rate of the euro zone increases relative to the real interest rate of the United States. Draw a correctly labeled graph of the foreign exchange market for the euro and show the impact of the change in the real interest rate in the euro zone on each of the following.

      (i) Demand for the euro. Explain.

      (ii) Value of the euro relative to the United States dollar

   (e) Assume that the United States current account balance is zero. Based on the change in the value of the euro identified in part (d)(ii), will the United States current account balance now be in surplus, be in deficit, or remain at zero?

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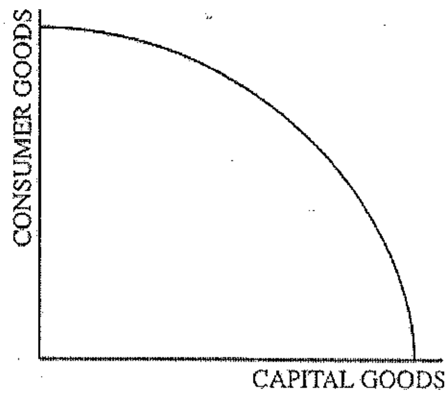
2. Assume that the country of Fischerland produces only consumer goods and capital goods.



(a) The graph above shows the production possibilities curve for Fischerland. The production of which of the following exhibits increasing opportunity costs: consumer goods only, capital goods only, both goods, or neither good?

(b) Redraw the graph given above. Show a point that represents fully employed and efficiently used resources on the redrawn graph and label it A.

(c) Assume there is a recession in Fischerland. On your graph in part (b), label as C a point representing the recession.

(d) Identify a fiscal policy action that the Fischerland government can take to address the recession.

(e) Assume instead that no discretionary policy actions are taken. Will short-run aggregate supply increase, decrease, or remain the same in the long run? Explain.

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3. Inflation and expected inflation are important determinants of economic activity.

(a) Draw a correctly labeled graph of a short-run Phillips curve.

(b) Using your graph in part (a), show the effect of an increase in the expected rate of inflation.

(c) What is the effect of the increase in the expected rate of inflation on the long-run Phillips curve?

(d) Given the increase in the expected rate of inflation from part (b),

(i) will the nominal interest rate on new loans increase, decrease, or remain unchanged?

(ii) will the real interest rate on new loans increase, decrease, or remain unchanged?

(e) Assume that the nominal interest rate is 8 percent. Borrowers and lenders expect the rate of inflation to be 3 percent, and the growth rate of real gross domestic product is 4 percent. Calculate the real interest rate.

STOP

END OF EXAM

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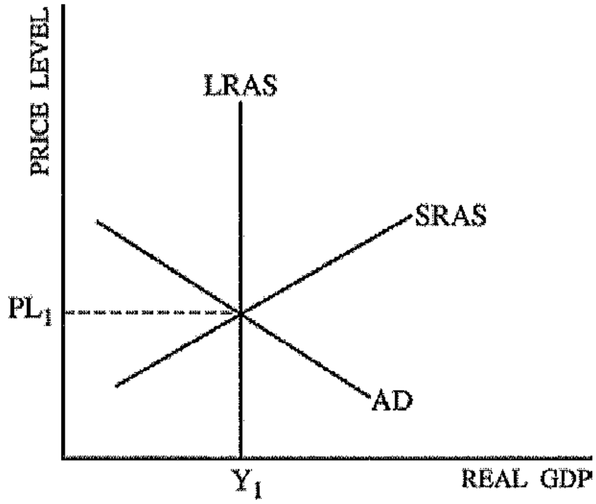
2013 SCORING GUIDELINES

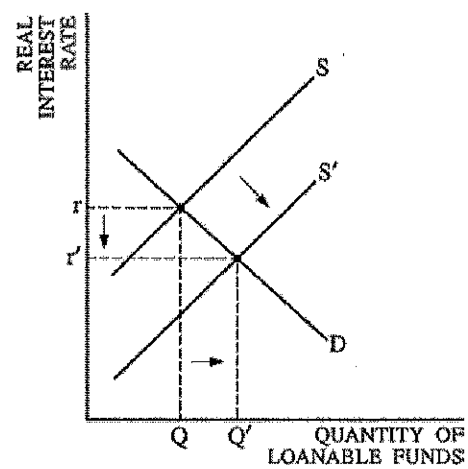
Question 1

10 Points (2 + 2 + 2 + 3 + 1)



(a) 2 points:

- One point is earned for drawing a correctly labeled graph, showing AD, SRAS, and PL_1.
- One point is earned for drawing a vertical LRAS curve at Y_1 that is at the intersection of AD and SRAS.



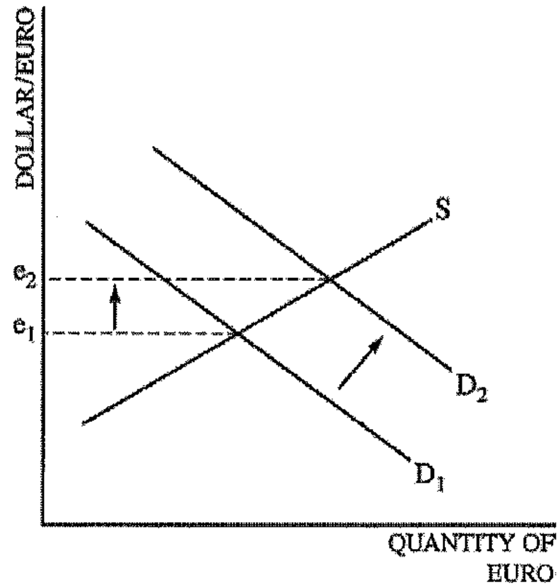
(b) 2 points:

- One point is earned for drawing a correctly labeled graph of the loanable funds market.
- One point is earned for shifting the supply curve to the right and showing a decrease in real interest rate.

(c) 2 points:

- One point is earned for stating that interest-sensitive expenditures will increase.
- One point is earned for stating that the economic growth rate will increase because higher investment will increase capital formation.

Question 1 (continued)



(d) 3 points:

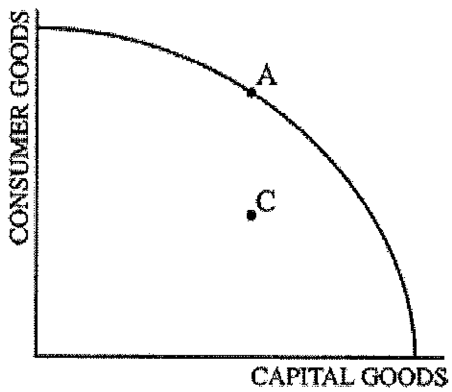
- One point is earned for drawing a correctly labeled graph of the foreign exchange market for the euro.
- One point is earned for shifting the demand curve to the right and showing an increase in the value of the euro.
- One point is earned for explaining that the demand for the euro increases because the higher real interest rate in the euro zone leads to higher returns for financial investments in the euro zone, attracting funds from the United States to the euro zone.

(e) 1 point:

- One point is earned for stating that United States current account will be in surplus.

Question 2

5 points (1 + 1 + 1 + 1 + 1)



(a) 1 point:

- One point is earned for answering both goods.

(b) 1 point:

- One point is earned for showing point A on the production possibilities curve.

(c) 1 point:

- One point is earned for showing point C inside the production possibilities curve.

(d) 1 point:

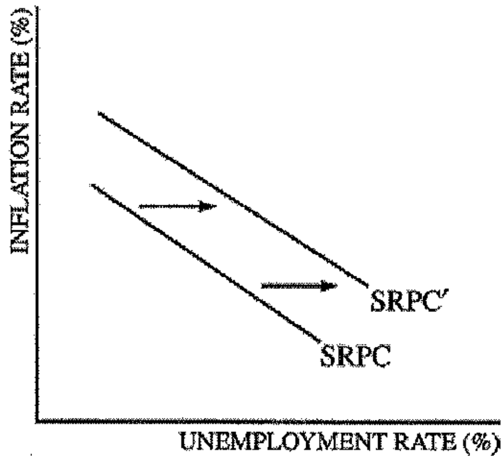
- One point is earned for identifying an expansionary fiscal policy, such as increasing government spending or decreasing taxes.

(e) 1 point:

- One point is earned for stating that SRAS will increase because wages and some other production costs decrease during a recession.

Question 3

6 points (1 + 1 + 1 + 2 + 1)



(a) 1 point:

- One point is earned for drawing a correctly labeled graph of the short-run Phillips curve.

(b) 1 point:

- One point is earned for shifting the short-run Phillips curve to the right.

(c) 1 point:

- One point is earned for stating that the increase in expected inflation does not affect the long-run Phillips curve.

(d) 2 points:

- One point is earned for stating that the nominal interest rate will increase.
- One point is earned for stating that the real interest rate will remain unchanged.

(e) 1 point:

- One point is earned for calculating the real interest rate: 8%-3%=5%.