3. Lizland is a small island nation, and its currency is the Lizland crown (LIZ). The economy of Lizland is in short-run macroeconomic equilibrium with a 600 million crown recessionary gap.

Part A

Policymakers in Lizland are considering taking action to close the recessionary gap in the short run.

i. The central bank of Lizland is considering implementing monetary policy. The banking system of Lizland has ample reserves. Identify a specific monetary policy action the central bank of Lizland would implement to close the recessionary gap in the short run.

ii. The government of Lizland is also considering changing its spending, and the marginal propensity to consume is 0.75. Calculate the minimum change in government spending and identify the direction of the change required to fully close the 600 million crown recessionary gap in the short run. Show your work.

Part B

Assume that the government of Lizland decides to change its spending as calculated in part A (ii). Based solely on this change, will the price level in Lizland increase, decrease, or remain the same in the short run? Explain.

Part C

The nations of Lizland and Andoh are trading partners with flexible exchange rates. The currency of Andoh is the Andoh note (AND). Draw a correctly labeled graph of the foreign exchange market for the Lizland crown (LIZ). Based solely on the change in the price level in part B, show the change in the international value of the Lizland crown on your graph.

STOP

END OF EXAM

3. The table provided shows the quantities and unit prices of shirts, bread, and pants, the only three goods produced in the country of Middleland in 2021 and 2022. Assume that 2021 was the base year.

	Shirts	Bread	Pants
Unit Prices in 2021	$11	$4	$12
Unit Prices in 2022	$10	$5	$15
Quantities Produced in 2021 and 2022	50	70	30

A. Was the real GDP in 2021 in Middleland greater than, less than, or equal to the nominal GDP in 2021? Explain.

B. Calculate the real GDP in Middleland in 2022. Show your work.

C. Assume that Middleland was in short-run equilibrium in 2022 and that POTENTIAL real GDP was $1,150 in 2022. Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Middleland in 2022, and show each of the following.

i. The equilibrium real output and price level, labeled Y_1 and PL_1, respectively

ii. The full-employment output, labeled Y_F

D. Assume the marginal propensity to consume in Middleland is 0.8. Calculate the minimum change and state the direction of change in government spending required to close the output gap in the short run in Middleland. Show your work.

STOP

END OF EXAM

3. Assume that Nepal is in long-run macroeconomic equilibrium and has an open economy.

A. Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Nepal, and show each of the following.

i. The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively

ii. The full-employment output, labeled Y_F

B. Nepal and Thailand are trading partners. Assume that Thailand experiences an increase in real income. On your graph in part A, show the short-run effect of the increase in real income in Thailand on real output and the price level in Nepal, labeling the new short-run equilibrium real output Y_2 and the new short-run equilibrium price level PL_2.

C. Assume that at the short-run equilibrium shown on your graph in part B, Nepal is experiencing a 400 million rupee output gap. Policymakers in Nepal want to use discretionary fiscal policy to return the economy to full employment, and the marginal propensity to consume is 0.75. Calculate the minimum change and state the direction of change in government spending required to completely close the output gap in the short run. Show your work.

D. Assume instead that no discretionary policy actions are taken. Explain how automatic stabilizers in the short run would reduce the effect of the change in real output shown on your graph in part B.

STOP

END OF EXAM

1. Assume that the economy of Moneyland is in equilibrium with an actual unemployment rate equal to the natural rate of unemployment.

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

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively
(ii) The full employment output, labeled Y_F

(b) Assume that consumer spending in Moneyland decreases from $110,000 to $100,000 as a result of a decrease in disposable income in Moneyland from $135,000 to $110,000.

(i) Calculate the marginal propensity to consume in Moneyland. Show your work.
(ii) Show the short-run effect of the decrease in consumer spending in Moneyland on your graph in part (a), labeling the new equilibrium real output and price level Y_2 and PL_2, respectively.

(c) Following the decrease in consumer spending, explain how the economy would adjust in the long run in the absence of any policy actions.

(d) The central bank of Moneyland is concerned about the short-run effects of the decrease in consumer spending on the broader economy and is considering taking action rather than waiting for the long-run adjustment process. Assuming the banking system in Moneyland has ample reserves, identify a specific monetary policy action the central bank of Moneyland would take to increase consumer spending.

(e) Draw a correctly labeled graph of the reserve market in Moneyland, and show the effect of the monetary policy action identified in part (d) on the policy rate.

(f) How would the change in the policy rate shown on your graph in part (e) affect each of the following in Moneyland in the short run?

(i) The quantity of national savings
(ii) Unemployment. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Assume the economy of Vanderlandia is in short-run equilibrium with a real GDP of \$500 million. The full-employment level of real GDP is \$550 million.

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

(i) The current equilibrium real output and price level, labeled Y_1 and PL_1, respectively

(ii) The full-employment output, labeled Y_F

(b) Assume no policy action is taken to restore full employment.

(i) Explain how the economy will adjust in the long run.

(ii) Following the long-run adjustment process, will the price level in Vanderlandia be greater than, less than, or equal to PL_1 shown on your graph in part (a)?

(c) Assume instead that policymakers in Vanderlandia are considering changing government spending to restore full employment in the short run and that the marginal propensity to save is 0.2.

(i) Calculate the minimum change and state the direction of change in government spending required to completely close the output gap in the short run. Show your work.

(ii) On your graph in part (a), show the short-run effect of the change in government spending in part (c)(i), labeling the new equilibrium price level PL_2.

(d) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in government spending in part (c)(i) on the equilibrium real interest rate.

(e) Based on the change in the real interest rate shown on your graph in part (d), what will happen to each of the following?

(i) The price of previously issued bonds

(ii) The rate of economic growth in the long run. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. The economy of Northland is in short-run equilibrium with an actual unemployment rate of 7% and an actual inflation rate of 1%. The natural unemployment rate in Northland is 5%.

(a) Using the relevant numerical values given, draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium point as X. Plot the relevant numerical values provided on the graph.

(b) Is the expected inflation rate greater than, less than, or equal to 1% ? Explain.

(c) Assume the marginal propensity to consume is 0.9.

(i) If the government decreases income taxes by $20 billion, calculate the maximum change in aggregate demand. Show your work.

(ii) If instead the government increases spending by $20 billion, calculate the maximum change in aggregate demand. Show your work.

(d) On your graph in part (a), show a possible new short-run equilibrium point labeled Z that would result if the government increases spending and there is no change in inflationary expectations.

(e) How would an increase in unemployment compensation affect aggregate demand in the short run? Explain.

(f) Assume instead the government takes none of the preceding policy actions. (Northland is still in short-run equilibrium; the actual unemployment rate is 7%, the actual inflation rate is 1%, and the natural unemployment rate is 5%.) What will happen to each of the following in the long run?

(i) The short-run aggregate supply curve. Explain.
(ii) The short-run Phillips curve
(iii) The actual unemployment rate

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Assume a country's economy is operating below full employment.

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

(i) The current equilibrium real output and price level, labeled as Y_1 and PL_1, respectively
(ii) The full-employment output, labeled as Y_F

(b) Identify one fiscal policy action the country's government can take to restore full employment.

(c) Assume instead that no fiscal policy action is taken. Suppose a change in investment spending causes real GDP to increase by $\$200$ billion. Calculate the minimum change in investment spending that could have caused this increase in real GDP if the marginal propensity to save is 0.25. Show your work.

(d) Assume the output gap was initially $\$800$ billion. On your graph in part (a), show the short-run effect of the change in investment spending identified in part (c), labeling the new equilibrium real output as Y_2 and the new equilibrium price level as PL_2.

(e) Given your answer to part (d), is the actual rate of unemployment greater than, less than, or equal to the natural rate of unemployment? Explain.

(f) Assume that private savings now increase. Draw a correctly labeled graph of the loanable funds market and show the effect of the increase in private savings on the real interest rate.

(g) Based solely on the change in the real interest rate shown in part (f), what will happen to each of the following?

(i) Real GDP in the short run. Explain.
(ii) Long-run aggregate supply. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Assume the United States economy is in short-run macroeconomic equilibrium at an output level greater than potential output.

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

(i) The current equilibrium real output and price level, labeled as Y_1 and PL_1, respectively
(ii) The full-employment output, labeled as Y_F

(b) Assume government spending increases by $100 billion. On your graph in part (a), show the short-run effect of the change in government spending on the equilibrium real output and price level. Label the new equilibrium output as Y_2 and the new equilibrium price level as PL_2.

(c) Assume the marginal propensity to consume is 0.8. As a result of the increase in government spending, what is the numerical value of the maximum change in each of the following in the short run?

(i) Real output
(ii) Household savings

(d) Draw a correctly labeled graph of the money market and show the effect of the change in real output identified in part (c)(i) on the equilibrium nominal interest rate.

(e) Based on the change in the nominal interest rate shown in part (d), what will happen to the prices of previously issued bonds in the short run?

(f) The United States and the European Union are trading partners with flexible exchange rates. The currency in the United States is the dollar, and the currency in the European Union is the euro. Assume the inflation rate in the United States increases relative to the inflation rate in the European Union. As a result of the change in the United States inflation rate, what will happen to each of the following in the foreign exchange market?

(i) The demand for dollars. Explain.
(ii) The international value of the dollar

(g) Suppose the Federal Reserve attempts to keep the value of the dollar constant in the foreign exchange market. Based on the change in the value of the dollar in part (f)(ii), should the Federal Reserve buy or sell each of the following?

(i) The euro
(ii) The dollar

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. An economy is currently in short-run equilibrium with a recessionary output gap of \$600 billion.

(a) Draw a single correctly labeled graph with both the short-run and long-run Phillips curves. Label the initial short-run equilibrium point X.

(b) Suppose the government implements fiscal policy in order to achieve full-employment output and the marginal propensity to consume is 0.75.

(i) Calculate the minimum change in government spending required to increase aggregate demand by the amount of the output gap of \$600 billion. Show your work.

(ii) Suppose instead the government wants to change taxes rather than government spending. Calculate the minimum change in taxes required to increase aggregate demand by the amount of the output gap of \$600 billion. Show your work.

(c) Assume instead the government takes no policy action to close the output gap shown in part (a). Explain how the economy will adjust in the long run.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

MACROECONOMICS
Section II
Total Time—1 hour
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. 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. 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. Use a pen with black or dark blue ink.

1. Canada is an open economy that is currently in a recessionary output gap.

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

      (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1, respectively

      (ii) Full-employment output, labeled Y_f

   (b) The central bank and the government do not take any policy actions to close the output gap.

      (i) Explain how the economy will adjust to full employment in the long run.

      (ii) On your graph in part (a), show how the economy adjusts to full employment in the long run.

   (c) Suppose the Canadian government is unwilling to wait for the long-run adjustment process. The marginal propensity to consume is 0.8. The equilibrium real output is \$500 billion and the full-employment output is \$540 billion.

      (i) Calculate the minimum change and indicate the direction of change in government spending required to shift the aggregate demand curve by the amount of the output gap.

      (ii) Calculate the minimum change and indicate the direction of change in taxes required to shift the aggregate demand curve by the amount of the output gap.

   (d) Assume instead that the Canadian central bank takes actions to restore the economy to full-employment output by influencing investment spending. Draw a correctly labeled graph of the money market, and show the effect of the actions taken by the central bank on the equilibrium interest rate.

   (e) Canada and Mexico are trading partners. Draw a correctly labeled graph of the foreign exchange market of the Canadian dollar, and show the effect of the change in the interest rate in part (d) on the value of the Canadian dollar with respect to the Mexican peso.

MACROECONOMICS
Section II
Planning Time—10 minutes
Writing Time—50 minutes

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 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. 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. Use a pen with black or dark blue ink.

1. Assume that the United States economy is operating below full employment.
   (a) Draw a correctly labeled graph of long-run aggregate supply, short-run aggregate supply, and aggregate demand, and show each of the following.
      (i) Current equilibrium output and price level, labeled as Y_1 and PL_1
      (ii) Full-employment output, labeled as Y_f
   (b) Assume that the Federal Reserve targets a new federal funds rate to reach full employment. Should the Federal Reserve target a higher or lower federal funds rate?
   (c) Given the Federal Reserve action you identified in part (b), draw a correctly labeled graph of the money market and show the effect on the nominal interest rate.
   (d) The policy makers pursue a fiscal policy rather than the monetary policy in part (b). Assume that the marginal propensity to consume is 0.8 and the value of the recessionary gap is \$300 billion.
      (i) If the government changes its spending without changing taxes to eliminate the recessionary gap, calculate the minimum required change in government spending.
      (ii) If the government changes taxes without changing government spending to eliminate the recessionary gap, will the minimum required change in taxes be greater than, smaller than, or equal to the minimum required change in government spending in part (d)(i) ? Explain.
   (e) Assume the government lowers income tax rates to eliminate the recessionary gap. Will each of the following increase, decrease, or stay the same?
      (i) Aggregate demand. Explain.
      (ii) Long-run aggregate supply. Explain.

MACROECONOMICS
Section II
Planning Time—10 minutes
Writing Time—50 minutes

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 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. Use a pen with black or dark blue ink.

1. Assume that the United States economy is currently operating below the full-employment level of real gross domestic product with a balanced budget.

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

      (i) Current output and price level, labeled as Y_1 and PL_1, respectively

      (ii) Full-employment output, labeled as Y_f

   (b) The United States government increases spending on goods and services by $100 billion, which is financed by borrowing. How will the increase in government spending affect each of the following?

      (i) Cyclical unemployment

      (ii) The natural rate of unemployment

   (c) If the marginal propensity to consume is equal to 0.75, calculate the maximum possible change in real gross domestic product that could result from the $100 billion increase in government spending.

   (d) Using a correctly labeled graph of the loanable funds market, show the effect of the $100 billion increase in government spending on the real interest rate.

   (e) Based on the real interest rate change in part (d), what is the effect on the long-run economic growth rate? Explain.

   (f) Now assume that instead of financing the $100 billion increase in government spending by borrowing, the United States government increases taxes by $100 billion. With this equal increase in government spending and taxes, will the real gross domestic product increase, decrease, or remain the same? Explain.