2024

AP® Macroeconomics

Sample Student Responses and Scoring Commentary Set 1

Inside:

Free-Response Question 1

- ☑ **Scoring Guidelines**
- ☑ **Student Samples**
- ☑ **Scoring Commentary**

Question 1: Long — 10 points

(a) Calculate the natural rate of unemployment as 5% and show your work. **1 point**

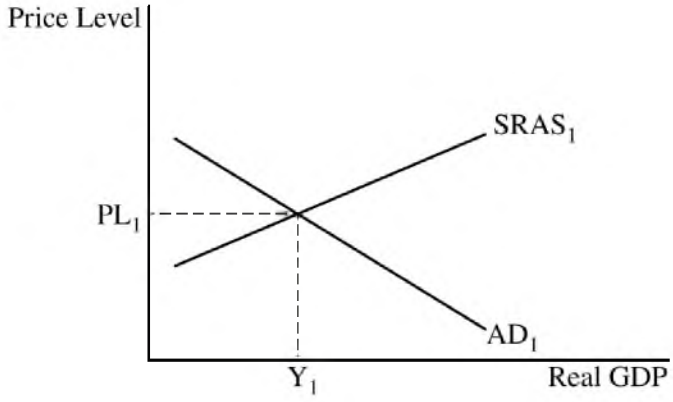
Natural UER = Actual UER – Cyclical UER = 8% – 3% = 5%

OR

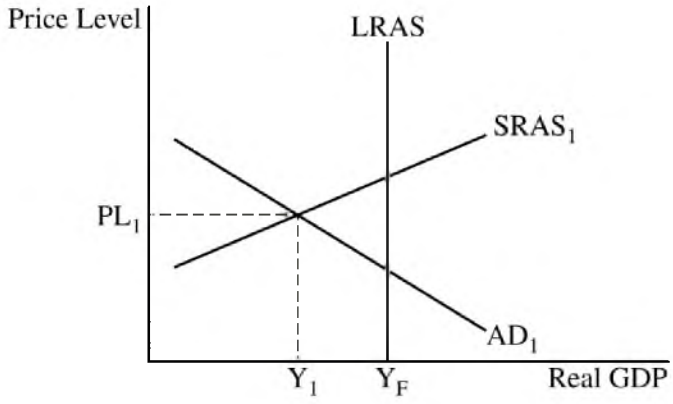
Structural UER = Actual UER – Cyclical UER – Frictional UER = 8% – 3% – 4% = 1%

Natural UER = Frictional UER + Structural UER = 4% + 1% = 5%

(b) Draw a correctly labeled aggregate demand–aggregate supply graph that shows PL_1 and Y_1 at the intersection of the aggregate demand (AD) and short-run aggregate supply (SRAS) curves. **1 point**

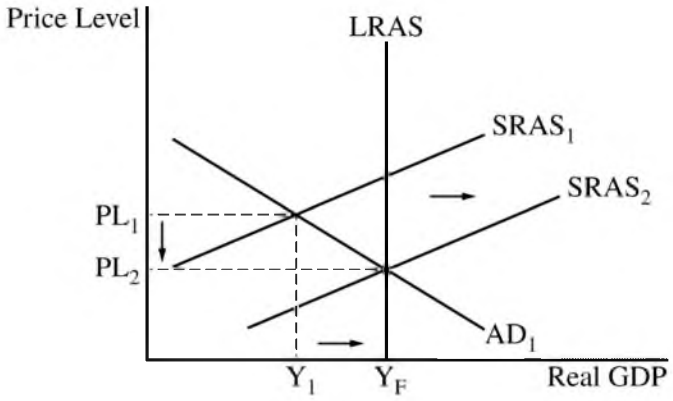
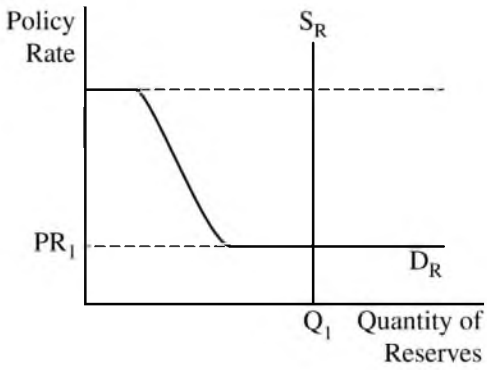


For the second point, the graph must show a vertical long-run aggregate supply (LRAS) curve to the right of Y_1 and label the full-employment output Y_F. **1 point**

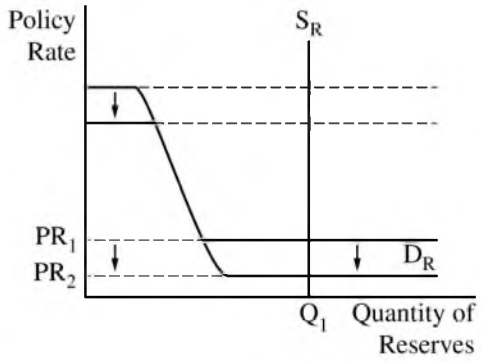


Total for part (b) **2 points**

(c) (i) Explain that input prices (e.g., nominal wages) and/or inflationary expectations will decrease, causing SRAS to increase until it reaches full employment. **1 point**

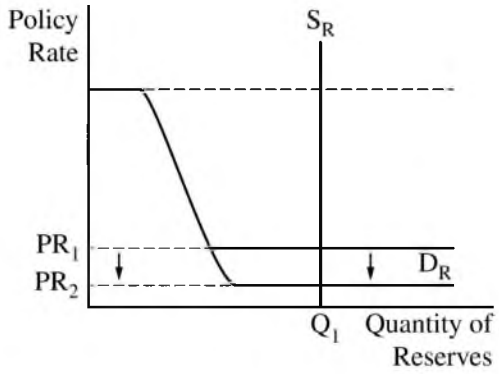
(ii)	On the graph from part (b), show how Alpha's economy will adjust to full employment in the long run by shifting the SRAS curve to the right until it intersects the AD and LRAS curves at a lower price level, labeled PL_2.  	**1 point**
	Total for part (c)	**2 points**
(d)	State that the central bank would decrease its administered interest rates or decrease interest on reserves.	**1 point**
(e)	Draw a correctly labeled graph of the reserve market with the supply curve intersecting the demand curve in the range of ample reserves.  	**1 point**

	For the second point, the graph must show a decrease in the administered interest rates, resulting in a decrease in the policy rate.	**1 point**



OR

For the second point, the graph must show a decrease in the lower bound of the demand curve for reserves, resulting in a decrease in the policy rate.



	Total for part (e)	**2 points**
(f)	For the first point, state that the price of previously issued bonds will increase and the price level will increase.	**1 point**
	For the second point, explain that the decrease in nominal interest rates will increase interest-sensitive spending (consumption, investment, or net exports), which will increase aggregate demand.	**1 point**
	Total for part (f)	**2 points**
	Total for question 1	**10 points**

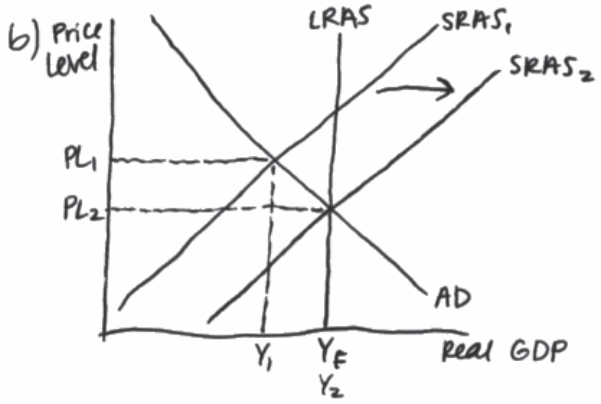
Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ● **Question 2** ○ **Question 3** ○

Begin your response to each question at the top of a new page.

1.a) NRU = 8% − 3% = 5% (NRU = total unemployment − cyclical unemployment)

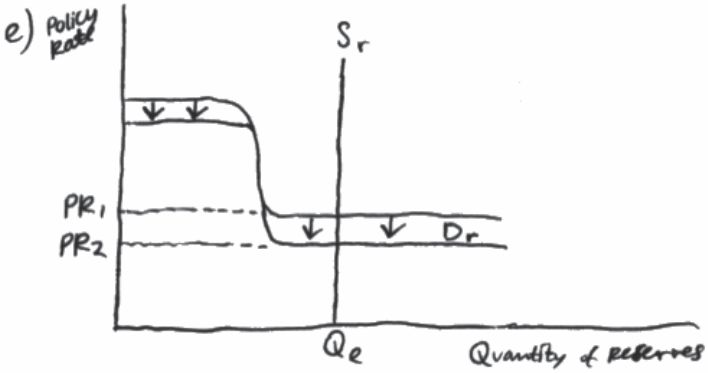
b)



c) In the long run, the SRAS will increase (shift right). This occurs because, due to the current recessionary gap, input costs and wages will decrease, allowing companies to produce more.

d) A specific monetary policy action the central bank of Alpha would take to close the output gap in the short run is to decrease the administered interest rates.

e)



f) i) The price of previously issued bonds will increase.

ii) The price level will increase. Since the policy rate decreases, the interest rates will also decrease. Because the interest rates decrease, interest-sensitive spending will increase. This will cause aggregate demand to shift right (increase). Since AD shifts right, the price level increases.

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

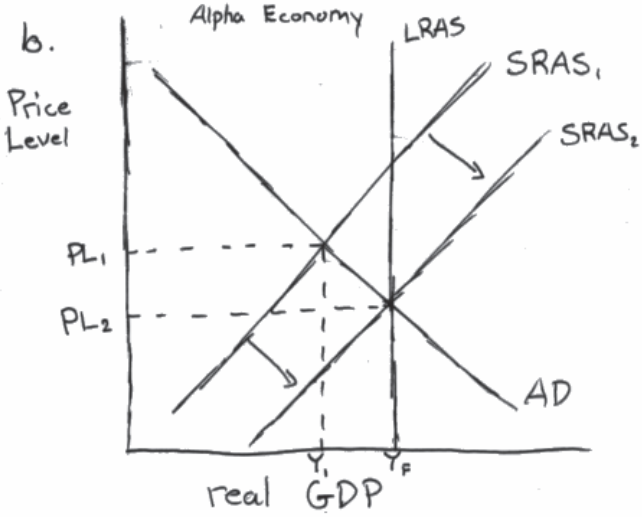
Question 1 ● Question 2 ○ Question 3 ○

Begin your response to each question at the top of a new page.

a. Natural Unemployment = Actual unemployment - Cyclical Unemployment

8 - 3 = 5 The natural rate of unemployment is 5%.

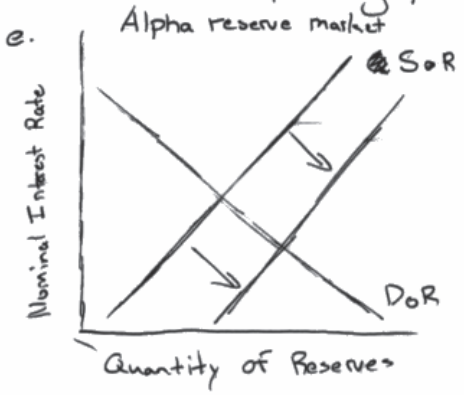
b.



c. i. In the long run, Alpha's economy will adjust to full employment through an increase in aggregate supply.

d. The central bank of Alpha could decrease interest rate levels to close the output gap in the short run.

e.



f. If interest rate levels fall, the price of previously issued bonds will increase. The price level will rise, because the policy rate increasing will cause aggregate demand to increase, which means the price level will rise.

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ● Question 2 ○ Question 3 ○

Begin your response to each question at the top of a new page.

a) NRU = FRU + SRU

Actual unemployment = CRU + FRU + SRU

8% = 3% + 4% + SRU

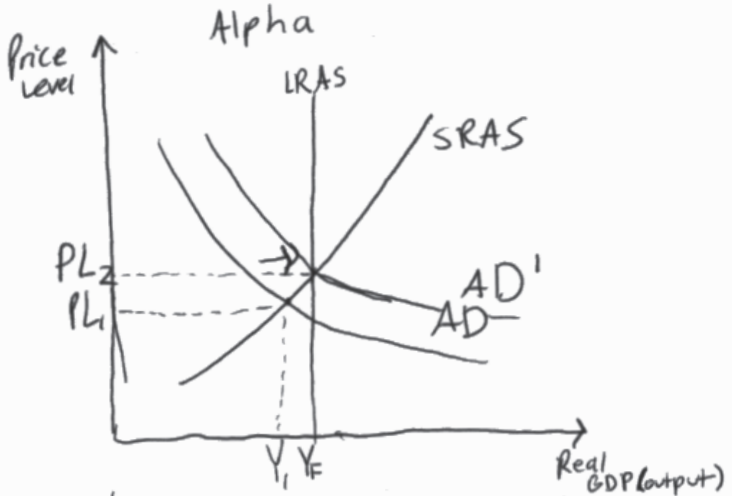
8% = 7% + SRU

1% = SRU

NRU = 4% + 1% = **5%**

NRU → natural rate of unemployment
SRU → structural rate of unemployment
CRU → cyclical rate of unemployment
FRU → frictional rate of unemployment

b) i) ii)



c) ii)

c) i) With a lower price level, prices of goods will drop, bringing an increased aggregate demand, which will shift the aggregate demand curve to the right and cause a return to full employment in the long run.

d) To close the output gap, Alpha's central bank needs to increase the money supply, which will reduce interest rates, therefore increasing investment, and thus increasing aggregate demand

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

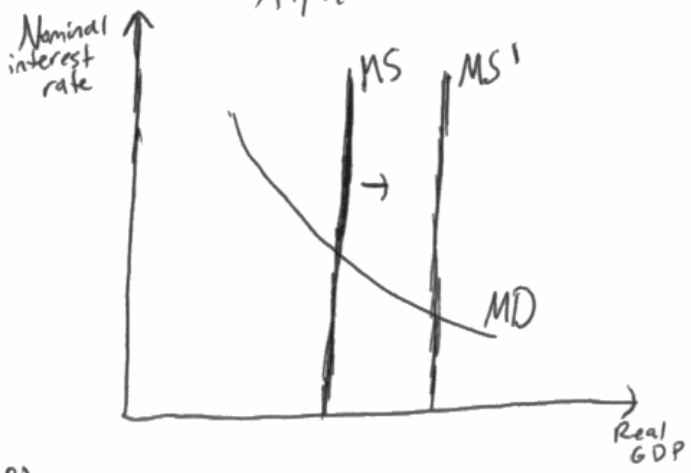
Question 1 ● Question 2 ○ Question 3 ○

Begin your response to each question at the top of a new page.

to close the output gap. To do this, the central bank can utilize open market operations to buy government bonds/securities.

e)

Alpha



f) i) Decrease

ii) Price level would increase. With more money supply there is more disposable income, which will increase spending. This increased spending will cause prices to rise. Additionally, the increase in money supply will increase aggregate demand, as explained in part(d). This increase in aggregate demand increases price level.

Question 1

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

The question examined students' understanding of the aggregate demand–aggregate supply model in a recessionary gap environment, self-adjustment to full employment in the long run, and the effects of monetary policy in a banking system with ample reserves on the reserve market, the price of previously issued bonds, and the price level.

The question begins by asking students to assume that the hypothetical economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

In part (a) students are asked to calculate the natural rate of unemployment and to show their work.

In part (b) students are asked to draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, show (i) the current equilibrium real output and price level, labeled Y_1 and PL_1, respectively, and (ii) the full-employment output, labeled Y_F.

In part (c) students are asked to assume that policymakers take no action to close the output gap and to (i) explain how Alpha's economy will adjust to full-employment in the long-run and (ii) show on the graph in part (b) how Alpha's economy will adjust to full employment in the long-run, labeling the new equilibrium price level PL_2.

In part (d) students are asked to assume that Alpha's central bank is considering using monetary policy to close a recessionary output gap. The banking system in Alpha has ample reserves. Students are asked to identify a specific monetary policy action the central bank of Alpha would take to close the output gap in the short run.

In part (e) students are asked to draw a correctly labeled graph of the reserve market in Alpha, and show the effect of the monetary policy action identified in part (d) on the policy rate.

Finally, in part (f), based on the change in the policy rate shown in part (e), students are asked what will happen to (i) the price of previously issued bonds and (ii) the price level and to explain.

Question 1 (continued)

Sample: 1A
Score: 10

The response earned 1 point in part (a) for calculating the natural rate of unemployment as 5% and showing the work. The response earned the first point in part (b) for drawing a correctly labeled aggregate demand-aggregate supply graph showing Y_1 and PL_1 at the intersection of AD and SRAS. The response earned the second point in part (b) for correctly showing a vertical LRAS curve to the right of Y_1 and labeling the full-employment output Y_F. The response earned 1 point in part (c)(i) for explaining that input prices will decrease, causing SRAS to increase. The response earned 1 point in part (c)(ii) for correctly shifting the SRAS curve to the right until it intersects the AD and LRAS curves at a lower price level, labeled PL_2. The response earned 1 point in part (d) for stating that the central bank would decrease its administered interest rates. The response earned the first point in part (e) for drawing a correctly labeled graph of the reserve market with the supply curve intersecting the demand curve in the range of ample reserves. The response earned the second point in part (e) for showing a decrease in administered interest rates, resulting in a decrease in the policy rate. The response earned the first point in part (f) for stating that the price of previously issued bonds will increase, and the price level will increase. The response earned the second point in part (f) for explaining that interest-sensitive spending will increase, which increases aggregate demand.

Sample: 1B
Score: 5

The response earned 1 point in part (a) for calculating the natural rate of unemployment as 5% and showing the work. The response earned the first point in part (b) for drawing a correctly labeled aggregate demand-aggregate supply graph showing Y_1 and PL_1 at the intersection of AD and SRAS. The response earned the second point in part (b) for correctly showing a vertical LRAS curve to the right of Y_1 and labeling the full-employment output Y_F. The response did not earn the point in part (c)(i) because it does not explain that the increase in SRAS is due to a decrease in input prices and/or inflationary expectations. The response earned 1 point in part (c)(ii) for correctly shifting the SRAS curve to the right until it intersects the AD and LRAS curves at a lower price level, labeled PL_2. The response did not earn the point in part (d) because it does not state that the central bank would decrease its administered interest rates or interest on reserves. The response did not earn the first point in part (e) because it does not draw a correctly labeled graph of the reserve market. The response did not earn the second point in part (e) because it does not show a decrease in the administered interest rates, resulting in a decrease in the policy rate. The response earned the first point in part (f) for stating that the price of previously issued bonds will increase, and the price level will increase. The response did not earn the second point in part (f) because it does not explain that the increase in aggregate demand is due to an increase in interest-sensitive spending.

Question 1 (continued)

Sample: 1C
Score: 3

The response earned 1 point in part (a) for calculating the natural rate of unemployment as 5% and showing the work. The response earned the first point in part (b) for drawing a correctly labeled aggregate demand-aggregate supply graph showing Y_1 and PL_1 at the intersection of AD and SRAS. The response earned the second point in part (b) for correctly showing a vertical LRAS curve to the right of Y_1 and labeling the full-employment output Y_F. The response did not earn the point in part (c)(i) because it does not explain that input prices will decrease, causing SRAS to increase until it reaches full employment. The response did not earn the point in part (c)(ii) because it does not shift the SRAS curve to the right until it intersects the AD and LRAS curves at a lower price level, labeled PL_2. The response did not earn the point in part (d) because it does not state that the central bank would decrease its administered interest rates or interest on reserves. The response did not earn the first point in part (e) because it does not draw a correctly labeled graph of the reserve market. The response did not earn the second point in part (e) because it does not show a decrease in the administered interest rates, resulting in a decrease in the policy rate. The response did not earn the first point in part (f) because it states that the price of previously issued bonds will decrease. The response did not earn the second point in part (f) because it does not explain that the increase in aggregate demand is due to an increase in interest-sensitive spending resulting from lower nominal interest rates.