

TOTAL SCORE _____

MC _____

EXE 1 _____

EXE 2 _____

EXE 3 _____

Econ 002- INTRO MACRO Prof. Luca Bossi May 07, 2015

FINAL EXAM -SUGGESTED SOLUTIONS-

My signature below certifies that I have complied with the University of Pennsylvania's Code of Academic Integrity in completing this examination. In particular, I declare that I have not used a graphing calculator to complete this exam, nor notes and any material.

Student Name (printed)

PennID

Signature

Date

Your TA Name (printed)

INSTRUCTIONS

The exam is closed book. It is composed of 40 multiple choice questions and three exercises. Unless stated otherwise, all multiple choice questions are worth 1.5 points (total is 60 points for the multiple choice part). You can detach the answer sheet for the MC part at the end of the exam if this is more comfortable for you. If that is the case, be sure to put your name on it and to tell your TA to staple it back to the exam when finished. If you do not fill in the MC part on time and request extra time at the end of the exam to write the answers up, a proctor will take your name and you will receive a penalty of 5 points. **ANSWER ALL QUESTIONS.**

TOTAL POINTS = 100. TOTAL TIME = 120 minutes

Provide your answers on the exam sheet directly. Read all questions very carefully. Write legibly.

EXAM TAKING POLICY

If you need to use the restroom, raise your hand and wait for the proctor to come to you. Only one person can be out of the examination room at a time, and the proctor will hold onto your exam papers while you are out at the restroom.

FOR THE DURATION OF THE EXAM, AND WITH THE EXCEPTION OF YOUR ALLOWED SCIENTIFIC CALCULATOR, YOU HAVE TO TURN OFF EVERYTHING ELSE THAT HAS A POWER BUTTON. NO CELL PHONES. NO BOOKS. NO NOTES. NO HELP SHEETS. NO TALKING TO EACH OTHER. YOU CANNOT CONNECT TO THE INTERNET.

NO ASKING THE PROCTORS ANY QUESTION OR HELP TO SOLVE THE EXAM.

WRITE IN PENCIL OR IN PEN AS YOU LIKE, BUT IF YOU WRITE IN PENCIL THERE IS NO POSSIBILITY FOR RE-GRADING. PLEASE WRITE YOUR NAME ON THE FIRST PAGE OF THE EXAM AND ON THE MC BUBBLE PAGE. PLEASE FOLLOW THE INSTRUCTIONS AS TO HOW TO SUBMIT YOUR EXAM AT THE END OF THE 2 HOURS.

PLEASE DO NOT START THIS EXAM UNTIL INSTRUCTED TO DO SO.

GOOD LUCK!

EXERCISE I (16 points total)

Suppose that the economy of Asgard consists of only two industries – beer brewing and pizza baking. The table below lists the quantities produced for the period 2007 – 2009. Read the headers carefully!

Year	Beer – produced and consumed by citizens of country A in country A		Pizza – Imported and Consumed in Country A	
	P	Q	P	Q
2007	\$2	1	\$4	2
2008	\$3	2	\$3	2
2009	\$4	3	\$2	2

Year	Beer – Imported and re-exported at imported prices		Pizza – Produced abroad by country A's citizens and sold abroad	
	P	Q	P	Q
2007	\$4	3	\$8	1
2008	\$6	3	\$9	2
2009	\$7	3	\$10	3

a) (5 POINTS) For each year compute nominal GDP and nominal GNP.

b) (5 POINTS) Using 2009 as the base year, compute real GDP and real GNP for each year.

c) (6 POINTS) Suppose that in 2007 there were 100 people residing in country A: 80 citizens and 20 non-citizens. Suppose that for the next two years (2008 and 2009) the number of citizen grew by 5% a year and the number of non-citizen grew by 10% a year. Calculate RGNP per capita and RGDP per capita for each year. (Hint: to compute the population figures round to the nearest integer).

Answers:

a. NGDP (Beer produced and consumed by citizens of country A in country A only) and NGNP (Beer produced and consumed by citizens of country A in country A + Pizza Produced abroad by country A's citizens and sold abroad)

	Nominal GDP	Nominal GNP
2007	$2 \times 1 = 2$	$2 \times 1 + 8 \times 1 = 10$
2008	$3 \times 2 = 6$	$3 \times 2 + 9 \times 2 = 24$
2009	$4 \times 3 = 12$	$4 \times 3 + 10 \times 3 = 42$

b. RGDP and RGNP, base year is 2009, so pick the prices of 2009!

	Real GDP	Real GNP
2007	$4 \times 1 = 4$	$4 \times 1 + 10 \times 1 = 14$
2008	$4 \times 2 = 8$	$4 \times 2 + 10 \times 2 = 28$
2009	$4 \times 3 = 12$	$4 \times 3 + 10 \times 3 = 42$

c. Population

	Citizen	Non-citizen	Total
2007	80	20	100
2008	84	22	106
2009	88	24	112

Per capita variables (divide by total population and not by citizens only)

	Real GDP per capita	Real GNP per capita
2007	4/100	14/100
2008	8/106	28/106
2009	12/112	42/112

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EXERCISE II (12 points total)

Consider the Kettlebell economy with the following characteristics:

Period	Capital	Adult Population	Labor Force	LFPR	Natural Rate of Unemployment	Current Rate of Unemployment
t	19	40	20	50%	5%	10%

Assume that the production function is given by the Cobb-Douglas expression

$$Y_t = A_t F(K_t, L_t) = K_t^{0.3} L_t^{0.7}$$

Also you know that in Kettlebell the natural rate of output is:

$$Y_{t,N} = A_t F(K_t, L_{t,N})$$

Where

$L_{t,N}$ = number of workers when the economy is at the natural rate of unemployment

$Y_{t,N}$ = natural rate of output

a) (4 POINTS) Find the output gap in period t for the Kettlebell economy. Use 2 decimals for your computations.

b) (4 POINTS) Suppose that the money demand for the Kettlebell economy is given by the following equation:

$$M_t = 500 + 0.2Y_t - 1,000r_t$$

Where:

r_t = real interest rate at time t

Determine the Money Supply that the central bank of Kettlebell would need to set in order to achieve a real interest rate target of 10% in period t. Use 2 decimals for your computations.

c) (4 POINTS) The monetary policy in Kettlebell follows this generic Taylor's rule:

$$i_t = \pi_t^E + \alpha(\pi_t - \pi^T) + \beta \left(\frac{Y_t - Y_{t,N} - 0.05}{Y_{t,N}} \right)$$

Where:

π_t = actual inflation at time t

π_t^E = inflation expectations at time t for period t+1

Y_t = actual level of output at time t.

π_t^T = the central bank's target for inflation

Suppose agents form their expectations on prices following this rule $\pi_t^E = \pi_t$, the current inflation rate is 15%, the real interest rate target of 10% (as per part b) of the exercise) has been reached; $\alpha = 0.75$, and $\beta = 0.25$. What is the inflation target set by the central bank in this economy? Use 2 decimals for your computations.

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a) The output gap is formally defined as $Y_t - Y_{t,N}$.

When the economy is at the natural rate of unemployment, there is 1 unemployed person (5% of labor force which is 20). This means that there are 19 people working (95% of labor force). Hence from the Cobb-Douglas production function: $Y_{t,N} = 19^{0.3} 19^{0.7} = 19$.

However, the current rate of unemployment is 10% so there are only 18 people working currently (90% of labor force). Hence, $Y_t = 19^{0.3} 18^{0.7} = 18.29$.

$$Y_t - Y_{t,N} = -0.71$$

b) Substituting the given values of Y_t , and the real interest rate target, the money demand becomes:

$$M_t = 500 + 0.2 * 18.29 - 1,000 * 0.1 = 403.66$$

In equilibrium for the money market we must have that money demand is equal to money supply, so to meet that real interest rate target, the central bank of Kettlebell needs to set the money supply equal to 403.66.

c) Since

$$\begin{aligned} \pi_t^E &= \pi_t \\ i_t - \pi_t^E &= i_t - \pi_t = r_t = 0.1 \end{aligned}$$

Using this into the Taylor rule:

$$\begin{aligned} r_t &= \alpha(\pi_t - \pi^T) + \beta \left(\frac{Y_t - Y_{t,N} - 0.05}{Y_{t,N}} \right) \\ 0.1 &= 0.75 * (0.15 - \pi^T) + 0.25 * \left(-\frac{0.71 + 0.05}{19} \right) \\ \pi^T &= 0.33\% \end{aligned}$$

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EXERCISE III (12 points total)

Consider the Solow model we have seen and studied in class. In this problem we will consider extension to account for an open economy first and taxation next. For all computations present your answers with four decimal places. To get full/partial credit CLEARLY show your work.

Consider an economy and assume that its aggregate production function is a Cobb-Douglas: $Y_t = AK_t^\alpha L_t^{1-\alpha}$. Furthermore the depreciation of capital is $d = 5\%$, the saving rate is $s = 15\%$, $\alpha = 0.5$, $A = 1$, and the population growth rate is $n = 5\%$.

a) (6 POINTS) Now suppose that we need to modify the standard Solow model to account for capital inflow-outflow (i.e. the economy is now open). In particular assume that because of unfavorable assets taxation and absence of profitable investment opportunities there is an outflow of capital from the country at rate of 5% from the GDP every period. Foreigners do not want to buy assets in this country.

Write down the new basic equations and solve for the economic meaningful steady state level of capital per person.

b) (6 POINTS) Forget the calculations you did for part (a) of this exercise, this part of the question is independent from part (a). Now the economy is closed. Suppose we want to introduce a government in the Solow model. In particular, we assume all the production/income in the economy is taxed at a certain constant tax rate Ω . Households can save only after having paid taxes.

Suppose that the government also offers productive government spending that enhances total production in the economy and that the government is running a balanced budget. Think of these as the services coming from the roads, general infrastructures, public schools, police, firemen etc. This being the case, the new production function for our economy becomes:

$$Y_t = AK_t^\alpha L_t^\beta G_t^{1-\alpha-\beta}$$

Where G_t denotes government spending.

Now the depreciation of capital is $d = 5\%$, the saving rate is $s = 15\%$, $\alpha = 0.5$, $A = 1$, and the population growth rate is $n = 5\%$, and also $\Omega = 0.1$, and $\beta = 0.1$, find the steady state level of capital per person.

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a) Let us write down the basic equations of the Solow model

$$1) Y_t = AK_t^\alpha L_t^{1-\alpha}$$

$$2) S_t = sY_t$$

$$3) I_t = S_t$$

$$4) K_{t+1} = I_t + (1-d)K_t$$

$$5) L_{t+1} = (1+n)L_t$$

For our case (3) needs to be modified to account for positive net capital outflow NCO. In particular

$$3') I_t + NCO_t = S_t$$

$$NCO_t = CO_t - CI_t = 0.05AK_t^\alpha L_t^{1-\alpha}$$

The equation for accumulation of aggregate physical capital now becomes:

$$\begin{aligned} K_{t+1} &= S_t - NCO_t + (1-d)K_t \\ &= sAK_t^\alpha L_t^{1-\alpha} - 0.05 * AK_t^\alpha L_t^{1-\alpha} + (1-d)K_t \end{aligned}$$

This in per capita terms becomes:

$$\frac{K_{t+1}}{L_{t+1}}(1+n) = (s - 0.05)A \left(\frac{K_t}{L_t}\right)^\alpha + (1-d)\frac{K_t}{L_t}$$

with our convention for lower case variables:

$$k_{t+1}(1+n) = (s - 0.05)Ak_t^\alpha + (1-d)k_t$$

In steady state we have that: $k_{t+1} = k_t = \bar{k}$. Substituting in the law of motion of capital in per capita terms we have

$$0 = (s - 0.05)A\bar{k}^\alpha - (n + d)\bar{k}$$

Note that one solution would be to have $\bar{k} = 0$. But that is not meaningful from the economic point of view. We can solve for Steady State \bar{k} in the following steps. First write the above as

$$(s - 0.05)A\bar{k}^\alpha = (n + d)\bar{k}$$

Second dividing both sides by \bar{k} :

$$(s - 0.05)A\bar{k}^{\alpha-1} = (n + d)$$

Finally after rearrange for \bar{k}

$$\bar{k}^{\alpha-1} = \frac{n + d}{(s - 0.05)A}$$

This expression gives us the steady level capital per person as function of the fundamental parameters. Substitute for the numbers in the hypothesis to obtain the numerical answer.

$$\begin{aligned}\bar{k} &= \left(\frac{n + d}{(s - 0.05)A} \right)^{\frac{1}{\alpha-1}} \\ &= \left(\frac{0.05 + 0.05}{(0.15 - 0.05)1} \right)^{\frac{1}{0.5-1}} \\ &= 1\end{aligned}$$

b) If the government is running a balanced budget then

$$G_t = \Omega Y_t$$

Substitute this into the production function:

$$Y_t = AK_t^\alpha L_t^\beta (\Omega Y_t)^{1-\alpha-\beta}$$

Rearrange the above into $Y_t^{\alpha+\beta} = AK_t^\alpha L_t^\beta (\Omega)^{1-\alpha-\beta}$ and solve for Y_t :

$$\begin{aligned}Y_t &= A^{\frac{1}{\alpha+\beta}} K_t^{\frac{\alpha}{\alpha+\beta}} L_t^{\frac{\beta}{\alpha+\beta}} (\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}} \\ &= K_t^{\frac{\alpha}{\alpha+\beta}} L_t^{\frac{\beta}{\alpha+\beta}} (\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}}\end{aligned}$$

The last line follows since $A = 1$. Output per capita is then:

$$\begin{aligned}\frac{Y_t}{L_t} &= \frac{K_t^{\frac{\alpha}{\alpha+\beta}} L_t^{\frac{\beta}{\alpha+\beta}} (\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}}}{L_t} \\ &= (\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}} \left(\frac{K_t}{L_t} \right)^{\frac{\alpha}{\alpha+\beta}}\end{aligned}$$

Using after tax output per person into the fundamental equation of the Solow model and the small cap convention we obtain:

$$k_{t+1}(1 + n) = s(1 - \Omega)(\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}} (k_t)^{\frac{\alpha}{\alpha+\beta}} + (1 - d)k_t$$

In steady state $k_{t+1} = k_t = \bar{k}$. Using this in the fundamental equation above:

$$0 = s(1 - \Omega)(\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}} (\bar{k})^{\frac{\alpha}{\alpha+\beta}} - (n + d)\bar{k}$$

Solving for \bar{k} :

$$\bar{k} = \left(\frac{s(1 - \Omega)(\Omega)^{\frac{1-\alpha-\beta}{\alpha+\beta}}}{n + d} \right)^{\frac{\alpha+\beta}{\alpha}}$$

Plugging the numbers:

$$\bar{k} = \left(\frac{0.15(0.9)(0.1)^{\frac{1-0.5-0.1}{0.5+0.1}}}{0.05 + 0.05} \right)^{\frac{0.5+0.1}{0.1}} = \left(1.5(0.9)(0.1)^{\frac{2}{3}} \right)^6 = 0.0006$$

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MULTIPLE CHOICE QUESTIONS

Identify the letter of the choice that best completes the statement or answers the question. Fill in the bubble with your answer in the answer sheet for the MC provided on the last page of the exam.

- 1) Suppose the economy is in long-run equilibrium. If there is an income tax cut at the same time that major new sources of oil are discovered in the country, then in the short-run
- real GDP will rise and the price level might rise, fall, or stay the same.
 - real GDP will fall and the price level might rise, fall, or stay the same.
 - the price level will rise, and real GDP might rise, fall, or stay the same.
 - the price level will fall, and real GDP might rise, fall, or stay the same.
- 2) Suppose the economy is in long-run equilibrium. If the government increases its expenditures, eventually the increase in aggregate demand causes price expectations to
- rise. This rise in price expectations shifts the short-run aggregate supply curve to the right.
 - rise. This rise in price expectations shifts the short-run aggregate supply curve to the left.
 - fall. This fall in price expectations shifts the short-run aggregate supply curve to the right.
 - fall. This fall in price expectations shifts the short-run aggregate supply curve to the left.
- 3) An economic contraction caused by a shift in aggregate demand remedies itself over time as the expected price level
- rises, shifting aggregate demand right.
 - rises, shifting aggregate demand left.
 - falls, shifting aggregate supply right.
 - falls, shifting aggregate supply left.
- 4) Imagine an economy in which: (1) pieces of paper called yollars are the only thing that buyers give to sellers when they buy goods and services, so it would be common to use, say, 50 yollars to buy a pair of shoes; (2) prices are posted in terms of yardsticks, so you might walk into a grocery store and see that, today, an apple is worth 2 yardsticks; and (3) yardsticks disintegrate overnight, so no yardstick has any value for more than 24 hours. In this economy,
- the yardstick is a medium of exchange but it cannot serve as a unit of account.
 - the yardstick is a unit of account but it cannot serve as a store of value.
 - the yardstick is a medium of exchange but it cannot serve as a store of value, and the yollar is a unit of account.
 - the yollar is a unit of account, but it is not a medium of exchange and it is not a liquid asset.
- 5) There is evidence that the rate at which money changed hands rose during the German hyperinflation. This means that
- velocity rose. If monetary neutrality holds the rise in velocity increased the ratio M/P .
 - velocity rose. If monetary neutrality holds the rise in velocity decreased the ratio M/P .
 - velocity fell. If monetary neutrality holds the fall in velocity increased the ratio M/P .
 - velocity fell. If monetary neutrality holds the fall in velocity decreased the ratio M/P .
- 6) A ton of scrap iron sells for \$150 in the U.S. and 1400 yuan in China. The nominal exchange rate is 6.7 yuan per dollar.
- A profit could be made by buying scrap iron in China and selling it in the U.S. This would tend to drive down the price of U.S. scrap iron.
 - A profit could be made by buying scrap iron in China and selling it in the U.S. This would tend to drive down the price of Chinese scrap iron.
 - A profit could be made by buying scrap iron in the U.S. and selling it in China. This would tend to drive down the price of U.S. scrap iron.

- d. A profit could be made by buying scrap iron in the U.S. and selling it in China. This would tend to drive down the price of Chinese scrap iron.
- 7) Workland has a population of 10,000, of whom 7,000 work 8 hours a day to produce a total of 224,000 final goods. Laborland has a population of 5,000, of whom 4,000 work 12 hours a day to produce a total of 120,000 final goods.
- Workland has higher productivity and higher real GDP per person than Laborland.
 - Workland has higher productivity but lower real GDP per person than Laborland.**
 - Workland has lower productivity but higher real GDP per person than Laborland.
 - Workland has lower productivity and lower real GDP per person than Laborland.
- 8) Which of the following contains a list only of things that decrease when the budget deficit of the U.S. increases?
- U.S. net exports, U.S. domestic investment, U.S. net capital outflow**
 - U.S. supply of loanable funds, U.S. interest rates, U.S. domestic investment
 - U.S. imports, U.S. interest rates, the real exchange rate of the dollar
 - None of the above is correct.
- 9) If people decide to hold more currency relative to deposits, the money supply
- falls. The larger the reserve ratio is, the more the money supply falls.
 - falls. The larger the reserve ratio is, the less the money supply falls.**
 - rises. The larger the reserve ratio is, the more the money supply rises.
 - rises. The larger the reserve ratio is, the less the money supply rises.
- 10) If U.S. citizens decide to purchase more foreign assets at each interest rate, the U.S. real interest rate
- increases, the real exchange rate of the dollar appreciates, and U.S. net capital outflow decreases.
 - increases, the real exchange rate of the dollar depreciates, and U.S. net capital outflow increases.**
 - decreases, the real exchange rate of the dollar depreciates, and U.S. net capital outflow decreases.
 - decreases, the real exchange rate of the dollar appreciates, and U.S. net capital outflow increases.

Table 1 -Labor Data for Aridia

Year	2010	2011	2012
Adult population	2000	3000	3200
Number of employed	1400	1300	1600
Number of unemployed	200	600	200

- 11) Refer to Table 1. The labor force of Aridia in 2010 was
- 1400.
 - 1600.**
 - 1800.
 - 2000.
- 12) Refer to Table 1. The unemployment rate of Aridia
- increased from 2010 to 2011 and increased from 2011 to 2012.
 - increased from 2010 to 2011 and decreased from 2011 to 2012.**
 - decreased from 2010 to 2011 and increased from 2011 to 2012.
 - decreased from 2010 to 2011 and decreased from 2011 to 2012.
- 13) Refer to Table 1. The labor-force participation rate of Aridia in 2011 was
- 43.3%.
 - 54.2%.
 - 63.3%.**
 - 68.4%.

14) Which of the following could explain a decrease in the equilibrium interest rate and in the equilibrium quantity of loanable funds?

- a. The demand for loanable funds shifted rightward.
- b. The demand for loanable funds shifted leftward.**
- c. The supply of loanable funds shifted rightward.
- d. The supply of loanable funds shifted leftward.

15) An increase in the saving rate would, other things the same,

- a. increase growth more for a poor country than for a rich country, and raise growth permanently.
- b. increase growth more for a poor country than for a rich country, but raise growth temporarily.**
- c. increase growth more for a rich country than for a poor country, and raise growth permanently.
- d. increase growth more for a rich country than for a poor country, but raise growth temporarily.

16) If the federal funds rate were above the level the Federal Reserve had targeted, the Fed could move the rate back towards its target by

- a. buying bonds. This buying would reduce reserves.
- b. buying bonds. This buying would increase reserves.**
- c. selling bonds. This selling would reduce reserves.
- d. selling bonds. This selling would increase reserves.

17) You bought some shares of stock and, over the next year, the price per share increased by 5 percent, as did the overall price level. Before taxes were paid, you experienced

- a. both a nominal gain and a real gain, and you paid taxes on the nominal gain.
- b. both a nominal gain and a real gain, and you paid taxes only on the real gain.
- c. a nominal gain, but no real gain, and you paid taxes on the nominal gain.**
- d. a nominal gain, but no real gain, and you paid no taxes on the transaction.

18) The money supply decreases if

- a. households decide to hold relatively more currency and relatively fewer deposits and banks decide to hold relatively more excess reserves and make fewer loans.**
- b. households decide to hold relatively more currency and relatively fewer deposits and banks decide to hold relatively fewer excess reserves and make more loans.
- c. households decide to hold relatively less currency and relatively more deposits and banks decide to hold relatively more excess reserves and make fewer loans.
- d. households decide to hold relatively less currency and relatively more deposits and banks decide to hold relatively less excess reserves and make more loans.

19) A bank loans Greg's Ice Cream \$250,000 to remodel a building near campus to use as a new store. On their respective balance sheets, this loan is

- a. a liability for the bank and an asset for Greg's Ice Cream. The loan increases the money supply.
- b. a liability for the bank and an asset for Greg's Ice Cream. The loan does not increase the money supply.
- c. an asset for the bank and a liability for Greg's Ice Cream. The loan increases the money supply.**
- d. an asset for the bank and a liability for Greg's Ice Cream. The loan does not increase the money supply.

20) All else equal, if there are diminishing returns, then what happens to productivity if both capital and labor increase?

- a. Productivity will definitely fall.
- b. Productivity will definitely be unchanged.
- c. Productivity will definitely rise.
- d. None of the above are necessarily correct.**

- 21)** In December 1999 people feared that there might be computer problems at banks as the century changed. Consequently, people wanted to hold relatively more in currency and relatively less in deposits. In anticipation banks raised their reserve ratios to have enough cash on hand to meet depositors' demands. These actions by the public
- a. would increase the multiplier. If the Fed wanted to offset the effect of this on the size of the money supply, it could have sold bonds.
 - b. would increase the multiplier. If the Fed wanted to offset the effect of this on the size of the money supply, it could have bought bonds.
 - c. would reduce the multiplier. If the Fed wanted to offset the effect of this on the size of the money supply, it could have sold bonds.
 - d. **would reduce the multiplier. If the Fed wanted to offset the effect of this on the size of the money supply, it could have bought bonds.**

- 22)** In the open-economy macroeconomic model, the key determinant of net capital outflow is
- a. the real exchange rate. When the real exchange rate rises, net capital outflow rises.
 - b. the real exchange rate. When the real exchange rate rises, net capital outflow falls.
 - c. the real interest rate. When the real interest rate rises, net capital outflow rises.
 - d. **the real interest rate. When the real interest rate rises, net capital outflow falls.**

- 23)** Ethel purchased a bag of groceries in 1970 for \$8. She purchased the same bag of groceries in 2006 for \$25. If the price index was 38.8 in 1970 and the price index was 180 in 2006, then what is the price of the 1970 bag of groceries in 2006 dollars?
- a. \$5.39
 - b. \$25.00
 - c. \$29.11
 - d. **\$37.11**

- 24)** Foreign citizens earn more income in Ireland than Irish citizens earn in foreign countries.
- a. Ireland's net factor payments from abroad are positive, and its GDP is larger than its GNP.
 - b. Ireland's net factor payments from abroad are positive, and its GNP is larger than its GDP.
 - c. **Ireland's net factor payments from abroad are negative, and its GDP is larger than its GNP.**
 - d. Ireland's net factor payments from abroad are negative, and its GNP is larger than its GDP.

- 25)** Senator Smith says that in order to help poor countries develop, the United States should: 1. Prevent U.S. corporations from investing in poor countries because they take profits that the poor countries should have; 2. reduce or eliminate subsidies to U.S. producers when poor countries have a comparative advantage producing those goods the U.S. subsidizes; 3. Work to promote political stability in poor countries; and 4. Reduce poor countries reliance on market forces in their economies. How many of these ideas are likely to help poor countries grow?
- a. 1
 - b. **2**
 - c. 3
 - d. 4

- 26)** Suppose one year ago the price index was 120 and Maria purchased \$20,000 worth of bonds. One year later the price index is 126. Maria redeems her bonds for \$22,250 and is in a 40 percent tax bracket. What is Maria's real after-tax rate of interest to the nearest tenth of a percent?
- a. 4.3 percent
 - b. 3.1 percent
 - c. **1.8 percent**
 - d. 1.2 percent

- 27)** A firm may pay efficiency wages in an attempt to
- reduce incentives to shirk.
 - reduce turnover.
 - attract a well-qualified pool of applicants.
 - All of the above are correct.**
- 28)** An increase in the price of bread produced domestically will be reflected in
- both the GDP deflator and the consumer price index.**
 - neither the GDP deflator nor the consumer price index.
 - the GDP deflator but not in the consumer price index.
 - the consumer price index but not in the GDP deflator.
- 29)** If Norway sold more goods and services abroad than it purchased from abroad, then it had
- positive net exports which is a trade surplus.**
 - positive net exports which is a trade deficit.
 - negative net exports which is a trade surplus.
 - negative net exports which is a trade deficit.
- 30)** The quantity of U.S. bonds foreigners want to buy is taken into account
- in the U.S. supply of loanable funds and the supply of dollars in the market for foreign-currency exchange.
 - in the U.S. supply of loanable funds and the demand for dollars in the market for foreign-currency exchange.
 - in the U.S. demand for loanable funds and the supply of dollars in the market for foreign-currency exchange.**
 - in the U.S. demand for loanable funds and the demand for dollars in the market for foreign-currency exchange.
- 31)** Your accountant tells you that if you can continue to earn the current interest rate on your balance of \$500 for ten years, you will have about \$983.58. If your accountant is correct, what is the current rate of interest?
- 5 percent
 - 6 percent
 - 7 percent**
 - 8 percent
- 32)** When the money market is drawn with the value of money on the vertical axis, long-run equilibrium is obtained when the quantity demanded and quantity supplied of money are equal due to adjustments in
- nominal interest rates.
 - real interest rates.
 - the price level.**
 - the money supply.
- 33)** In a closed economy, if Y and T remained the same, but G rose, and C fell but by less than the rise in G , what would happen to public and national saving?
- public and national saving would rise
 - public and national saving would fall**
 - public saving would rise and national saving would fall
 - public saving would fall and national saving would rise
- 34)** Suppose a country has only a sales tax. Now suppose it replaces the sales tax with an income tax that includes a tax on interest income. This would make equilibrium
- interest rates and the equilibrium quantity of loanable funds rise.
 - interest rates rise and the equilibrium quantity of loanable funds fall.**
 - interest rates fall and the equilibrium quantity of loanable funds rise.

d. interest rates and the equilibrium quantity of loanable funds fall.

35) If in a closed economy $Y = \$11$ trillion, which of the following combinations would be consistent with national saving of \$2.5 trillion?

- a. **C = \$8 trillion, G = \$0.5 trillion**
- b. C = \$6.5 trillion, G = \$3 trillion
- c. C = \$8.5 trillion, G = \$2 trillion
- d. C = \$9 trillion, G = \$.5 trillion

36) If a country has \$2.4 billion of net exports and purchases \$4.8 billion of goods and services from foreign countries, then it has

- a. **\$7.2 billion of exports and \$4.8 billion of imports.**
- b. \$7.2 billion of imports and \$4.8 billion of exports.
- c. \$4.8 billion of exports and \$2.4 billion of imports.
- d. \$4.8 billion of imports and \$2.4 billion of exports.

37) Suppose the price of a gallon of ice cream rises from \$4 to \$5 and the price of a can of coffee rises from \$2 to \$2.50. If the CPI rises from 150 to 177, then people likely will buy

- a. more ice cream and more coffee.
- b. more ice cream and less coffee.
- c. less ice cream and more coffee.
- d. **less ice cream and less coffee.**

38) Sam has no job but keeps applying to get a job with a business that is unionized. He is qualified and he finds the pay attractive, but the firm is not hiring. Sam is

- a. **structurally unemployed. Structural unemployment exists even in the long run.**
- b. structurally unemployed. Structural unemployment does not exist in the long run.
- c. frictionally unemployed. Frictional unemployment exists even in the long run.
- d. frictionally unemployed. Frictional unemployment does not exist in the long run.

39) On its web site, your bank posts the interest rates it is paying on savings accounts. Those posted rates

- a. and a price index are both real variables.
- b. **and a price index are both nominal variables.**
- c. are real variables, and a price index is a nominal variable.
- d. are nominal variables, and a price index is a real variable

40) Suppose some country had an adult population of about 25 million, a labor-force participation rate of 60 percent, and an unemployment rate of 6 percent. How many people were employed?

- a. 0.9 million
- b. **14.1 million**
- c. 15 million
- d. 23.5 million

YOUR NAME: _____

YOUR TA's NAME: _____

FILL IN THE BUBBLE WITH THE LETTER OF YOUR CHOICE FOR THE MULTIPLE CHOICE QUESTIONS
ONLY THIS PAGE WILL BE GRADED FOR THE MC PART.

- | | | | | |
|-----|-----|-----|-----|-----|
| 1. | (A) | (B) | (C) | (D) |
| 2. | (A) | (B) | (C) | (D) |
| 3. | (A) | (B) | (C) | (D) |
| 4. | (A) | (B) | (C) | (D) |
| 5. | (A) | (B) | (C) | (D) |
| 6. | (A) | (B) | (C) | (D) |
| 7. | (A) | (B) | (C) | (D) |
| 8. | (A) | (B) | (C) | (D) |
| 9. | (A) | (B) | (C) | (D) |
| 10. | (A) | (B) | (C) | (D) |
| 11. | (A) | (B) | (C) | (D) |
| 12. | (A) | (B) | (C) | (D) |
| 13. | (A) | (B) | (C) | (D) |
| 14. | (A) | (B) | (C) | (D) |
| 15. | (A) | (B) | (C) | (D) |
| 16. | (A) | (B) | (C) | (D) |
| 17. | (A) | (B) | (C) | (D) |
| 18. | (A) | (B) | (C) | (D) |
| 19. | (A) | (B) | (C) | (D) |
| 20. | (A) | (B) | (C) | (D) |
| 21. | (A) | (B) | (C) | (D) |
| 22. | (A) | (B) | (C) | (D) |
| 23. | (A) | (B) | (C) | (D) |
| 24. | (A) | (B) | (C) | (D) |
| 25. | (A) | (B) | (C) | (D) |
| 26. | (A) | (B) | (C) | (D) |
| 27. | (A) | (B) | (C) | (D) |
| 28. | (A) | (B) | (C) | (D) |
| 29. | (A) | (B) | (C) | (D) |
| 30. | (A) | (B) | (C) | (D) |
| 31. | (A) | (B) | (C) | (D) |
| 32. | (A) | (B) | (C) | (D) |
| 33. | (A) | (B) | (C) | (D) |
| 34. | (A) | (B) | (C) | (D) |
| 35. | (A) | (B) | (C) | (D) |
| 36. | (A) | (B) | (C) | (D) |
| 37. | (A) | (B) | (C) | (D) |
| 38. | (A) | (B) | (C) | (D) |
| 39. | (A) | (B) | (C) | (D) |
| 40. | (A) | (B) | (C) | (D) |