

**EXAMINATION 4 VERSION A**  
**"Short-Run Business Cycles"**  
**November 25, 2024**

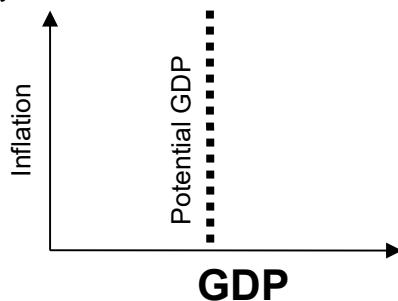
INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 100.

**I. Multiple choice:** Circle the one best answer to each question. [1 pts each, 22 pts total]

- (1) Most economists believe that business cycles are caused mainly by fluctuations in
- a. the labor force.
  - b. the capital stock.
  - c. aggregate demand.
  - d. the population.
  - e. aggregate supply (that is, potential GDP).

- (2) If GDP is greater than potential GDP, then the unemployment rate is usually
- a. greater than the natural rate of unemployment.
  - b. less than the natural rate of unemployment.
  - c. equal to the natural rate of unemployment.
  - d. zero.

- (3) On a graph like that below, most economic fluctuations cause the economy to
- a. move horizontally left and right.
  - b. move vertically up and down.
  - c. cycle in a clockwise direction.
  - d. cycle in a counterclockwise direction.



- (4) The marginal propensity to consume, according to Keynes, is
- a. the fraction of consumers who are willing to spend money.
  - b. the ratio of the change in consumption spending to the change in total income.
  - c. the fraction of total GDP represented by consumption spending.
  - d. the slope of the demand curve for a product.

- (5) Keynes argued that in a recession, the government should
- a. cut spending.
  - b. increase spending.
  - c. raise taxes to eliminate any government deficits.
  - d. make no changes to spending or taxes so as to stabilize the economy.

- (6) Keynes claimed that any increase in government purchases causes an even larger increase in total GDP because of a subsequent increase in
- a. the interest rate.
  - b. consumption spending.
  - c. investment spending.
  - d. the money supply.
  - e. net exports.
  - f. the inflation rate.

- (7) The “paradox of thrift” in Keynes’s model is that if consumers suddenly begin saving more, then in the short run,
- a. consumption spending will rise.
  - b. GDP will fall.
  - c. imports will rise.
  - d. the money supply will decrease.

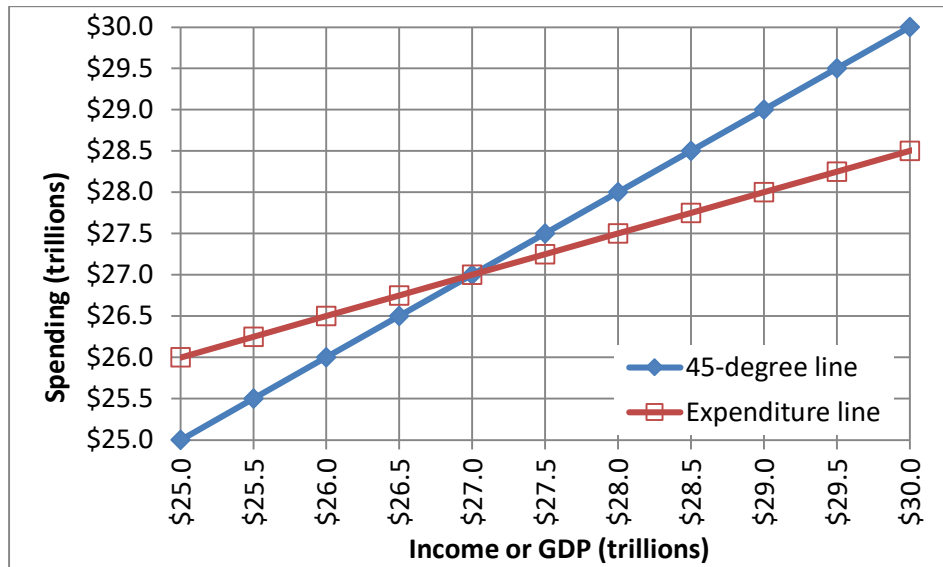
- (8) According to Keynes's model, the bigger the marginal propensity to consume,
- the bigger the government-purchases multiplier.
  - the smaller the government-purchases multiplier.
  - The marginal propensity to consume is unrelated to the multiplier.
- (9) The "permanent income hypothesis" says that short-term changes in income have little effect on spending because of
- unemployment.
  - consumption smoothing.
  - liquidity constraints.
  - high marginal tax rates.
- (10) A country's own aggregate income affects
- its exports only.
  - its imports only.
  - both its exports and imports.
  - neither its exports nor imports.
- (11) The bigger the marginal propensity to import,
- the bigger the government-purchases multiplier.
  - the smaller the government-purchases multiplier.
  - The marginal propensity to consume is unrelated to the multiplier.
- (12) Suppose the interest rate in the U.S. decreases but interest rates in the rest of the world remain unchanged. Then the U.S. dollar will
- appreciate.
  - depreciate.
  - remain unchanged.
  - cannot be determined from information given.
- (13) The spending category most sensitive to the interest rate is
- residential investment.
  - consumption of services.
  - consumption of nondurables.
  - government purchases.
- (14) The main reason why the aggregate demand curve slopes down is
- businesses dislike inflation and respond to it by decreasing investment spending.
  - consumers save more during periods of high inflation and less during periods of low inflation.
  - foreigners do not want to purchase exports from a country with high inflation.
  - the central bank raises interest rates when inflation is high and lowers them when inflation is low.
- (15) If actual GDP is greater than potential GDP, the inflation rate will typically
- remain constant.
  - rise eventually.
  - fall eventually.
  - rise immediately.
  - fall immediately.
- (16) In the standard model of economic fluctuations, the inflation adjustment line moves slowly because
- policymakers are slow to respond to business cycles.
  - inflation has momentum.
  - consumers and businesses are often unaware of booms and recessions.
  - government agencies that measure inflation are normally one year behind in their data collection.
- (17) Suppose GDP initially equals potential GDP. Then government purchases are increased sharply. What happens *first*, according to the standard model of economic fluctuations?
- the inflation rate increases.
  - the interest rate increases.
  - GDP increases.
  - the unemployment rate increases.
  - exports increase.
- (18) According to the standard model, a boom caused by relaxed monetary policy eventually results in
- lower inflation.
  - higher inflation.
  - the same inflation rate as before.
- (19) A "price bubble" is a rise in the price of some item caused by
- an increase in the cost of producing the item.
  - an expectation that the price will continue to rise.
  - an increase in the price of a close substitute for the item.
  - an unexpected increase in the tax rate on the item.
- (20) A mortgage on a house is said to be "under water" if
- the property has experienced flood damage.
  - the market value of the house is less than the amount owed on the mortgage.
  - the homeowner has lost their source of income.
  - construction of the house is incomplete.

- (21) “Countercyclical monetary policy” means
- taking actions that move the economy in a counterclockwise circle.
  - policy that discourages the use of bicycles.
  - raising interest rates in recessions and lowering them in booms.
  - lowering interest rates in recessions and raising them in booms.

- (22) “Quantitative easing” means
- adjusting numbers to fit the problem at hand.
  - massive purchases of bonds by the central bank.
  - gradual implementation of fiscal policy so as not to disturb markets.
  - lowering interest rates.

**II. Problems:** Insert your answer to each question in the box provided. Use graphs and margins for scratch work. Only the answers in the boxes will be graded. Work carefully: partial credit is not normally given for questions in this section.

(1) [Keynesian cross, Keynesian multipliers: 12 pts] The following diagram shows a Keynesian cross diagram, including a 45-degree line and an expenditure line.



a. What is the current level of real GDP—that is, the point of "spending balance"?

\$	trillion
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Suppose government purchases for defense spending *increase* by **\$ 0.5 trillion**.

b. Does the expenditure line shift *up* or *down* in the short run?

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c. By how much (measured vertically)?

\$	trillion
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d. Does GDP *increase* or *decrease* in the short run?

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e. By how much?

\$	trillion
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f. Compute the government-purchases multiplier from your previous answers to this problem.

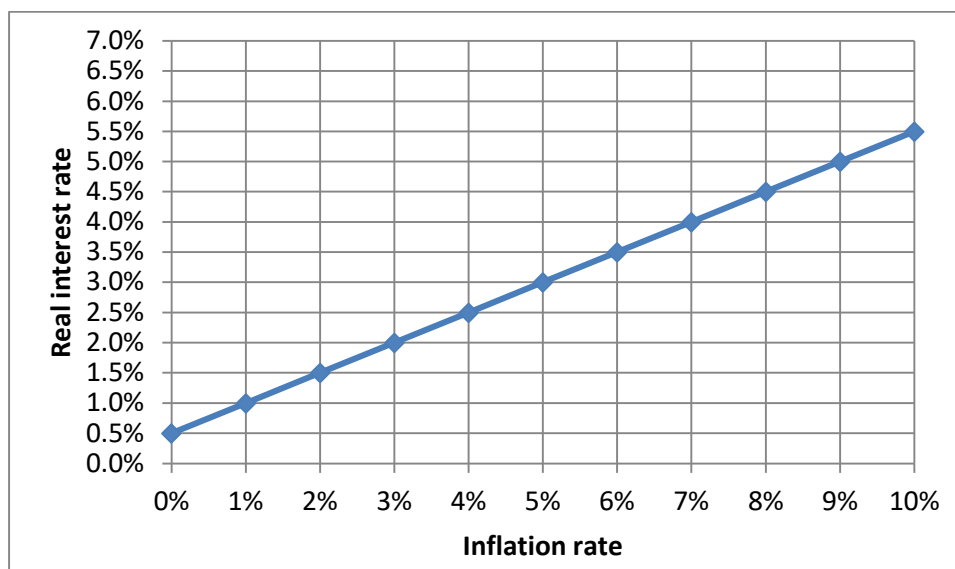
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(2) [Consumption function, Keynesian cross, Keynesian multipliers: 16 pts] Suppose the marginal propensity to consume is 0.9 and the marginal propensity to import is 0.15. Assume no other spending components of GDP are affected by aggregate income.

- a. Compute the slope of the consumption function.
- b. Compute the slope of the expenditure line in the Keynesian cross diagram.
- c. Compute the government-purchases multiplier.
- d. By how much does GDP increase in the short run if government purchases (G) increase by \$ 300 billion?
- e. How much of an increase in government purchases is required to raise GDP by \$ 300 billion?
- f. Compute the tax-cut multiplier.
- g. How much of a tax cut is required to raise GDP by \$ 300 billion?
- h. Suppose taxes and government purchases are to be increased simultaneously by exactly the same amount. What amount is required to raise GDP by \$ 300 billion?

\$	billion
\$	billion
\$	billion
\$	billion

(3) [Monetary policy rule: 10 pts] Suppose the central bank follows the monetary policy rule depicted below.



Suppose the inflation rate is now 2%.

- a. What level of the *real* interest rate will the central bank set?
- b. What level of the *nominal* interest rate does this imply?
- c. Suppose monetary policy is “relaxed.” Does that mean that the policy rule curve shifts *up*, shifts *down*, or remains *unchanged*?
- d. In the *short run*, will GDP *increase*, *decrease*, or remain *unchanged*?
- e. In the *short run*, will the inflation rate *increase*, *decrease*, or remain *unchanged*?

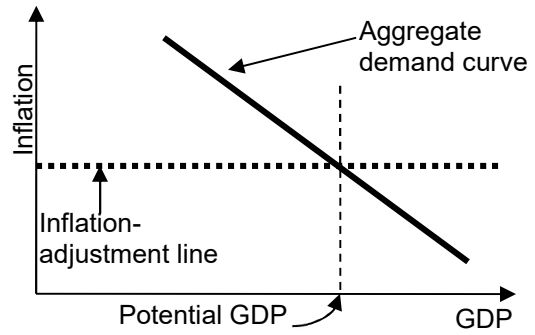
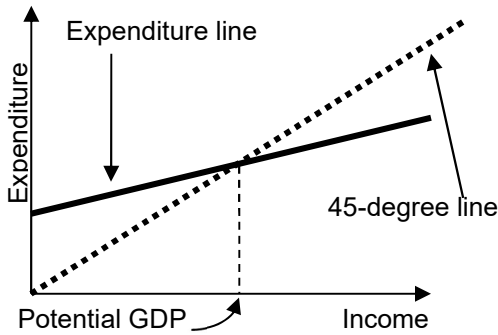
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(4) [How business cycles begin: 20 pts] Assume GDP initially equals potential GDP and consider the *short-run* consequences of each scenario in the left column. Indicate whether and how the scenario shifts the expenditure line in the Keynesian cross diagram. Then indicate whether and how it shifts the “aggregate demand” (AD) curve in the diagram used in Taylor’s textbook in the *short run*. Indicate whether the scenario is likely to cause a recession, a boom or neither (assuming GDP was initially equal to potential GDP).

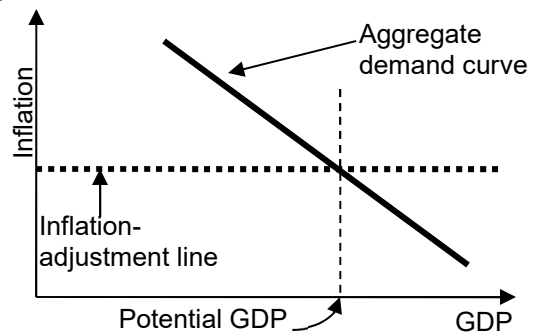
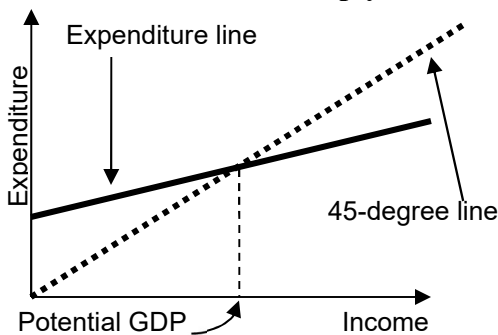
	Expenditure line shifts <i>up, down or unchanged?</i>	AD curve shifts <i>left, right, or unchanged?</i>	Causes <i>recession, boom, or neither?</i>
a. The government rapidly increases spending on infrastructure.			
b. Taxes are increased sharply to balance the budget.			
c. New leadership at the Federal Reserve decides to “tighten” monetary policy.			
d. A new computer technology (like AI) makes business owners feel more confident about the future.			

**For each of these four scenarios, draw the shifts in curves on the next page.**

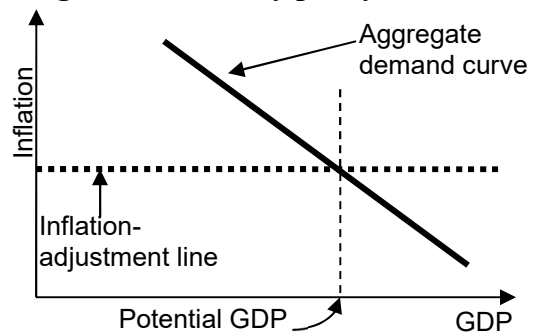
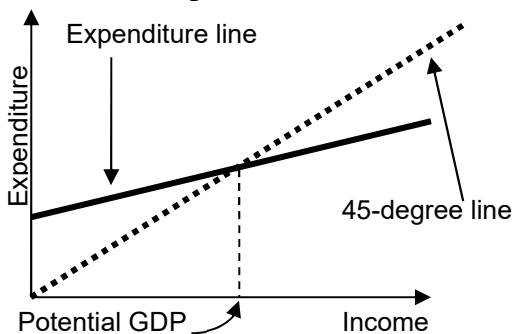
**a. The government rapidly increases spending on infrastructure.**



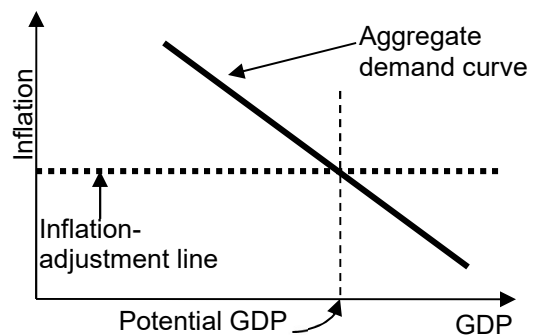
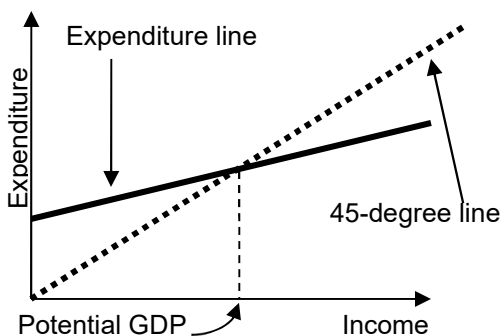
**b. Taxes are increased sharply to balance the budget.**



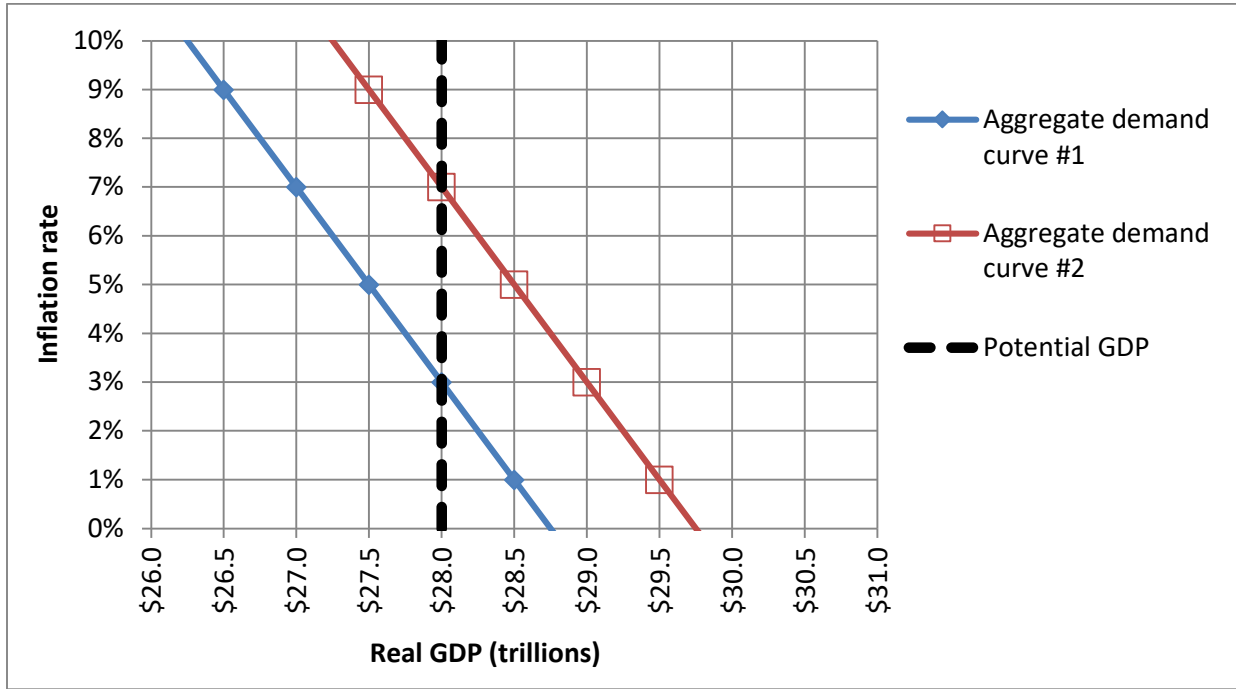
**c. New leadership at the Federal Reserve decides to “tighten” monetary policy.**



**d. A new computer technology (like AI) makes business owners feel more confident about the future.**



(5) [Inflation adjustment: 16 pts] Consider the following graph of the macroeconomy, similar to those in textbook by Taylor and Weerapana. Suppose that the aggregate demand curve is currently at "aggregate demand curve #1" and the inflation rate is currently 3%. [Hint: Begin by drawing the "inflation adjustment" line.]



a. What is the current level of real GDP?

\$	trillion

b. Is the unemployment rate currently *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment?

Now suppose the government passes a large tax cut and the aggregate demand curve shifts to "aggregate demand curve #2."

c. What is the level of real GDP in the short run?

\$	trillion
	%

d. What is the inflation rate in the short run?

e. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the short run?

f. What will be the level of real GDP in the long run?

\$	trillion
	%

g. What will be the inflation rate in the long run?

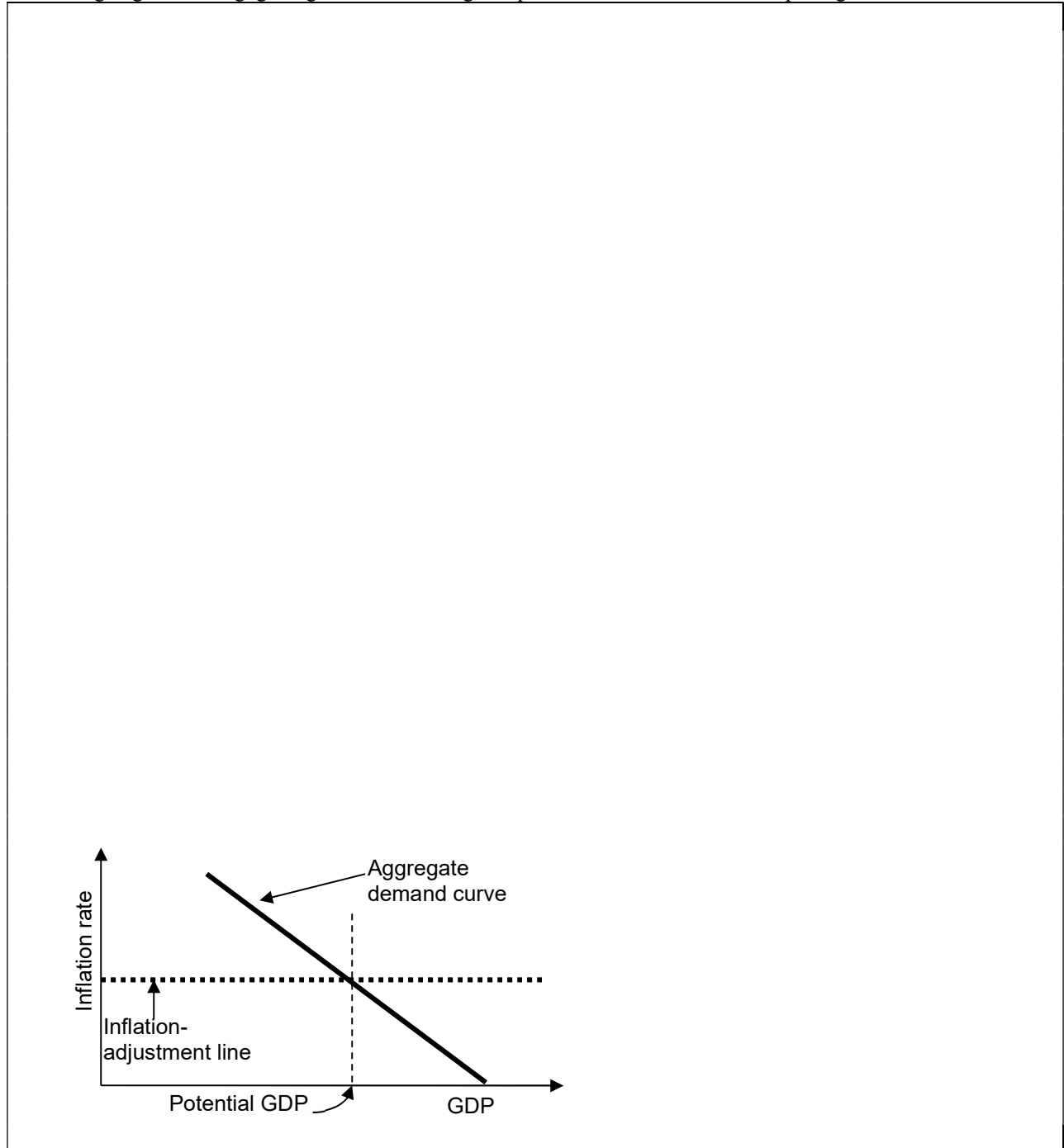
h. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the long run?

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**III. Critical thinking:** Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

- (1) Suppose there is a recession in the United States and U.S. GDP decreases. Will this cause GDP in *Canada* to increase, decrease, or remain constant? Why? (Ignore the graph below.)
- (2) Suppose the U.S. experiences a boom due to a rightward shift in aggregate demand for some reason. To prevent inflation from rising, should Congress enact a *tax cut* or a *tax increase*? Why? Illustrate your verbal explanation with curve shifts in the graph below.

Please circle the question you are answering and write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.



[end of exam]