

## Answer Key to Final Exam

### 1. Multiple Choice:

- 1) D
- 2) C
- 3) B
- 4) D
- 5) D
- 6) A
- 7) B
- 8) D
- 9) D
- 10) B
- 11) D
- 12) C
- 13) D
- 14) D
- 15) A
- 16) B
- 17) D
- 18) A
- 19) C
- 20) C
- 21) B
- 22) D

**If you have questions regarding these questions please contact me.**

### Bonus Multiple choices:

- 23.** If a bank customer transferred \$100 from his or her checking account to his or her savings account, which of the following would happen?
- A. M1 would rise by \$100 and M2 would stay constant.
  - B. M1 and M2 would both rise by \$100.
  - C. M1 would fall by \$100 and M2 would rise by \$100.
  - D. M1 would fall by \$100 and M2 would stay constant.
  - E. M1 and M2 would both fall by \$100.

**Answer: D**

**Explanation:** The monetary aggregate M1 includes deposits in checking accounts, but not deposits in savings accounts. So, when a bank customer moves \$100 from his or her checking to his or her savings account, M1 falls by \$100. However, because M2 includes both checking and savings accounts, M2 is unchanged.

### Scenario

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Consider the following information about a hypothetical economy. This year, the real gross domestic product (GDP) is 500,

the price level is 120, and the quantity of money is 6,000.

24. Suppose that the quantity theory of money holds for this economy. Which of the following statements, if any, is true?
- A. Nominal GDP is 600,000.
  - B. The velocity of circulation depends on the quantity of money.
  - C. Potential GDP depends on the quantity of money.
  - D. The velocity of circulation is 10.
  - E. In the long run, the fundamental source of inflation is the growth of potential GDP.
  - F. None of these statements is true.

**Answer: D**

**Explanation:** Nominal GDP equals real GDP times the price level, or  $500 \times 120 = 60,000$ .

The velocity of circulation equals nominal GDP divided by the quantity of money, or  $60,000 / 6,000 = 10$ . On average, each dollar must change hands 10 times to buy the final goods and services in this country's GDP.

The assumptions of the quantity theory of money are that the quantity of money does NOT affect either potential GDP or the velocity of circulation.

The quantity theory of money implies that long-run changes in the price level (for example, inflation) are caused by changes in the quantity of money. So the long-run fundamental source of inflation is the growth of the money supply, not the growth of potential GDP

25. Suppose that the quantity of money increases by 2%. Which, if any, of the following statements is true in the aggregate supply-aggregate demand model for this economy?
- A. Aggregate demand would decrease.
  - B. The aggregate demand curve would shift leftward.
  - C. We would see a rightward movement along the aggregate demand curve, with the price level falling by 2%.
  - D. We would see a leftward movement along the aggregate demand curve, with the price level rising by 2%.
  - E. The aggregate demand curve would shift rightward.
  - F. None of these statements is true.

**Answer: E**

**Explanation:** An increase in the quantity of money would increase aggregate demand. So the aggregate demand curve would shift rightward. The amount of this shift, measured by the vertical distance between the old and new aggregate demand curves, would be 2%.

26. Which of the following is NOT a function that money serves?

- A. Acts as a means of payment in settling a debt
- B. Ensures that the double coincidence of wants is satisfied in barter trades
- C. Serves as a measure for stating the prices of goods and services
- D. Stores value for later exchange of goods and services
- E. Provides a medium of exchange that is generally accepted in trade

**Answer: B**

**Explanation:** Using money does eliminate the double coincidence of wants. However, money is not used in barter trades. Barter is the direct exchange of one good or service for another, with no money involved.

27. The government can reduce the natural rate of unemployment by:  
The government can reduce the natural rate of unemployment by:

- A. Indexing wages, pensions, income taxes, and other nominal variables
- B. Using expansionary fiscal policy
- C. Supporting job placement and training programs
- D. Increasing unemployment compensation benefits
- E. Fooling the public into inaccurately forecasting inflation

**Answer: C**

**Explanation:** The only way that the government can hope to reduce the natural rate of unemployment is to help workers and employers find a match more quickly. Recall that the economy always has some unemployment from frictional and structural unemployment. Frictional unemployment captures the time spent in the job-search process. Structural unemployment measures unemployment caused by people whose skills are no longer useful in the economy. Job training and placement can help mitigate these problems. Beneficial unemployment benefits may actually discourage workers from immediately seeking a job.

Although the government may temporarily reduce unemployment through expansionary policy, it cannot reduce the natural rate of unemployment this way. The Phillips Curve inflation-unemployment trade-off depends on the ability of people to anticipate inflation. If they are fooled and underestimate inflation, then the government can temporarily achieve a large reduction in unemployment accompanied by a small increase in inflation.

Indexing reduces the costs of inflation but does not affect the natural rate of unemployment.

- 28.** Which of the following explains why the economy tends to experience growing prices (inflation) over time?
- A.** The central bank pursues contractionary monetary policy, preventing growth in the money supply.
  - B.** As the population grows, spending on consumption and investment increases.
  - C.** The unemployment rate tends to fall, driving prices upward.
  - D.** The economy's available capital and technology decrease over time.

**Answer: B**

**Explanation:** In general, the aggregate demand and aggregate supply curves shift to the right over time. In addition to the Fed's maintaining money supply growth, a growing population leads to increased spending on consumption goods and investment. Aggregate supply rises because of increased capital (investment), labor (population), and technological progress.

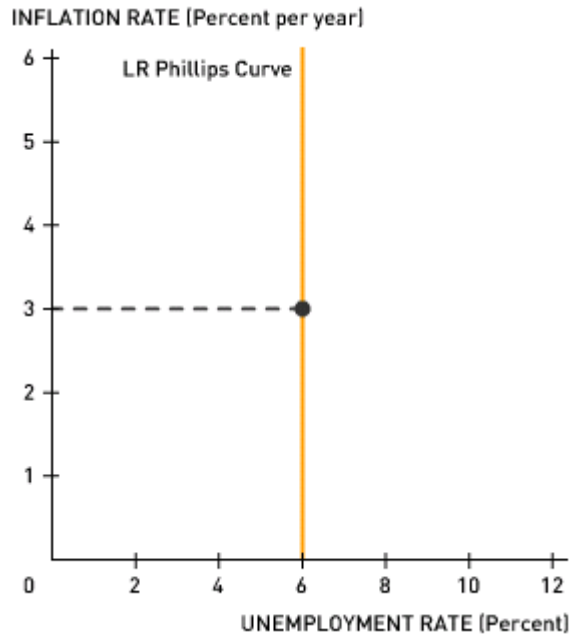
- 29.** When people have rational expectations:
- A.** The short-run Phillips Curve is flat
  - B.** Expansionary policy will not lead to a significant increase in real GDP
  - C.** They make systematic mistakes in their inflation forecasts
  - D.** The government is able to reduce the natural rate of unemployment using expansionary policy
  - E.** Indexing is costly because it hurts borrowers and workers

**Answer: B**

**Explanation:** When people have rational expectations, the short-run and long-run Phillips Curves are vertical, indicating that workers can accurately forecast inflation and do not make systematic mistakes. If the government enacts an expansionary policy, workers will forecast a higher inflation rate, demanding higher nominal wages. This causes an immediate change in the aggregate supply curve, offsetting the gains from increased spending (aggregate demand). The inflation rate rises and the unemployment rate remains at the natural rate.

Indexing simply protects people and businesses from unexpected changes in inflation. By indexing wages, pensions, and other payments, both the payer and payee are protected. If everyone had rational expectations, indexing would make little difference because people would accurately forecast inflation.

- 30.** This is a graph of the long-run Phillips curve.



Which of the following statements is correct?

- A. The long-run unemployment rate is 3%.
- B. The curve shows the positive relationship between unemployment and inflation in the long run.
- C. The curve illustrates the temporary tradeoff between unemployment and inflation.
- D. In the long run, changes in the inflation rate have no effect on unemployment.

**Answer: D**

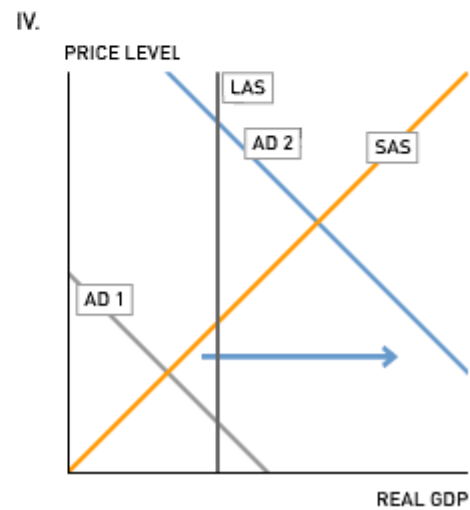
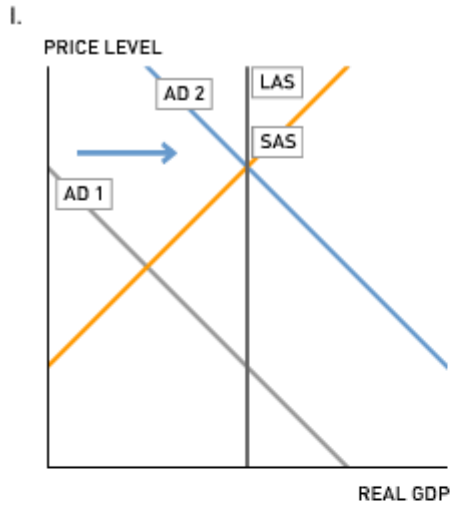
**Explanation:** The long-run Phillips curve is vertical, showing that a change in the inflation rate has no effect on the unemployment rate in the long run. The expected unemployment rate is 6% regardless of whether inflation is 2% or 6% per year.

## SHORT ANSWERS

### 1. Scenario

This question uses an aggregate supply-aggregate demand framework. AD indicates the aggregate demand curve. LAS indicates the long-run aggregate supply curve; SAS indicates the short-run aggregate supply curve.

- a) Consider the following graphs:



Which graph shows the short-run effects of an increase in the quantity of money, with all else held constant?

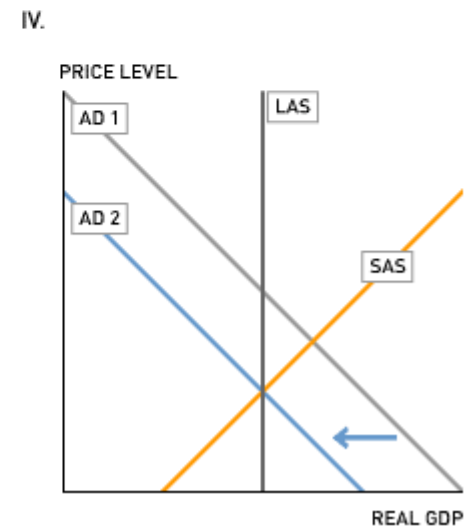
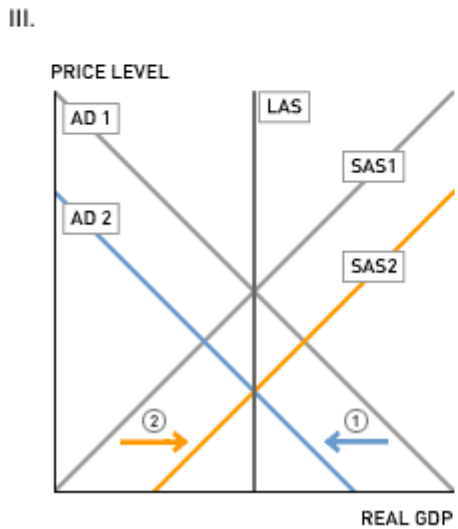
- A. I
- B. II
- C. III
- D. IV
- E. I, II, III, and IV

Your answer is: \_\_\_\_\_ (No need to explain).

**Answer: E**

**Explanation:** Each graph shows an increase in aggregate demand occurring as a result of the increase in the quantity of money. In each case, the new short-run equilibrium results from a movement along the short-run aggregate supply curve. In the case of Graph I, the increase in AD is just enough to bring the economy to full employment, so the economy is also now in a long run equilibrium. In Graphs II, III, and IV, the increase in aggregate demand produced a new short-run equilibrium that was not at full employment.

b) Consider the following graphs:



Which graph shows the long-run effects of a decrease in the quantity of money, with all else held constant?

- A. I
- B. II
- C. III
- D. IV
- E. II, III, and IV

Your answer is: \_\_\_\_\_ (No need to explain).

**Answer: E**

**Explanation:** All the graphs show a decrease in aggregate demand that would occur as a result of the decrease in the quantity of money. In each case, the new short-run equilibrium results from a movement along the short-run aggregate supply curve. In Graph IV, the new short-run equilibrium is also a long-run equilibrium, because the decrease in AD is exactly what was necessary to take the economy to full employment. Graphs II and III also show the long-run effects of a decrease in the quantity of money, as the economy adjusts from its new short-run equilibrium to full employment.

Graph I, however, shows the short-run but not the long-run effects of the decrease in the quantity of money. Here, the decrease in the quantity of money was large enough to generate a new short-run equilibrium with aggregate output below potential GDP. So, the unemployment rate is now above the natural rate of unemployment. In the long run, this high unemployment rate will make workers willing to accept lower nominal wages, shifting the short-run aggregate supply curve rightward until the economy is at full employment.

c) Consider the following graphs:



Which graph shows the long-run effects of an increase in the quantity of money, with all else held constant?

- A. I
- B. II
- C. III
- D. IV
- E. I and II

Your answer is: \_\_\_\_\_ (No need to explain).

**Answer: A**

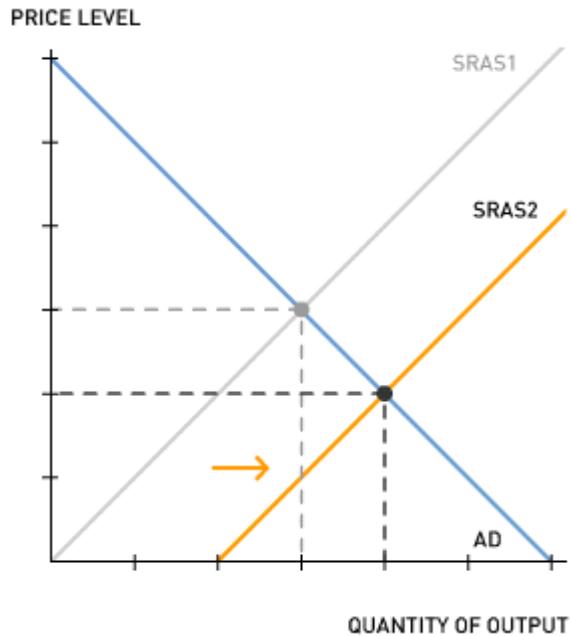
**Explanation:** Graph I shows the increase in aggregate demand that comes from an increase in the quantity of money. In the short run, the effect of rising AD is a movement along SAS1, resulting in an increase in output above potential GDP and a decrease in the unemployment rate below the natural rate. In the long run, this very low unemployment rate will cause workers to ask for higher nominal wages, shifting the short-run aggregate supply until the economy is at full employment at SAS2.

Graph II shows the short-run effects of an increase in the quantity of money. However, it does not show the long-run adjustment to full employment.

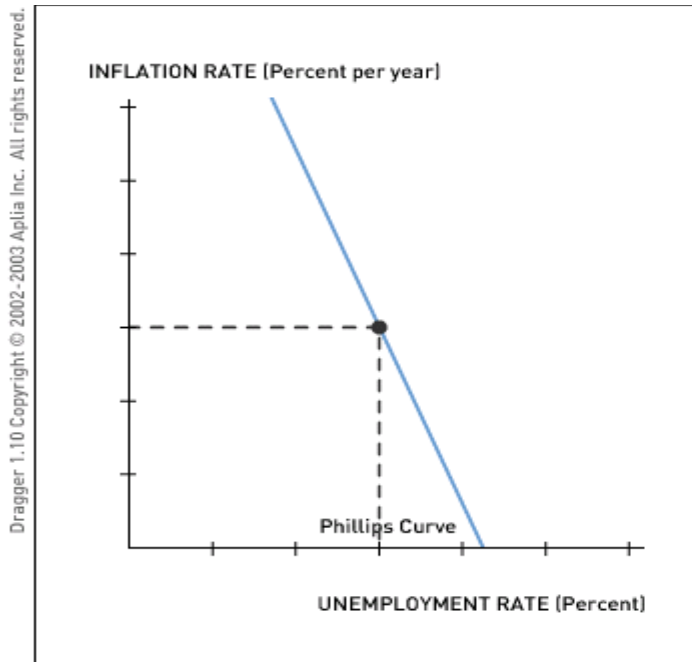
Graph III shows aggregate demand decreasing, which would occur if the quantity of money decreased.

Graph IV shows an initial increase in aggregate demand, which would occur if the quantity of money increased. The new short-run equilibrium has the economy closer to full employment. However, this graph then shows a long-run adjustment AWAY from full employment, as the short-run aggregate supply curve shifts leftward. In fact, in the long run, the short-run aggregate supply curve would shift rightward and bring the economy to full employment.

2. This graph shows the short-run aggregate supply (SRAS1) and aggregate demand (AD) curves initially in equilibrium. Oil-producing countries significantly increase the quantity of oil produced, resulting in lower energy costs. This results in a rightward shift of the short-run aggregate supply curve (SRAS2).

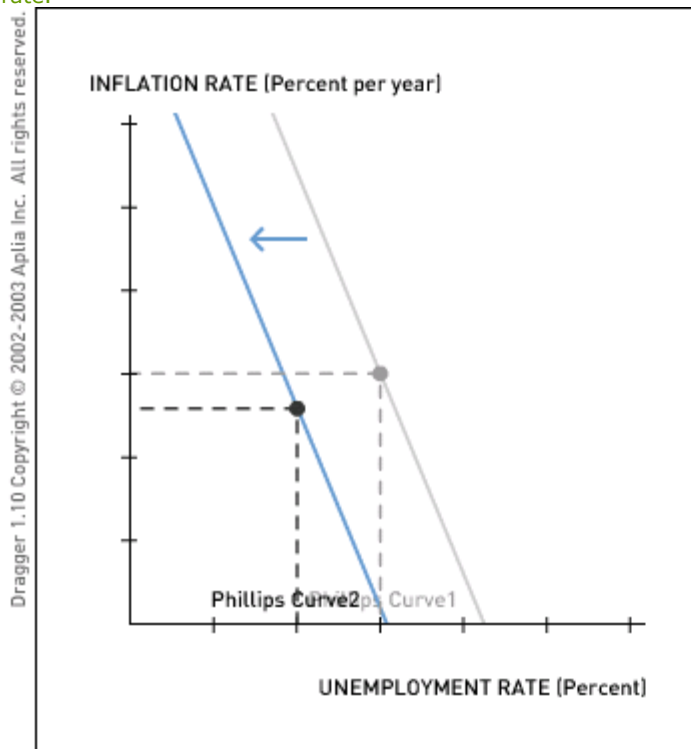


Show the impact of this change in short-run aggregate supply on the short-run Phillips curve by showing the move of the point (using an arrow) or shifting the curve in the graph below.



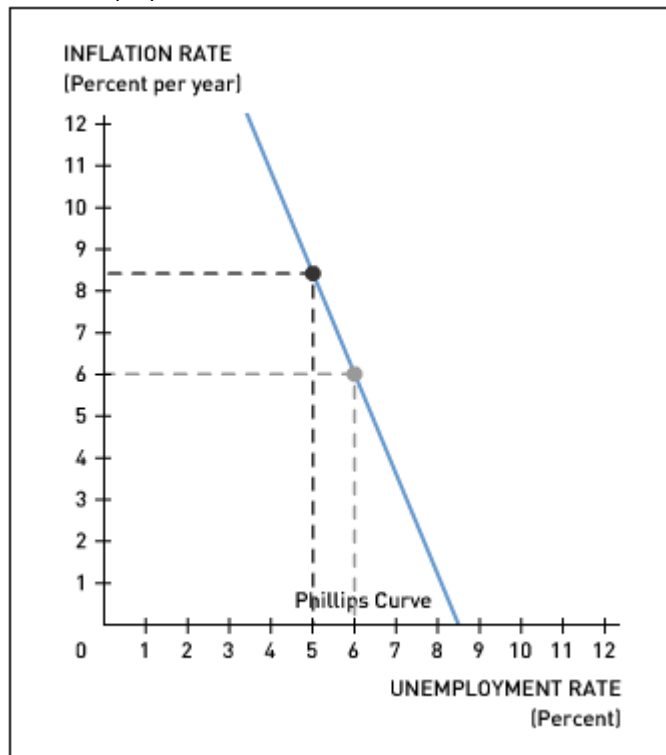
**Answer: See graph below**

**Explanation:** A Phillips curve shows the short-run tradeoff between unemployment and inflation due to shifts in the aggregate demand curve along the short-run aggregate supply curve. Therefore, as the short-run aggregate supply curve shifts because of the decrease in oil prices, the short-run Phillips curve shifts to the left, illustrating that the favorable supply-side shock has improved the tradeoff between unemployment and inflation. For any given inflation rate, the economy can expect a lower unemployment rate.

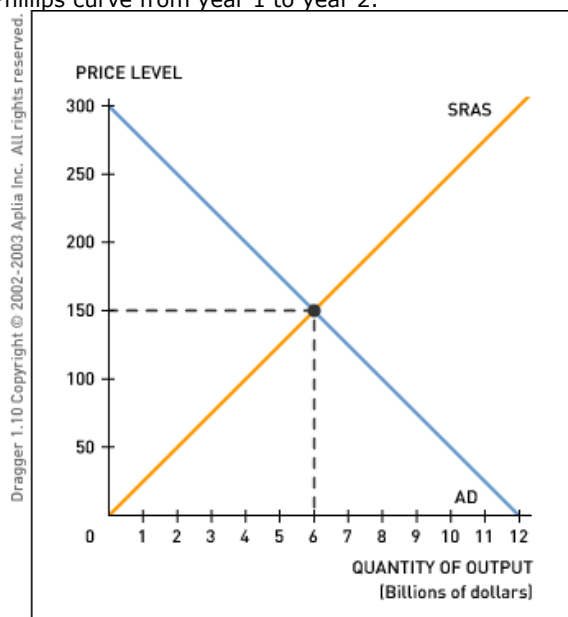


3. The Phillips curve shows the combinations of inflation and unemployment rates available in the short run for a

hypothetical economy. In year 1, the inflation rate is 8.5% and the unemployment rate is 5%. In year 2, the inflation rate has fallen to 6% and the unemployment rate has risen to 6%.



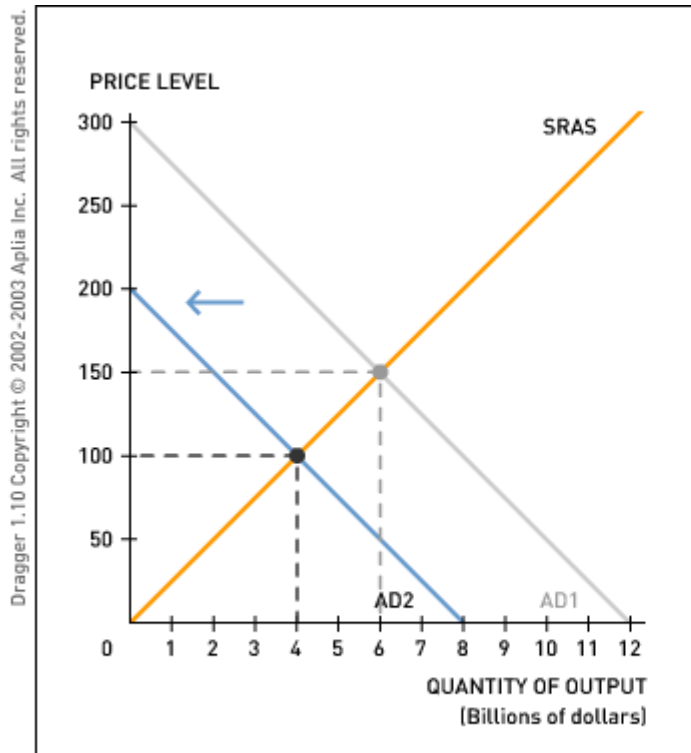
The aggregate supply-aggregate demand graph shows the economy in equilibrium in year 1. SRAS is short-run aggregate supply and AD is aggregate demand. Shift the appropriate curve or curves to be consistent with the change in the Phillips curve from year 1 to year 2.



**Answer: See Graph below.**

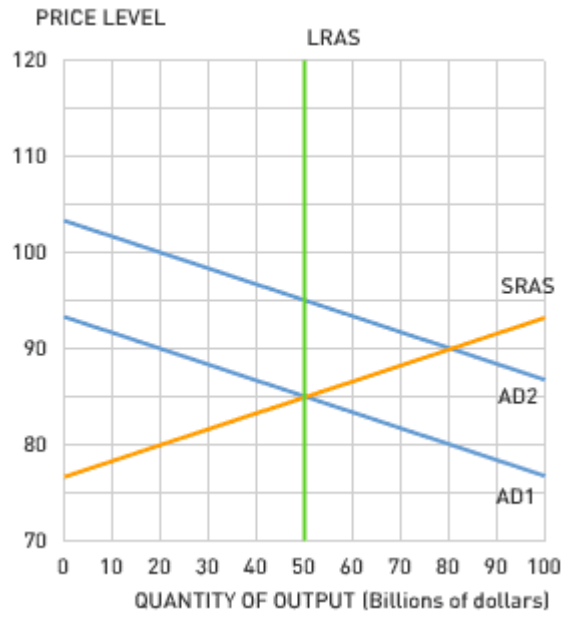
**Explanation:** The economy traded a higher rate of unemployment for a lower rate of inflation. This is represented by an upward movement along a short-run Phillips curve. A short-run Phillips curve is the result of shifts in the aggregate demand curve for a given short-run aggregate supply curve.

A decrease in aggregate demand reduces the quantity of output, which increases the unemployment rate. A decrease in aggregate demand also decreases the price level, leading to a decrease in inflation. Therefore, a reduction in aggregate demand, or a leftward shift of the aggregate demand curve, is responsible for a movement down a short-run Phillips curve.

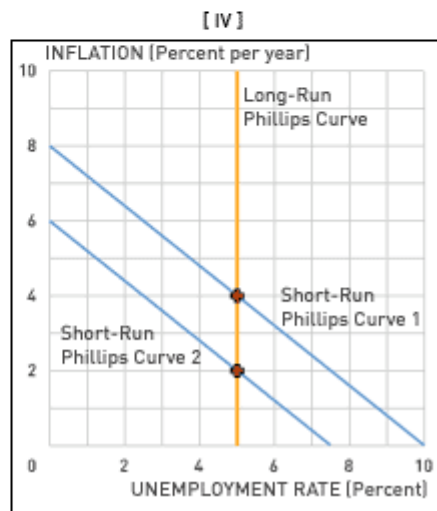
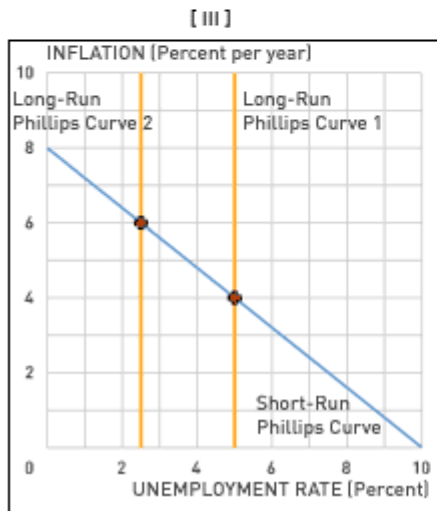
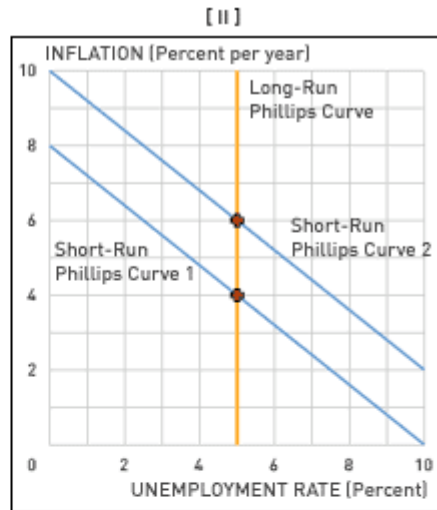
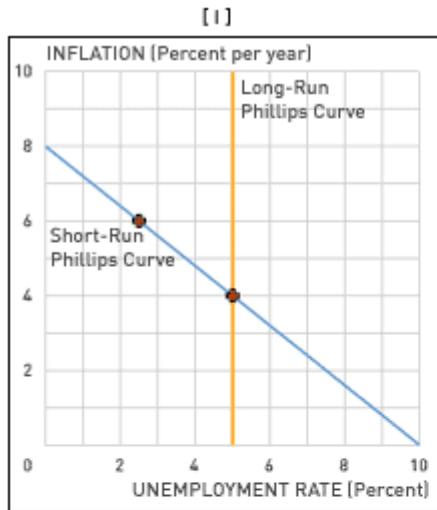


#### 4. Scenario

This aggregate supply-aggregate demand graph shows the economy in a long-run equilibrium at an output level of \$50 billion and a price level of 85. The government institutes a new prescription drug plan for the elderly, which causes government spending to increase, shifting the aggregate demand curve from AD1 to AD2.



- a) Which of the following graphs shows the short-run impact of increased government spending on the Phillips curve?



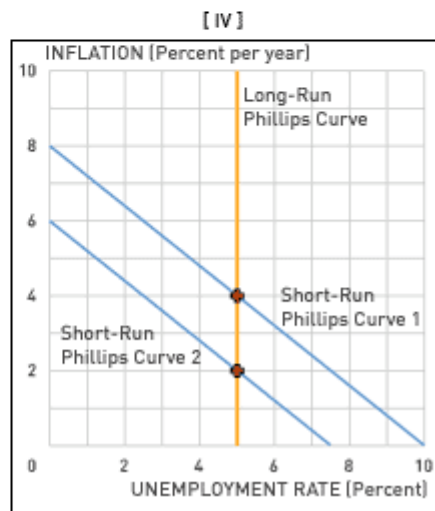
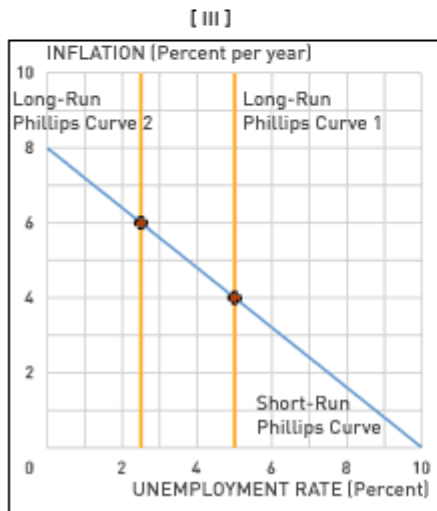
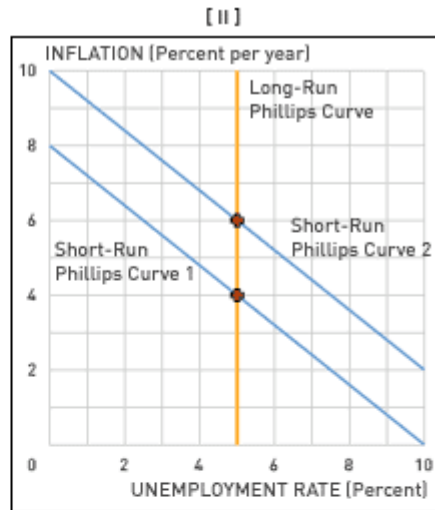
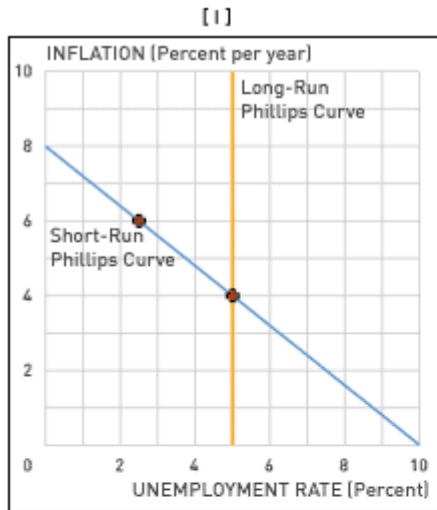
- A. I
- B. II
- C. III
- D. IV

Your answer is: \_\_\_\_\_ (No need to explain).

**Answer: A**

**Explanation:** The increase in aggregate demand increases both the quantity of output and the price level in the short run. The increase in output corresponds to a decrease in the unemployment rate, represented by an upward movement along the short-run Phillips curve.

- b) Which of the following graphs shows the long-run impact of the increase in government spending on the Phillips curve?



- A. I
- B. II
- C. III
- D. IV

Your answer is: \_\_\_\_\_ (No need to explain).

**Answer: B**

**Explanation:** The increase in the aggregate demand curve temporarily lowers the unemployment rate below its natural rate, but as people expect higher inflation, the short-run Phillips curve shifts to the right. This brings the economy back to the natural rate of unemployment, but at a higher inflation rate.

### 5. Scenario

**Suppose the government wants to increase its expenditure by \$200 but does not have this much money so it sells 5-year government bonds to the Fed on the open market. Then it deposits the \$200 in a commercial bank for future use. Assume that all commercial banks have the same reserve ratio (RR) requirement of 5% and that they lend out all extra reserves as loans. Further assume that all borrowers do not keep the loans in the form of currencies but deposit them in some banks for later use.**

- (1) What is the money multiplier for this economy?

The money multiplier is  $\frac{1}{RR} = \frac{1}{5\%} = \frac{1}{0.05} = 20$

- (2) How much does the total money supply increase because of this open market operation?

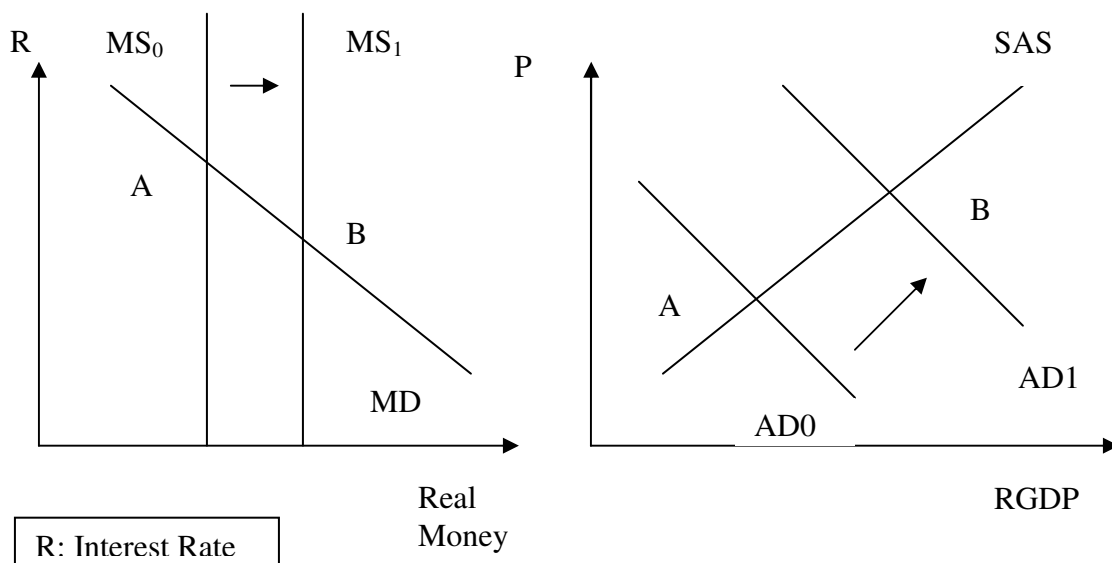
$$\Delta M = \Delta D * \text{money multiplier} = \$200 * 20 = \$4000$$

- (3) Suppose the demand for money does not change. Will this open market operation increase or decrease equilibrium interest rate?

**Increase in money supply will decrease the equilibrium interest rate.**

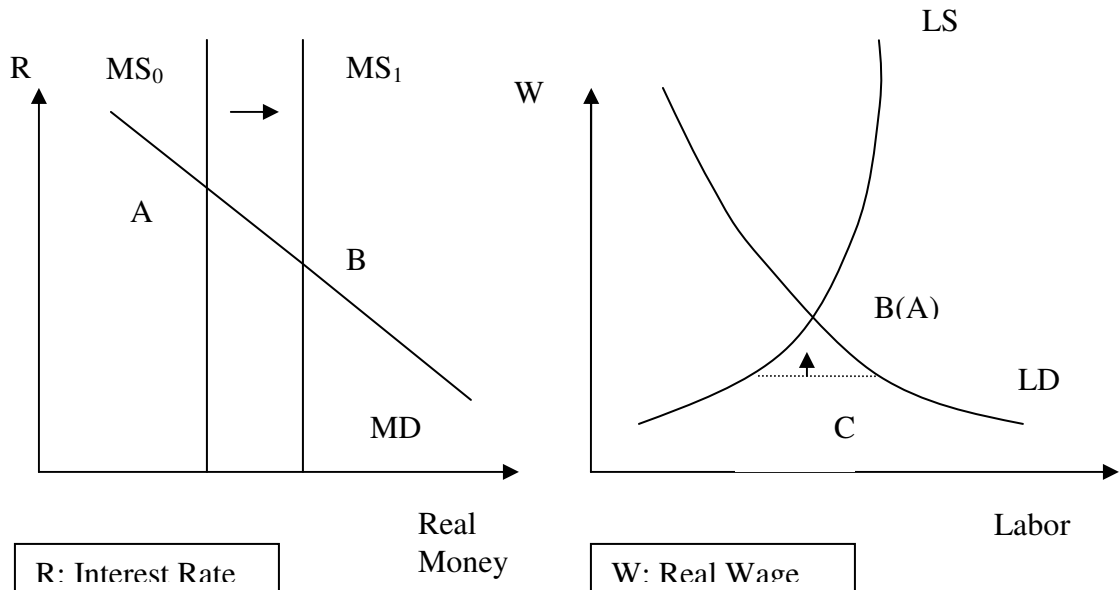
- (4) Using graphs for the money market and goods market to show the effect of this monetary policy in the short run.

**In the short run, money wages will remain the same so short run aggregate supply curve will not shift. Thus the equilibrium price and RGDP will both increase due to the increase in aggregate demand.**



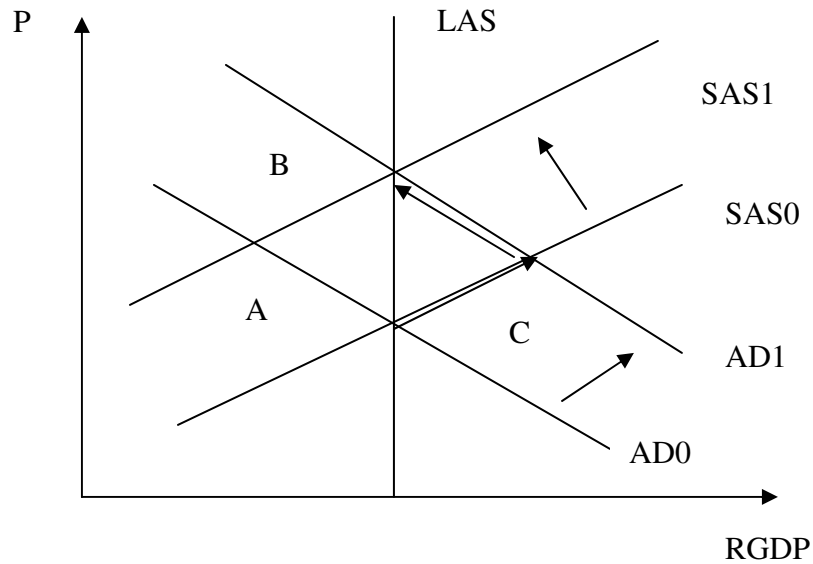
- (5) Using graphs for the money market, labor market, and goods market to show the effect of this monetary policy in the long run. (assume the economy is originally at long run equilibrium)

**In the long run, money wages will adjust to clear the labor market: when the economy is shifted because of demand change, there will be over-employment in labor market, which means real wage will be below equilibrium level. As the real wage rate rises to clear labor market, money wage rate also increases so short run aggregate supply curve will shift leftward. Thus the equilibrium price will be higher but equilibrium RGDP will still be at the potential GDP level.**



R: Interest Rate

W: Real Wage



- (6) If the original level of money stock in the economy is \$1000, and the original equilibrium price level in the economy is 2, what will the equilibrium price level be in the long run after this monetary shock? (Assume the Quantity Theory of Money is true!)

**The quantity theory of money says that in the long run, percentage change in equilibrium price will equal the percentage change in money stock. Hence, the money supply increase of 400% (from \$1000 to \$5000) will lead to a 400% increase in equilibrium price, which means the equilibrium price will finally be 8.**