Name:
Section No.:
UM ID No.:
GSI:

Economics 102
Introduction to Macroeconomics
Prof. Alan Deardorff
Final Exam
December 21, 2000

INSTRUCTIONS: READ CAREFULLY!!!

1. Please do not open the exam book until you are told to do so.

2. **PLACE YOUR NAME, UM ID NO. (ALL EIGHT DIGITS), AND SECTION NUMBER ON THE EXAM AND ON THE SCANTRON SHEET. ALSO PLACE THE FORM NUMBER, WHICH YOU CAN FIND AT THE TOP OF PAGE 2, ON THE SCANTRON.** *ALL OF* ***THIS IS WORTH TWO POINTS ON THE EXAM****.*

3. This exam has 100 points and is designed to take about 90 minutes to complete. However, you have approximately 120 minutes to complete the test. Check that you have all **17** pages of the exam.

4. **Section A** consists of 35 multiple choice questions worth 2 points each. Answers to the multiple-choice questions in Section A should be marked on the scantron sheet using a #2 pencil. There are no penalties for guessing.

5. **Section B** consists of 3 parts for which you must provide written answers on these sheets. Point values for questions in Section B are indicated in parentheses. Please try to fit your answer into the space provided.

6. Good luck!

GSI	Sections	
Tom Bishop	112, Thu 10-11:30	113, Thu 8:30-10
Brahima Coulibaly (Coul)	102, Wed 1-2:30	103, Wed 2:30-4
Herman Kamil	101, Thu 4-5:30	109, Thu 1-2:30
Yener Kandogan	111, Thu 2:30-4	
George Li	105, Thu 4-5:30	115, Wed 1-2:30
Byung-ho Suh (Chris)	107, Thu 10:11:30	108, Thu 1-2:30
Hui-chen Wang	110, Thu 2:30-4	114, Thu 10:11:30
Yingbin Xiao	104, Wed 2:30-4	116, Thu 4-5:30

FORM 1

PART A: Multiple Choice
(2 points each; 70 points total)

A.1. Suppose the real output of the economy is above its natural rate. The government is concerned about the possibility of rising inflation. Which of the following will make sense?

(a) Congress increases unemployment benefits, increasing the natural rate of unemployment.
(b) Congress increases expenditures, crowding out investment and cooling the economy.
(c) The Fed buys bonds, forcing up interest rates and increasing savings.
(d) The Fed raises the discount rate, forcing up interest rates, thus reducing investment.
(e) The Fed lowers the reserve ratio, forcing down interest rates, thus reducing savings.

Answer: D

A.2. Which of the following would NOT be included in the Gross Domestic Product for 2000?

(a) Goods that are produced in 2000
(b) The tuition that you paid for this semester
(c) Sale of your used textbook back to the bookstore the day after this exam
(d) The increase in publishers' inventories of new textbooks in 2000
(e) Lawyers' fees in 2000

Answer: C

A.3. Consider an economy currently in short-run equilibrium at a level of output less than the natural rate of output. All of the following are possible ways the economy could return to equilibrium at the natural rate of output EXCEPT:

(a) The government raises taxes to balance the budget.
(b) The Fed purchases government bonds.
(c) As the economy experiences unemployment above the natural rate, there will be downward pressure on wages.
(d) The Fed reduces the reserve requirement.
(e) The government increases transfers paid as welfare benefits.

Answer: A

A.4. The Fed lowered the discount rate during period 1990 to 1992 and then raised the discount rate from 1992 to 1995. With this information, it is likely that policy makers were most concerned about_____ in the first period and _____ in the second period.

(a) unemployment, trade deficit
(b) inflation, trade deficit
(c) unemployment, inflation
(d) inflation, unemployment
(e) none of the above
Answer: C

A.5. Ignoring any crowding out effect and any increase in the price level, if the MPC=0.75 and government purchases increase by $100 million, aggregate demand should increase by

(a) $500 million
(b) $400 million
(c) $75 million
(d) $100 million
(e) $133 million
Answer: B

A.6. Suppose the Japanese government were to implement simultaneously both a fiscal expansion and a monetary contraction that together keep aggregate demand unchanged. We would expect all of the following to happen in response EXCEPT:

(a) investment in Japan would decrease
(b) the interest rate would rise in Japan
(c) budget deficit of Japan would increase
(d) the price level would rise in Japan
(e) Japanese real GDP would not change
Answer: D

A.7. You take $1000 that you had previously kept under your mattress and deposit it in your bank account. Assume that banks only hold reserves equal to 20% of deposits, and nobody else holds additional cash. If this $1000 stays in the banking system as reserves from now on, then by how much does the money supply change?

(a) -$1000
(b) $0
(c) $1000
(d) $4000

(e) $5000
Answer: D

A.8. In the US in year 2000, suppose that there are the following:

traveler's checks:	$60 billion
bills and coins in circulation:	$550 billion
demand deposits:	$965 billion
saving deposits:	$4,955 billion
small time deposits:	$2,498 billion
money market mutual funds:	$1,983 billion
bonds:	$360 billion

From these data, what is the amount of M1?

(a) $550 billion
(b) $1,515 billion
(c) $1,575 billion
(d) $11,011 billion
(e) $11,371 billion
Answer: C

A.9. Assume the required reserve ratio is 20% while banks hold 5% in excess reserves and households do not hold cash. Suppose that the Fed now sells $100 million worth of bonds through open market operations. Which of the following is TRUE?

(a) The total amount of reserves increases by $100 million
(b) The total amount of deposits decreases by $500 million
(c) The money supply decreases by $100 million
(d) The money supply decreases by $400 million
(e) The total amount of loans decreases by $75 million
Answer: D

A.10. Which of the following is NOT a function of the central bank?

(a) Regulate the banking system
(b) Control the amount of money in the economy
(c) Formulate and execute fiscal policies.
(d) Facilitate check clearing between commercial banks.
(e) Act as a lender of last resort for commercial banks.
Answer: C

A.11. Suppose that in 1999 the real GDP in the economy was $5 billion, and the money supply was $2.5 million. Assume that through year 2000 the real GDP increases to $6

billion and money supply increases to $3 million. According to the quantity theory of money, we would expect the rate of inflation to be

(a) –20%
(b) 0%
(c) 20%
(d) 40%
(e) Not enough information.
Answer: B

A.12. Suppose Tom and Jerry are the only people in a tiny economy. Tom grows beans for a living. Jerry grows rice. Tom consumes equal quantities of rice and beans, and so does Jerry. In 1999 the price of beans was $1 per pound and the price of rice was $3 per pound. In 2000 the price of beans was $2 and the price of rice was $4. What is the inflation rate?

(a) 2%
(b) 6%
(c) 50%
(d) 100%
(e) 150%
Answer: C

A.13. You read in a newspaper that the nominal interest rate in the US is 8% and the nominal interest rate in Canada is 12%. Suppose that the real interest rates in the two countries are equal. Using the Fisher equation and assuming Purchasing Power Parity, what can you infer about the nominal exchange rate (Canadian dollars per US dollar)?

(a) The nominal exchange rate is expected rise by 4%.
(b) The nominal exchange rate is expected rise by 8%.
(c) The nominal exchange rate is expected to fall by 4%.
(d) The nominal exchange rate is expected to fall by 8%.
(e) The nominal exchange rate is expected not to change.
Answer: A

A.14. Suppose inflation in Mexico is higher than inflation in the US. If the real exchange rate is constant over time, what will happen?

(a) The US dollar will appreciate relative to the Mexican peso.
(b) The US dollar will depreciate relative to the Mexican peso.
(c) The Mexican peso will appreciate relative to the US dollar.
(d) The value of US goods relative to Mexican goods will rise.
(e) The value of US goods relative to Mexican goods will fall.

Answer: A

A.15. Suppose you are given the following information about the US and Japanese economies.

Year	(Yen/Dollar)	US Price Level	Japanese Price Level
1998	120	100	150
1999	115	110	165

Which of the following statements is TRUE?

(a) In nominal terms the Yen has depreciated, but in real terms it has appreciated, so we would expect US exports to Japan to increase.
(b) In nominal terms the Yen has appreciated, but in real terms it has depreciated, so we would expect US exports to Japan to decrease.
(c) The Yen has appreciated in both nominal and real terms, so we would expect US exports to Japan to increase.
(d) The Yen has depreciated in both nominal and real terms, so we would expect US exports to Japan to increase.
(e) The Yen has depreciated in both nominal and real terms, so we would expect US exports to Japan to decrease.

Answer: C

A.16. Suppose you are given the following information about prices of cabbage in the US and Burkina Faso (BF) and exchange rates between their currencies, the $ and the CFA:

Year	Nominal exchange rate	Price of US cabbage	Price of BF cabbage
	e = CFA/ $	in $ per kg	in CFA per kg
1998	500	2.00	850
1999	515	1.90	950

If US cabbage and BF cabbage are of identical quality (perfect substitutes), then which statement is TRUE?

(a) If there are no transportation costs, then the US imported BF cabbage in 1998.
(b) If transportation cost was US $0.20 per kg (either from US to BF or BF to US), then the US still imported BF cabbage in 1998.
(c) If there are no transportation costs, then the US still imported BF cabbage in 1999.
(d) If transportation cost is still US $0.20 per kg, then there was no cabbage trade between the US and BF in 1999.
(e) All of the above are true.

Answer: E

A.17. Suppose the US dollar depreciates relative to foreign currencies, and that prices in the US and foreign countries are roughly constant in the short run. Who benefits from this depreciation?

(a) Japanese holders of US government bonds
(b) US exporters of maize and soybeans
(c) US importers of Italian shoes
(d) Taiwanese computer companies trying to sell their products in the US
(e) Dutch owners of stock in a US corporation
Answer: B

A.18. If domestic investment is greater than total national savings, then one MUST observe:

(a) Negative net foreign investment
(b) A government budget deficit
(c) A trade deficit
(d) (a) and (c)
(e) (a), (b) and (c)
Answer: D

A.19. Suppose the economy is initially at the natural unemployment rate, u_N. Workers threaten to go on strike and succeed in getting a substantial wage increase. This results in an increase in unemployment, higher prices, a higher interest rate, and reduced investment. If it wishes to see unemployment return to u_N without further reducing investment, then CONGRESS should

(a) allow the self correcting mechanism of the economy to work, through the adjustment of sticky prices, wages, and price expectations
(b) use contractionary fiscal policy
(c) increase tax rates
(d) expand the money supply
(e) increase government spending
Answer: A

A.20. If the rate of unemployment goes up, which of the following must be true:

(a) the labor force goes up.
(b) the number of people unemployed goes up.
(c) the number of people employed goes down.
(d) the labor force goes down.

(e) none of the above must be true.
Answer: E

A.21. According to Mankiw's theories of unemployment, which of the following is NOT TRUE:

(a) The natural rate of unemployment may change due to changes in union membership.
(b) The natural rate of unemployment does not tend to move with short run fluctuations in output.
(c) Unemployment insurance may increase the amount of unemployment.
(d) Structural unemployment can arise because it takes time for workers to search for the jobs that best suit their tastes and skills.
(e) Unemployment is increased by firms choosing to pay workers more than they have to.
Answer: D

A.22. An increase in the government budget deficit in a closed economy in the long run:

(a) reduces the demand for loanable funds in the economy, shifting the demand curve to the left.
(b) increases the supply of loanable funds in the economy, shifting the supply curve to the right.
(c) causes a reduction of national savings and investment by the same amount in equilibrium.
(d) causes an increase in investment following the change in the equilibrium interest rate
(e) generates a decrease in national savings, a decrease in investment and an increase in public savings.
Answer: C

A.23. An increase in the desire to save by households in an open economy will cause all of the following in the long run EXCEPT:

(a) Boost domestic investment.
(b) Increase net foreign investment.
(c) Shift the supply of loanable funds curve to the right.
(d) Cause the actual amount saved to be lower than it was before because the interest rate falls.
(e) Increase national savings and the total amount of loanable funds demanded.
Answer: D

A.24. All of the following can result in a shift to the left of the short-run Phillips curve EXCEPT:

(a) Appointment of a Federal Reserve Board Chairman reputed to dislike inflation
(b) Discovery of new oil wells in the U.S. which led to a decrease in oil prices
(c) Internet technological innovation of the 1990's
(d) Monetary expansion by the Fed
(e) A decrease in the expected rate of inflation
Answer: D

A.25. Which of the following events is NOT likely to cause inflation in the US in the short run?

(a) Tax cut by the US Congress
(b) Depreciation of the US dollar
(c) New invention that causes productivity to rise more rapidly in the US
(d) Optimism that encourages domestic investment in the US
(e) Decrease in the US government budget surplus
Answer: C

A.26. Which of the following events is NOT likely to cause higher real GDP per capita in the long run?

(a) Increase in immigration of skilled labor into the US from abroad
(b) Optimism that increases domestic investment in the US
(c) Discovery of oil in Texas
(d) Tax cut by the US Congress
(e) New invention that improves productivity in the US
Answer: D

A.27. Suppose that the Fed increases the minimum reserve requirement. In the long run, nominal GDP will _____, the real interest rate will _____, and real GDP will _____ compared to the original level. Find the combination that fits into each blank correctly.

(a) decrease, increase, decrease
(b) increase, decrease, increase
(c) stay the same, decrease, stay the same
(d) decrease, increase, stay the same
(e) decrease, stay the same, stay the same
Answer: E

A.28. Suppose that OPEC decides to increase the price of oil. Which of the following is surely going to happen in the US in the short run?

I) Short run aggregate supply curve will shift upward since it is more expensive to produce some goods.
II) Aggregate demand curve will shift to the left since consumption decreases due to the increase in price.
III) Unemployment will decrease as the money supply expands to keep up with prices.

(a) I (b) I, II (c) I, II, III (d) II, III (e) I, III
Answer: A

A.29. Suppose that real GDP per capita is $30,000 in the US and $15,000 in Canada (both in US dollars). If the growth rate of the US is 2% and that of Canada is 5%, approximately how many years will it take for Canada to catch up with the US? Assume that the population and the growth rate of each country are constant.

(a) 35
(b) 23
(c) 14
(d) 20
(e) never
Answer: B

A.30. Which of the following is NOT a policy to encourage long-run growth?

(a) Allow free trade
(b) Promote education
(c) Encourage consumption
(d) Stimulate investment
(e) Provide increased incentives to save
Answer: C

A.31.

Year	Q_A	P_A	Q_B	P_B	Q_C	P_C
1998	100	$5	150	$8	230	$10
1999	120	$6	150	$10	250	$9

In the table above, Q_A, Q_B and Q_C are the quantities of three goods consumed in 1998 and 1999, and P_A, P_B and P_C are the corresponding prices of the goods. Let the 1998

quantities be the consumption basket. Assuming that 1998 is the base year, what is the CPI in 1999?

(a) 110
(b) 111.75
(c) 104.25
(d) 107.50
(e) 100
Answer: C

A.32. In the news about unemployment rates during the fall of 2000, the unemployment rate among African Americans

(a) Increased above 10% as the economy slowed down.
(b) Rose above what it had been in the first half of the year, even as unemployment among the rest of the population was falling.
(c) Was not measured because the sample of workers did not include African Americans.
(d) Was lower than ever before.
(e) Was below that of the rest of the population.
Answer: D

A.33. As of early December (according to a report in the Wall Street Journal), which of the following best describes the current monetary policy of the Fed?

(a) The Fed raised interest rates at its most recent opportunity in order to fight inflation.
(b) The Fed is more worried about inflation than about unemployment, and is likely to raise interest rates in the near future even though it has not done so recently.
(c) The Fed is confident that neither inflation nor unemployment are likely to be problems in the future, and it therefore will keep interest rates fixed into the indefinite future.
(d) The Fed is no longer more worried about inflation than about unemployment, and it will be watching for the need to lower interest rates even though it does not expect to lower them any time soon.
(e) Concerned now that the U.S. economy is heading into a recession, the Fed promised to reduce interest rates at its next opportunity.
Answer: D

A.34. The U.S. trade deficit has been very large in recent years, often at record high levels. From both our economic models and from any assigned outside readings that address this issue, which of the following is NOT a reason for the large U.S. trade deficit?

(a) The U.S. has reduced its tariffs against imports while other countries have not.
(b) U.S. real GDP has grown faster than other countries, increasing U.S. income and imports.
(c) U.S. investment is larger than U.S. savings.
(d) The U.S. dollar has appreciated in real terms.
(e) In recent years, the U.S. has borrowed heavily from abroad.

Answer: A

A.35. According to the assigned reading by Jeff Faux, who disagrees with the view that low unemployment causes unacceptable inflation, the true main objective of the Fed is to

(a) Reduce unemployment.
(b) Raise workers' real wages.
(c) Increase the amount of international reserves that it has in its vaults.
(d) Prevent wages from rising so as to increase the return to capital.
(e) Avoid being removed from office by the President.

Answer: D

PART B: Written Answers
(28 points total)

NOTE: Be sure to show your work, so that you can get partial credit if appropriate.

B.1. (8 points) The following table gives the nominal and real GDP in the U.S. for 1998 and 1999. Answer the following questions using this table.

Year	Nominal GDP	Real GDP
1998	$9,100 billion	$7,280 billion
1999	$9,900 billion	$7,500 billion

(a) What is the annual rate of inflation between 1998 and 1999?

GDP deflator98 = Nominal GDP98 / Real GDP98 x 100 =9,100 / 7,280 x 100 = 125

GDP deflator99 = Nominal GDP99 / Real GDP99 x 100 =9,900 / 7,500 x 100 = 132

The increase in price level from 125 to 132 implies an inflation rate of: (132-125)/125 = 5.6%.

(b) What is the growth rate of the economy's output from 1998 to 1999?

The growth rate can be found by calculating the percentage increase in real GDP. It goes up from $7,280 billion to $7,500 billion, an increase of 3%.

(c) Assume that the velocity of money is constant at 5 in 1998 and in 1999. By what percentage did the money supply change from 1998 to 1999?

According to quantity theory of money, we have the following equality:

% change M + % change V = % change P + % change Y

% change in V is zero. % change Y is the growth rate, and the % change in P is the inflation rate.

Therefore, the change in money supply is 5.6 + 3 = 8.6%

(d) What possible actions by the Fed could be the reason for the change you found in part (c)? Give at least two possibilities.

The above implies a monetary expansion. It can be either buying bonds, decreasing the minimum reserve requirement, or decreasing the discount rate.

B.2. (12 points) Assume that in the U.S. total commercial bank deposits amount to $3,000 billion. Assume further that the minimum reserve requirement is 10% and that banks do not hold excess reserves. Suppose that Americans are holding cash totaling $100 billion in their pockets.

(a) Calculate the money supply.

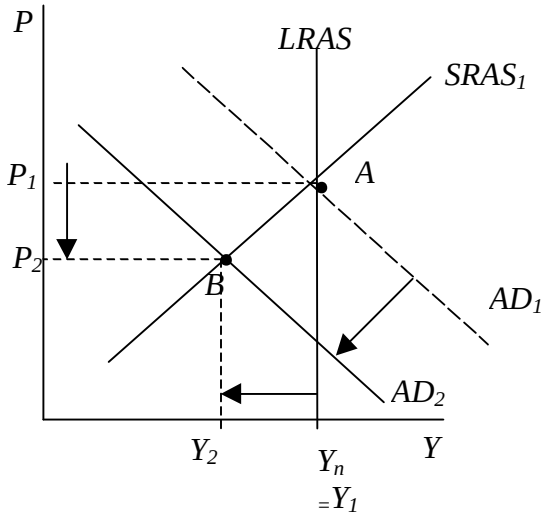
Money supply is the sum of bank deposits and cash holdings. In this question, it is equal to 3,000 + 100 = $3,100 billion.

(b) What will be the new money supply if there is an increase in desired cash holdings by the public, which increases cash holding to $150 billion?

In order to increase their cash holdings to $150 billion, the public will withdraw $50 billion from the banking system. Since the reserve ratio is 10%, the money multiplier in this question is 10. Therefore, the bank deposits will go down by 50 x 10 = $500 billion to $2,500 billion. The new money supply, the sum of bank deposits and cash holdings will be 2,500 + 150 = $2,650 billion.

(c) What will be the short-run effects of this change on nominal GDP, real GDP, and the unemployment rate? Show by drawing a graph.

The money supply goes down from $3,100 billion to $2,650 billion. This will cause an increase in the interest rate. Consequently, the investment will fall, shifting the AD curve to the left from point A to B.



Circle your answers: Compared to the initial equilibrium, in the short run

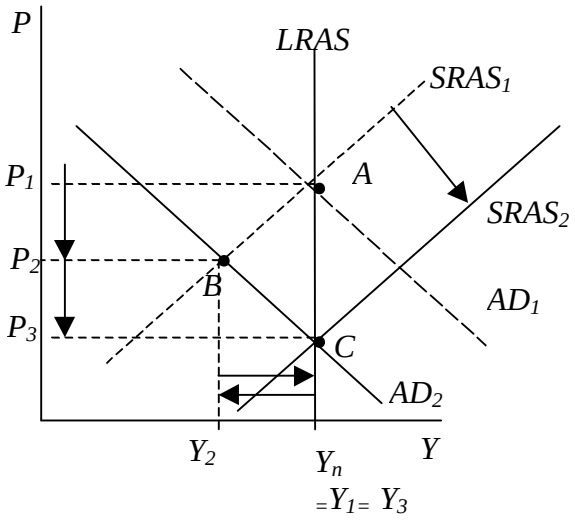
Nominal GDP will (<u>decrease</u>, not change, increase)

Real GDP will (<u>decrease</u>, not change, increase)

Unemployment rate will (decrease, not change, <u>increase</u>)

(d) What will be the long-run effects of this change on the nominal GDP, real GDP, and the unemployment level? Show by drawing a graph. Note that you are asked to compare the new long-run equilibrium to the initial equilibrium before the change in part (b).

In the long run the public will adjust to the new price level, and change their expectations. This will shift the SRAS curve to the right. And, we will be back in long-run equilibrium, given by point C. In the money market, as a result of the decrease in the nominal GDP in the short run, the money demand will fall, reducing the interest rate back to its original level.



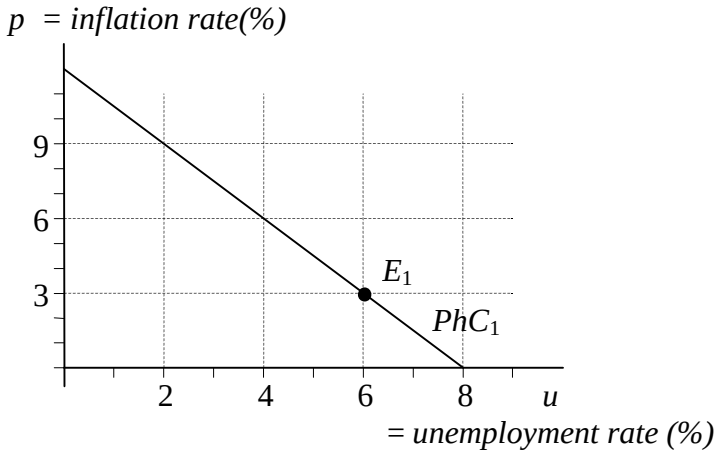
Circle your answers: Compared to the initial equilibrium, in the long run

Nominal GDP will (<u>decrease</u>, not change, increase)

Real GDP will (decrease, <u>not change</u>, increase)

Unemployment rate will (decrease, <u>not change</u>, increase)

B.3. (8 points) Consider a country that is in a long-run equilibrium at point E_1 on the short-run Phillips Curve PhC_1 in the diagram below. It has a 6% unemployment rate and an inflation rate of 3% per year, and it has had these rates for a long time. It is also true that its real GDP is growing at 2% a year, and has been doing that, too, for a long time.



(a) How fast is this country's money supply growing in this long-run equilibrium?

Since real GDP is growing at 2% and the price level is growing at the rate of inflation of 3%, nominal GDP must be growing at 5% a year. Therefore, using the quantity theory of money, since we are in a long-run equilibrium, the money supply must be growing at 5% a year.

(b) What is the natural rate of unemployment for this economy?

Since the country has had this rate of inflation for a long time, the public must have come to expect it, and the expected rate of inflation is therefore 3% a year. The natural rate of unemployment is therefore the current rate (at which actual inflation equals expected), and therefore 6%.

(c) Suppose now that the country's central bank, by changing its monetary policy, succeeds in raising the inflation rate to 6%. What will be the new rate of unemployment in the short run?

In the short run we move along the short-run Phillips Curve, PhC_1, which shows that the unemployment rate falls to 4% at 6% inflation.

(d) If the central bank continues to keep the inflation rate at 6%, what will be the unemployment rate in the long run?

In the long run, we cannot stay permanently away from the natural rate of unemployment without accelerating inflation, so the unemployment rate must rise back to 6%.

(e) Draw into the diagram above the new short-run Phillips Curve in this new long-run equilibrium, and label it PhC_2. What is the reason for the difference between this curve and PhC_1?

The new short run Phillips Curve is parallel to the old one, passing through the point at 6% unemployment and 6% inflation. Whereas the initial short-run Phillips Curve was based on an expected rate of inflation of 3%, this new one has an expected rate of inflation of 6%, and is therefore 3 percentage points higher.

(f) Suppose now that the sacrifice ratio for this country is 4. If the central bank now wants to lower the inflation rate back to 3% by increasing the unemployment rate to 8%, for approximately how long must it keep the unemployment rate at this higher rate?

Since the sacrifice ratio tells us that the country must give up 4% of its annual output for each percentage point reduction that it wants to achieve in the rate of inflation, and the desire here is to reduce inflation from 6% to 3%, or 3 percentage points, this will cost it about 12 percent of its annual GDP. With two percent more unemployment, the country will produce approximately 2% less GDP, and it will therefore take it about 6 years to get back to 3% inflation.