Econ 362 Hanes Fall '22 Final exam

The exam has 60 multiple choice questions for 1 point each, and no written questions. Good luck! Hint: skip over the questions that are relatively hard to answer, and come back to those later after you have answered the easier ones.

1) Which of the following indicates total dollar income of U.S. residents?
a) Real GDP b) Nominal GDP c) Real GNP d) Nominal GNP e) None of the above

2) Which of the following indicates total dollar value-added of enterprises located in the U.S.?
a) Real GDP b) Nominal GDP c) Real GNP d) Nominal GNP e) None of the above

3) Here is some information about a factory that makes shoes. What is value added for this factory?

Revenue from sales of shoes	$10
Wages and salaries of employees	$5
Cost of leather	$1
Cost of fuel to run the factory	$2
Rent paid to factory building owner	$2

Value added is
a) $0 b) $1 c) $2 d) $3 e) None of the above

4) What's bigger, nominal GDP or nominal GNP?
a) GDP is bigger b) GNP is bigger c) They must be equal d) Either one can be bigger - it depends.
e) They are measured in different units, so they can't be compared.

5) What's bigger, nominal GDP or nominal NDP (net domestic product)?
a) GDP is bigger b) NDP is bigger c) They must be equal d) Either one can be bigger - it depends.
e) They are measured in different units, so they can't be compared.

6) Which of those people would not be counted as unemployed in our national statistics, but is unemployed on the theoretical concept of unemployment?
a) Harry does not have a job. He is a full-time college student.
b) Melissa owns and manages a Burger King franchise.
c) Aloysius is a recent high-school graduate who does not have a job. He applies for many jobs and goes on many job interviews. He will take a job that pays $100,000 a year, but not a job that pays less than that.
d) Cecilia was an autoworker until the plant shut down. She has not applied for any jobs or had any interviews recently because no employer within commuting distance of her town is hiring. She will take the first job she is offered, at any wage.
e) Harrison is a recent college graduate who does not have a job. He spends all of his time in his mother's basement watching "Rick and Morty" and huffing aerosols.

7) Which of those people would be counted as unemployed in our national statistics, but is not unemployed on the theoretical concept of unemployment?
a) Harry does not have a job. He is a full-time college student.
b) Melissa owns and manages a Burger King franchise.
c) Aloysius is a recent high-school graduate who does not have a job. He applies for many jobs and goes on many job interviews. He will take a job that pays $100,000 a year, but not a job that pays less than that.
d) Cecilia was an autoworker until the plant shut down. She has not applied for any jobs or had any interviews recently because no employer within commuting distance of her town is hiring. She will take the first job she is offered, at any wage.
e) Harrison is a recent college graduate who does not have a job. He spends all of his time in his mother's basement watching "Rick and Morty" and huffing aerosols.

8) When a country breaks up into two countries, total real GDP of the two countries together is usually about the same as the real GDP of the original country before the break-up. This shows aggregate production functions have which property?
a) Cobb-Douglas form b) Euler's theorem c) Diminishing marginal product d) Constant returns to scale
e) None of the above

The following information is for 8) - 11). Look at the following data on prices and quantities in an economy.

	Peanut butter		Jelly	
Year	Quantity	Price	Quantity	Price
2002	5	10	100	1
2003	4	11	110	2

9) Which of the lines below gives you the formula for a *Laspeyres price index* for 2003, base year 2002?

a) $[(4\times11)+(110\times2)] / [(4\times10)+(110\times1)]$

b) $[(5\times11)+(100\times2)] / [5\times10)+(100\times1)]$

c) $[(11\times4)+(2\times110)] / [(11\times5)+(2\times100)]$

d) $[(10\times4)+(1\times110)] / [(10\times5)+(1\times100)]$

e) None of the above

10) Which of the lines below gives you the formula for a *Laspeyres quantity index* for 2003, base year 2002?

a) $[(4\times11)+(110\times2)] / [(4\times10)+(110\times1)]$

b) $[(5\times11)+(100\times2)] / [5\times10)+(100\times1)]$

c) $[(11\times4)+(2\times110)] / [(11\times5)+(2\times100)]$

d) $[(10\times4)+(1\times110)] / [(10\times5)+(1\times100)]$

e) None of the above

11) Which of the lines below gives you the formula for a *Paasche price index* for 2003, base year 2002?

a) $[(4\times11)+(110\times2)] / [(4\times10)+(110\times1)]$

b) $[(5\times11)+(100\times2)] / [5\times10)+(100\times1)]$

c) $[(11\times4)+(2\times110)] / [(11\times5)+(2\times100)]$

d) $[(10\times4)+(1\times110)] / [(10\times5)+(1\times100)]$

e) None of the above

12) Which of the lines below gives you the formula for a *Paasche quantity index* for 2003, base year 2002?

a) $[(4\times11)+(110\times2)] / [(4\times10)+(110\times1)]$

b) $[(5\times11)+(100\times2)] / [5\times10)+(100\times1)]$

c) $[(11\times4)+(2\times110)] / [(11\times5)+(2\times100)]$

d) $[(10\times4)+(1\times110)] / [(10\times5)+(1\times100)]$

e) None of the above

13) Which of the following would *not* be included in the construction of a CPI for the United States?
a) Prices of U.S.-produced automobiles
b) Prices of U.S. medical services
c) Tuition rates charged by New York state universities
d) Prices of televisions produced in the country of Taiwan, sold in the U.S.
e) All of the above would be included in that price index

14) Which of the following would *not* be included in the construction of a GDP price index for the United States?
a) Prices of U.S.-produced automobiles
b) Prices of U.S. medical services
c) Tuition rates charged by New York state universities
d) Prices of televisions produced in the country of Taiwan, sold in the U.S.
e) All of the above would be included in that price index

15) Suppose an economy has this aggregate production function: $Y = 10 + 6K^{1/3}L^{2/3} + 2L$
What is the marginal product of labor in the economy? Hint: take the derivative in the space below!
a) $4K^{1/3}L^{-1/3} + 2$ b) $4K^{1/3}L^{-1/3}$ c) $2K^{-1/3}L^{-2/3}$ d) $10 + 4K^{1/3}L^{-2/3} + 2$ e) None of the above

16) Suppose an economy has this aggregate production function: $Y = 10 + 6K^{1/3}L^{2/3} + 2L$
What is the marginal product of capital in the economy? Hint: take the derivative in the space below!
a) $4K^{1/3}L^{-1/3} + 2$ b) $4K^{1/3}L^{-1/3}$ c) $2K^{-2/3}L^{2/3}$ d) $10 + 4K^{1/3}L^{-2/3} + 2$ e) None of the above

17) Suppose I asked you to use the "Z method" to determine whether the following production function has constant returns to scale: $Y = 10 + K^{1/2}L^{1/2}$. What is the first line of math you would write down? Hint: write down the first line in the space below, then choose the answer that matches what you wrote.

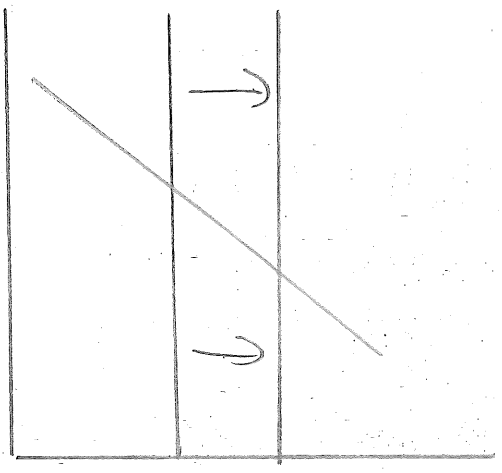
a) $Z(10 + K^{1/2}L^{1/2}) = Z * 10 + (ZK)^{1/2}(ZL)^{1/2}$
b) $Z(10 + K^{1/2}L^{1/2}) = 10 + ZK^{1/2}ZL^{1/2}$
c) $10 + Z(K^{1/2}L^{1/2}) = 10 + (ZK)^{1/2}(ZL)^{1/2}$
d) $Z(10 + K^{1/2}L^{1/2}) = 10 + (ZK)^{1/2}(ZL)^{1/2}$
e) None of the above

18) Here is an exercise in "growth accounting." Given the information below, what was the average percent rate of growth of Total Factor Productivity (A) in the economy?
Share of national income going to owners of capital: 1/3
Average annual growth in real GDP: 8 %
Average annual growth in capital stock 9%
Average annual growth in labor input 6%

a) 0 % b) 1% c) 2% d) 3% e) None of the above

The following information is for 19) - 22). Consider a closed economy in which *output is always held equal to potential output (natural rate) by a suitable adjustment of the real interest rate.* Look at the four "loanable funds" graphs below. I will ask you to tell me which graph corresponds to a particular event. More than one event may correspond to a given graph. Also, an event may correspond to none of the graphs.

a)



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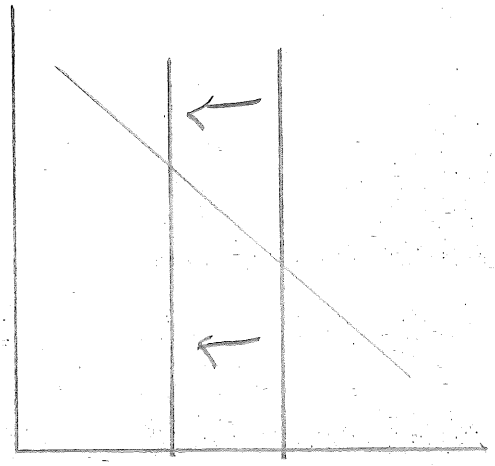

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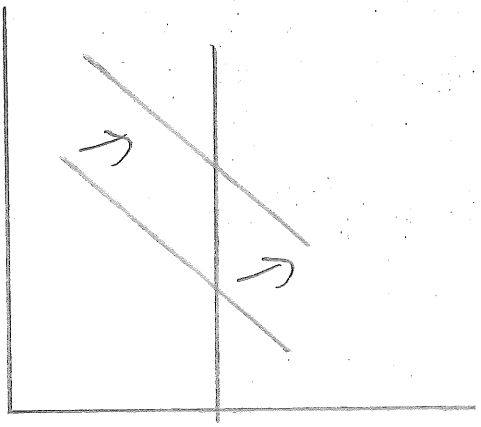

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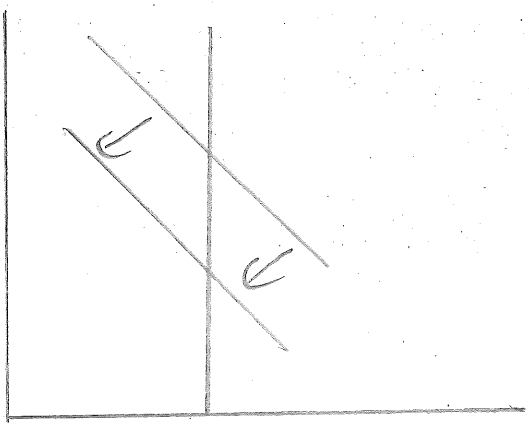


Which graph could correspond to each of the following events?

19) There is an increase in government purchases of goods and services $\overline{G}$.

a) b) c) d) e) None of the above

20) There is an increase in taxes net of transfers $\overline{T}$.

a) b) c) d) e) None of the above

21) There is an increase in $\overline{G}$ accompanied by an equal increase in $\overline{T}$.

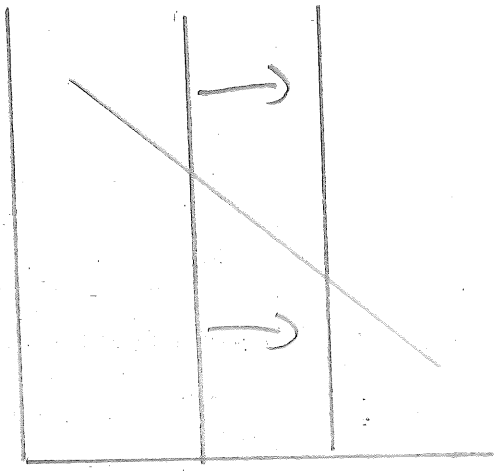
a) b) c) d) e) None of the above

22) There is an increase in the natural rate of output $\overline{Y}$.

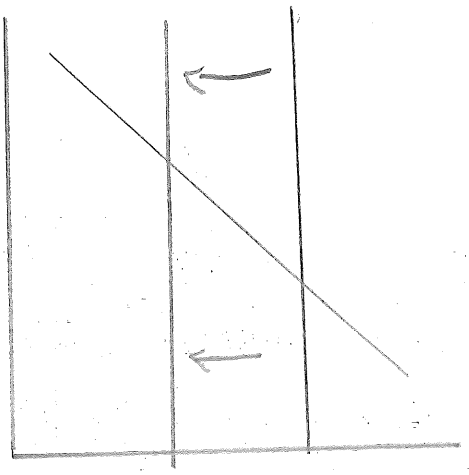
a) b) c) d) e) None of the above

The following information is for 23) - 26). Consider a closed economy in which output is *not* always held equal to potential output (natural rate). Look at the four "loanable funds" graphs below. I will ask you to tell me which graph corresponds to a particular event. More than one event may correspond to a given graph. Also, an event may correspond to none of the graphs.

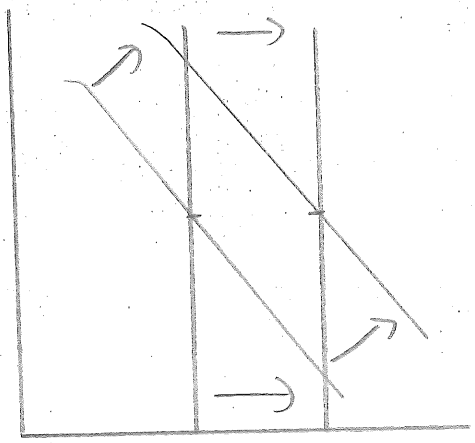
a)



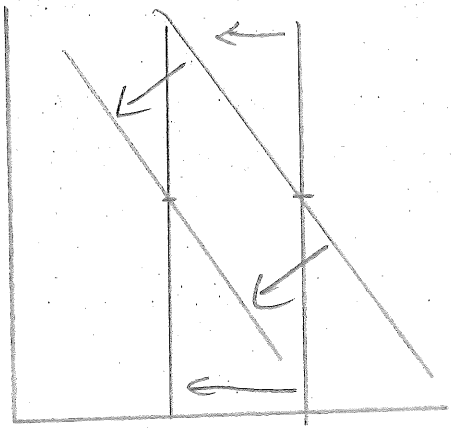
b)



c)



d)



Which graph could correspond to each of the following events?

23) There is an increase in the real interest rate.
a) b) c) d) e) None of the above

24) There is an increase in government purchases of goods and services $\overline{G}$ while the real interest rate r remains fixed.
a) b) c) d) e) None of the above

25) There is an increase in taxes net of transfers $\overline{T}$ while the real interest rate r remains fixed.
a) b) c) d) e) None of the above

26) There is an increase in $\overline{G}$ accompanied by an equal increase in $\overline{T}$ while the real interest rate r remains fixed.
a) b) c) d) e) None of the above

For 27)- 30), consider a small open economy in the long run (that is, assume $Y = \overline{Y}$). In this economy, as in class:

$Y = C + I + G + NX$ $C = a + b(Y - T)$ $I = c - dr$ $G = \overline{G}$ $T = \overline{T}$

What happens to the economy's net capital outflow (NCO), net exports (NX) and real exchange rate in response to the following events, assuming everything else remains fixed? Hint: in the spaces I left below draw graphs, and for simplicity assume that "before" the economy is in a state of *balanced trade*.

27) There is a decrease in government purchases of goods and services.

a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

28) Foreign demand for the economy's exports decreases, so exports would be smaller at any given real exchange rate.

a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

29) There is a reduction in investment opportunities in the economy, so that investment spending is lower at any given real interest rate.

a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

30) There is an increase in the world real interest rate r^*.

a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

The following information is for 31) - 32). Consider the long-run equilibrium rate of unemployment in an economy. Like the model we used in class,
U is the number of unemployed people in the economy.
L is the number of people in the labor force (which is fixed, does not grow over time).
E is the number of employed people.
u is the unemployment rate (expressed as a fraction or decimal).
Also like the model we used in class, the number of unemployed people who become employed in a period is fU where f is a fraction less than one. *Unlike* in class, the number of people who become unemployed in a period is xL, where x is a fraction less than one.

31) Suppose I asked you to derive the long-run equilibrium unemployment rate in this economy.What is the first line of math you would write down? Hint: write down the first line in the space below, then choose the answer that matches what you wrote.

a) $fU = sE$
b) $fU = sE + xL$
c) $fU = xL$
d) $fU - xL = sE$
e) None of the above

32) Starting from your answer to 33), derive the long-run unemployment rate u in the space below. What is u?

a) $u = \frac{x}{f}$ b) $u = \frac{1}{1+\frac{s}{f}}$ c) $u = \frac{1}{1+\frac{f}{s}}$ d) $u = \frac{1}{1+\frac{f}{x}}$ e) None of the above

33) Assuming that the "Solow model of economic growth" is true for all countries, which of the following countries is likely to have the highest output per worker in the long run?

	Savings rate	Depreciation rate	Population growth rate
Country A	15%	10%	3%
Country B	10%	10%	5%
Country C	5%	10%	3%
Country D	5%	12%	3%
Country E	10%	12%	3%

a) Country A. b) Country B. c) Country C. d) Country D. e) Country E.

34) The Solow model of economic growth implies that the savings rate in an economy can be too high, in the sense that it is higher than needed to maximize long-run steady-state consumption per worker. In an economy with a too-high savings rate, which of the following things are true in the long-run steady state (long-run equilibrium)?

I The marginal product of capital is too high
II The marginal product of capital is too low
III Output per person is too high
IV Output per person is too low

a) I & III b) I & IV c) II&III d) II & IV e) II only

35) Consider the immediate effect on consumption per person c of an increase in the savings rate s in the Solow model, versus the effect that will prevail in the very long run. Which of the following is true?

a) May or may not reduce c immediately; may or may not reduce c in long run
b) Increases c immediately and in the very long run
c) Decreases c immediately and in the very long run
d) May or may not decrease c immediately, increases c in the very long run
e) none of the above

36) Think about the graph we use to describe the Solow model of economic growth. Why is the $f(k)$ line "concave" (bowed down) rather than straight or "convex" (bowed up)? Because of:

a) constant returns to scale
b) diminishing marginal product of capital
c) diminishing marginal product of labor
d) a constant savings rate
e) none of the above

The following information is for 37)-39). Consider an economy described by the Solow model of economic growth.
The per-worker production function is $y = Ak^{1/2}$
The savings rate is 15 percent.
The depreciation rate is 10 percent.
The rate of population growth is 2 percent.

37) What is the "marginal product of capital" in this economy? Hint: do the math to find it in the space below, then find the correct answer among the choices.

a) $\frac{1}{2}k^{1/2}$ b) $-\frac{1}{2}k^{1/2}$ c) $\frac{1}{2}Ak^{1/2}$ d) $-\frac{1}{2}Ak^{1/2}$ e) None of the above

38) Suppose that I asked you to find the "golden rule" value of k for this economy. What is the first line of math you would write down? Hint: write down the first line in the space below, then choose the answer that matches what you wrote.

a) $.15Ak^{1/2} = .10k$
b) $.15Ak^{1/2} = (.10+.02)k$
c) $.15 * A\frac{1}{2}k^{-1/2} = .10+.02$
d) $A\frac{1}{2}k^{-1/2} = .10+.02$
e) None of the above

39) Suppose that I asked you to find the long-run steady state (long-run equilibrium) value of k for this economy. What is the first line of math you would write down? Hint: write down the first line in the space below, then choose the answer that matches what you wrote.

a) $.15Ak^{1/2} = .10k$
b) $.15Ak^{1/2} = (.10+.02)k$
c) $.15 * A\frac{1}{2}k^{-1/2} = .10+.02$
d) $A\frac{1}{2}k^{-1/2} = .10+.02$
e) None of the above

This information is for 40- 43). Consider an *open* economy economy where:

$Y = C + I + G + NX$

$C = a + b(Y - T)$

$I = c - dr$

$G = \overline{G}$

$T = \overline{T}$

$NX = n - j\epsilon$

In the last equation, n is a constant, j is a coefficient and ϵ is a variable: it is the real exchange rate.

From these equations, derive an equation that gives real GDP Y as a function of r, ϵ and any other relevant variables. That is, get an equation with Y alone on the left-hand side and no Y on the right-hand side. Do this in the space below. Then answer the questions.

40) Suppose the real exchange rate ϵ increases by 3 units (e.g. from 11 to 14) while the real interest rate r, $\overline{G}$ and $\overline{T}$ all remain the same. What is the resulting change in Y? The change in Y is equal to:

a) -3 b) $-j*3$ c) $-\frac{1}{1-b}*3$ d) $-\frac{j}{1-b}*3$ e) None of the above

41) Suppose the real interest rate r increases by 3 units (e.g. from 11 to 14) while the real exchange rate ϵ, $\overline{G}$ and $\overline{T}$ all remain the same. What is the resulting change in Y? The change in Y is equal to:

a) -3 b) $-j*3$ c) $-\frac{1}{1-b}*3$ d) $-\frac{j}{1-b}*3$ e) None of the above

42) Suppose $\overline{G}$ increases by 3 units (e.g. from 150 to 153) while the real interest rate r, the real exchange rate ϵ and $\overline{T}$ all remain the same. What is the resulting change in Y? The change in Y is equal to:

a) 3 b) $j*3$ c) $\frac{1}{1-b}*3$ d) $\frac{j}{1-b}*3$ e) None of the above

43) Suppose $\overline{G}$ and $\overline{T}$ *both simultaneously* increase by 3 units (e.g. $\overline{G}$ increases from 150 to 153 while $\overline{T}$ increases from 100 to 103 units), while the real interest rate r and the real exchange rate ϵ remain the same. What is the resulting change in Y? The change in Y is equal to:

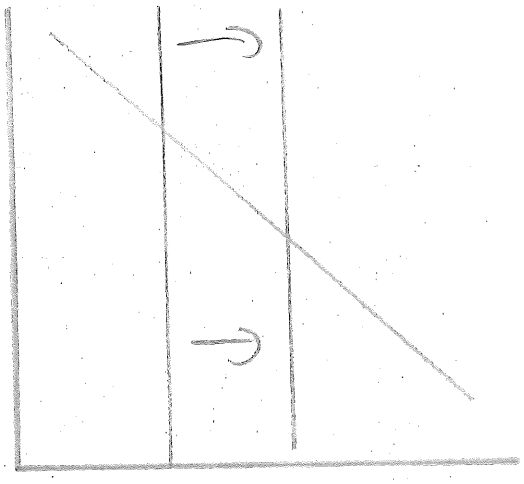
a) 3 b) $j*3$ c) $\frac{1}{1-b}*3$ d) $\frac{j}{1-b}*3$ e) None of the above

44) What are the three functions of money? Pick them out from the following list, write down the Roman numerals, then choose your answer below.
I) Real interest rate
II) Store of value
III) Unit of account
IV) Nominal interest rate
V) Reserve requirement
VI) Sacrifice ratio
VII) Medium of exchange

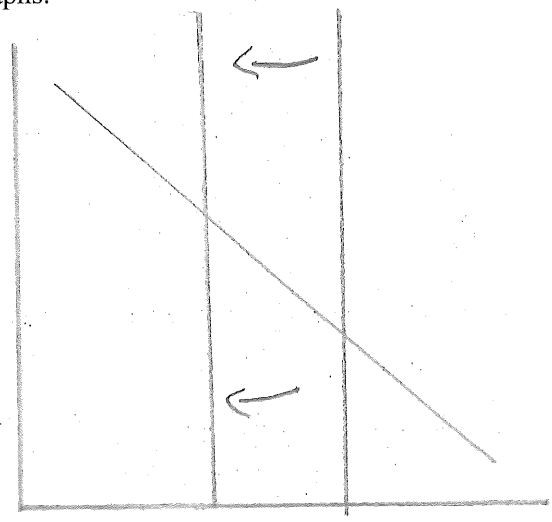
a) I, II, III b) II, III, IV c) II, IV, VI d) II, IV, VI e) None of the above

The following is for 45) - 49). Look at the four graphs below. They are graphs of supply and demand for *real money balances*. I will ask you to tell me which graph corresponds to a particular event. More than one event may correspond to a given graph. Also, an event may correspond to none of the graphs.

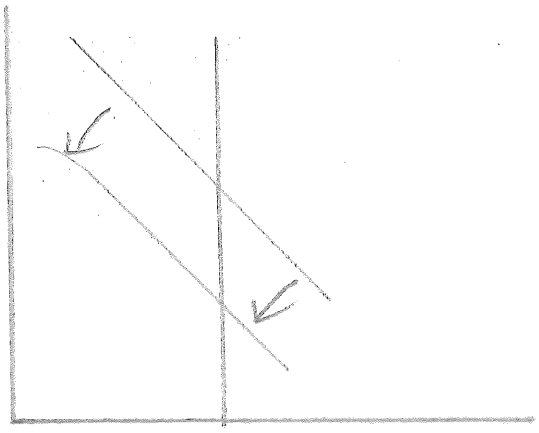
a)



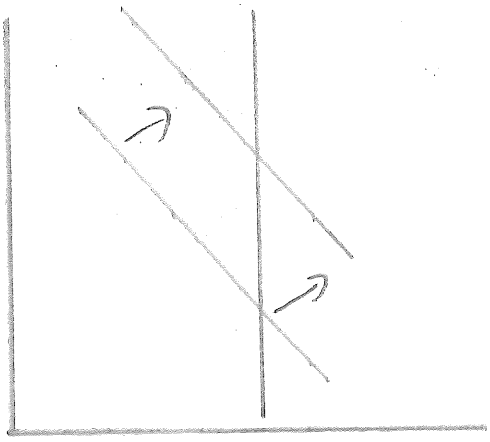
b)



c)



d)



45) Increase in M^S (no change in P). a) b) c) d) e) None of the above

46) Increase in P (no change in M^S). a) b) c) d) e) None of the above

47) M^S doubles while P also doubles. a) b) c) d) e) None of the above

48) Increase in Y. a) b) c) d) e) None of the above

49) Increase in expected future inflation $E\pi$ a) b) c) d) e) None of the above

The following information is for 50) - 54). Think about a closed economy with an expectations-augmented Phillips curve and an IS curve. The economy's natural rate of interest is 3 percent. Its natural rate of unemployment (or NAIRU) is 6 percent. There are no "supply shocks."

50) Suppose expected inflation is 2 percent, and realized inflation this year is 1 percent. What do you know about the unemployment rate this year?
a) It must be equal to 6 percent.
b) It must be less than 6 percent.
c) It must be greater than 6 percent.
d) That information does not imply anything about the unemployment rate.
e) None of the above.

51) Suppose expected inflation is 2 percent, and realized inflation this year is 3 percent. What do you know about real GDP this year?
a) It is equal to potential GDP (the natural rate of output)
b) It is greater than potential GDP (the natural rate of output)
c) It is less than potential GDP (the natural rate of output)
d) That information does not imply anything about real GDP
e) None of the above.

52) Suppose expected inflation is 2 percent, and realized inflation this year is 3 percent. What do you know about the real interest rate this year?
a) It is equal to 3 percent
b) It is greater than 3 percent
c) It is less than 3 percent
d) That information does not imply anything about the real interest rate.
e) None of the above.

53) Suppose expectations are "anchored:" no matter what inflation was last year, people's expected value for future inflation is *four* percent. Under which of the following circumstances might this year's realized inflation π turn out to be equal to *five* percent?
a) Output is equal to the natural rate of output.
b) The real interest rate r is greater than 3 percent.
c) The real interest rate r is less than 3 percent.
d) The real interest rate r is equal to 3 percent.
e) None of the above

54) Suppose expectations are "adaptive" and last year's rate of inflation was *four* percent. Under which of the following circumstances might this year's realized inflation π turn out to be equal to *five* percent?
a) Output is equal to the natural rate of output.
b) The real interest rate r is greater than 3 percent.
c) The real interest rate r is less than 3 percent.
d) The real interest rate r is equal to 3 percent.
e) None of the above

The following information is for 55)-60). Consider an economy in which the central bank chooses an interest rate and adjusts the money supply as needed to keep the interest rate at that chosen value. The central bank always tries to keep inflation exactly equal to a target inflation rate of 2 percent. The natural rate of unemployment (NAIRU) u^n is 6 percent. The central bank always knows the true value of potential output $\overline{Y}$. There are no "supply shocks." Think about the value that the central bank will choose for r in each situation below. Given that choice for r, what will happen in the economy?

55) The public's expected value for future inflation is 2 percent. Government purchases, taxes net of transfers and other determinants of spending all turn out to be as the central bank expected when it set the interest rate. Results for u and π :
a) u = 6 percent, inflation = 2 percent
b) u< 6 percent, inflation > 2 percent.
c) u > 6 percent, inflation < 2 percent.
d) u = 6 percent, inflation > 2 percent.
e) u = 6 percent, inflation < 2 percent.

56) The public's expected value for future inflation is 1 percent. Government purchases, taxes net of transfers and other determinants of spending all turn out to be as the central bank expected when it set the interest rate. Results for u and π :
a) u = 6 percent, inflation = 1 percent
b) u< 6 percent, inflation > 1 percent.
c) u > 6 percent, inflation < 1 percent.
d) u = 6 percent, inflation > 1 percent.
e) None of the above.

57) The public's expected value for future inflation is 3 percent. Government purchases, taxes net of transfers and other determinants of spending all turn out to be as the central bank expected when it set the interest rate. Results for u and π :
a) u = 6 percent, inflation = 3 percent
b) u< 6 percent, inflation > 3 percent.
c) u > 6 percent, inflation < 3 percent.
d) u = 6 percent, inflation > 3 percent.
e) None of the above.

58) The public's expected value for future inflation is 2 percent. Government purchases turn out to be *more* than the central bank expected when it set the interest rate. Results for u and π :
a) u = 6 percent, inflation = 2 percent
b) u< 6 percent, inflation > 2 percent.
c) u > 6 percent, inflation < 2 percent.
d) u = 6 percent, inflation > 2 percent.
e) None of the above.

59) Suppose that the public's expectations are "anchored" at 2 percent. *Last* year government purchases turned out to be more than the central bank expected when it set the interest rate. Given what the central bank will do *this* year, what is likely to be true in the economy *this* year?
a) u = 6 percent, inflation = 2 percent
b) u< 6 percent, inflation > 2 percent.
c) u > 6 percent, inflation < 2 percent.
d) u > 6 percent, inflation = 2 percent.
e) None of the above.

60) Now suppose that in this economy the public's expectations are "adaptive." *Last* year government purchases turned out to be more than the central bank expected when it set the interest rate. Given what the central bank will do *this* year, what is likely to be true in the economy *this* year?
a) u = 6 percent, inflation = 2 percent
b) u< 6 percent, inflation > 2 percent.
c) u > 6 percent, inflation < 2 percent.
d) u > 6 percent, inflation = 2 percent.
e) None of the above.