

TOTAL SCORE _____

EXE 1 _____

EXE 2 _____

EXE 3 _____

MC _____

Econ 002- INTRO MACRO Prof. Luca Bossi December 15, 2016
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

Your TA Name (printed)

INSTRUCTIONS

The exam is closed book. It is composed of 40 multiple choice questions and three exercises. 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!

To get full credits in the exercises below you really need to show your work. If you write just a number as the answer and even if that number is correct you will not get full credits in the exercise unless you show fully the formulas and your work (how you got that number and the steps involved in your computation).

EXERCISE I (12 POINTS TOTAL)

Consider the Solow growth model we have seen and studied in class with a production function given by

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

You are also given $n = 5\%$, $A = 1.5$, $d = 2.5\%$, and $s = 3\%$, $\alpha = 0.25$. Where n stands for the population growth rate, A is Total Factor Productivity, d is depreciation of capital, s is the saving rate, and α is the capital share.

The initial labor at period 0, in this closed economy is given by $L_0 = 25$, and the initial physical capital is $K_0 = 50$.

a) (6 POINTS) Determine the growth rate of per capita savings between period 1 and period 0. Use 3 decimal digits precision for your computations.

b) (6 POINTS) Now assume the economy becomes an open one. In particular, you are told that this economy at period t runs a trade deficit equal to 2% of its GDP and that the currency market is in equilibrium.

Compute the per capita of steady state. Show your work and the steps to derive the fundamental equation of the Solow model in this case.

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Answers

a) First, find Y_0

$$Y_0 = AK_0^{0.25} L_0^{0.75}$$

$$Y_0 = (1.5)(50)^{0.25} (25)^{0.75} = 44.595$$

Saving in period zero is:

$$sY_0 = (0.03)(44.595) = 1.338$$

Per capita saving in period 0:

$$1.338/25 = 0.054$$

Use the equation for physical capital to determine physical capital in period 1:

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

$$K_1 = (0.03)(44.595) + (1 - 0.025)(50) = 50.088$$

Use the equation for population growth to determine labor in period 1:

$$L_1 = (1+n) L_0 = (1.05) (25) = 26.25$$

Output is determined by our production function

$$Y_1 = AK_1^{0.25} L_1^{0.75}$$

$$Y_1 = (1.5) (50.088)^{0.25} (26.25)^{0.75} = 46.278$$

Saving in period one is:

$$sY_1 = (0.03)(46.335) = 1.388$$

Per capita saving in period 1:

$$1.388/26.25 = 0.053$$

The growth rate of per capita savings is $[(0.053-0.054)/0.054] \times 100 = -1.852\%$

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

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

$$2) S_t = sY_t$$

$$3) I_t = S_t$$

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

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

In this context (3) needs to be modified to account for the fact that the economy is open and the currency market is in equilibrium: $NX = NCO$. In particular

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

$$NCO_t = NX_t = -0.02 * Y_t = -0.02AK_t^\alpha L_t^{1-\alpha}$$

The equation for accumulation of aggregate physical capital now becomes:

$$\begin{aligned} K_{t+1} &= S_t - NCO_t + (1-d)K_t \\ &= sAK_t^\alpha L_t^{1-\alpha} + 0.02 * AK_t^\alpha L_t^{1-\alpha} + (1-d)K_t \end{aligned}$$

This in per capita terms becomes:

$$\frac{K_{t+1}}{L_{t+1}}(1+n) = (s + 0.02)A \left(\frac{K_t}{L_t}\right)^\alpha + (1-d)\frac{K_t}{L_t}$$

with our convention for lower case variables:

$$k_{t+1}(1+n) = (s + 0.02)Ak_t^\alpha + (1-d)k_t$$

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

$$0 = (s + 0.02)A\bar{k}^\alpha - (n + d)\bar{k}$$

We can solve for Steady State \bar{k} in the following steps. First write the above as

$$(s + 0.02)A\bar{k}^\alpha = (n + d)\bar{k}$$

Second dividing both sides by \bar{k} :

$$(s + 0.02)A\bar{k}^{\alpha-1} = (n + d)$$

Finally after rearrange for \bar{k}

$$\bar{k}^{\alpha-1} = \frac{n + d}{(s + 0.02)A}$$

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.

$$\begin{aligned} \bar{k} &= \left(\frac{n + d}{(s + 0.02)A}\right)^{\frac{1}{\alpha-1}} \\ &= \left(\frac{0.05 + 0.025}{(0.03 + 0.02)1.5}\right)^{\frac{1}{0.5-1}} = \left(\frac{0.075}{0.075}\right)^{\frac{1}{0.5-1}} = 1 \end{aligned}$$

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EXERCISE II (16 POINTS TOTAL)

Use 2 decimal digits precision for all your computations in this exercise.

Private savings and investment in the closed Penn Economy are characterized by the following equations:

Private Savings: $S_{PR} = (10/3)r + 10$

Investment: $I = 17.5 - 2.5r$

Where r is the interest rate already in percentage form, so if, for example, $r = 10$ then this implies that the interest rate is 10%. We also know that in equilibrium total income is 100, consumption is 60 and transfer payments are zero.

a) (6 POINTS) The government believes that the economy is effective when the quantity of loanable funds available in equilibrium is equal to 10. What is the equilibrium interest rate in this case? What is the level of private saving when the market for loanable funds is in equilibrium? What must government spending (G) be such that the equilibrium quantity of loanable funds is 10?

b) (5 POINTS) In this part of the exercise, the equations are the same as given in part a), but the figures are going to change. In particular, the government changes its spending patterns so that now, $G = (125/3)$. Taxes are 20, transfers are zero. What is the new equilibrium quantity of loanable funds? What is the new equilibrium interest rate?

c) (5 POINTS) Now disregard all the information given in the two parts above. Suppose that taxes at time t are 2,000 and government spending at time t is 1,000\$. There are no transfer payments, do not consider monetary policy. Also suppose that the nominal interest rate is fixed at 10%. What is the steady state level of debt?

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Answers

a) We are told that in the market for loanable funds the quantity of Investment in equilibrium needs to be 10 so the Investment equation needs to be equal to 10, the equilibrium quantity. This way we can obtain the equilibrium interest rate in the financial market:

$$10 = 17.5 - 2.5r$$

$$r = 3$$

Note that if $r = 3$, then $S_{PR} = (10/3)(3) + 10 = 20$.

Since the equilibrium quantity of loanable funds is 10, we also know that national savings in equilibrium must be 10, so $S = 10$, and therefore since:

$$S = S_{PR} + S_{PUB}$$

$$10 = 20 + T - G$$

$$G = 20 - 10 + T = 10 + T$$

Now you need to find tax revenues, T to determine G :

You know by the definition of private saving that:

$$S_{PR} = Y - T + Tr - C$$

so

$$T = Y + Tr - C - S_{PR}$$

And you are told that $Y = 100$, $Tr = 0$, and $C = 60$:

$$T = 100 - 60 - 20 = 20$$

Then:

$$G = 10 + T = 10 + 20 = 30$$

b) Now that $G = (125/3) = 41.67$, we can plug it into our national savings equation to get:

$$S = S_{PR} + S_{PUB} = (3.333r + 10) + (20 - 41.67) = 3.333r - 11.67$$

The new equilibrium occurs where $I = S$, so

$$S = I$$

$$3.333r - 11.67 = 17.5 - 2.5r$$

$$29.16667 = 5.833r$$

$$r = 5$$

Given $r = 5\%$, we can find the equilibrium quantity by plugging $r = 5$ into either the S or I equations:

$$I = 17.5 - 2.5(5) = 5$$

The new equilibrium quantity of loanable funds is 5.

c) We know that the equation that defines budget debt is

$$B_t = DE_t + (1 + i)B_{t-1}$$

Where:

Budget debt in period $t = B_t$

Deficit in period $t = DE_t$

Nominal interest rate = i

Plugging the information given into the equation above

$T - G = 2,000 - 1,000 = 1,000 \Rightarrow$ period t surplus

$$B_t = -1,000 + (1 + 0.1)B_{t-1}$$

In steady state Debt is a constant: $B_t = B_{t-1} = \bar{B}$

So plugging this into the equation above we obtain:

$$\bar{B} = -1,000 + (1 + 0.1)\bar{B}$$

Solving for \bar{B} :

$$\bar{B} = \frac{-1,000}{-0.1} = 10,000$$

EXERCISE III (12 POINTS TOTAL)

Use 2 decimal digits precision for all your computations in this exercise.

Suppose that output in the economy of Manchester by the Sea evolves according to:

$$Y_t = Y_{N,t} + 10(P_t - P_{t-1})$$

Where Y_t and P_t are respectively the output and the GDP deflator in period t , and $Y_{N,t}$ is the natural level of output which is equal to 1,000. Assume throughout this exercise that the velocity of money is fixed at 10.

a) (2 POINTS) In year 2014 the GDP deflator is 100, and the output is at its natural level, find the Money supply of this economy in 2014.

b) (5 POINTS) Now, suppose the monetary authority wants the growth rate of output to be 5% in 2015. To what level should the central bank set the Money supply to achieve that goal? What is the inflation rate in 2015?

c) (5 POINTS) Assume again the monetary authority wants to sustain the 5% real GDP growth for 2016. Find the inflation and the money supply for 2016.

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Answers

a) We know

$$P_t Y_t = M_t V$$

And solving for the money supply we obtain

$$M_t = \frac{P_t Y_t}{V} = \frac{100 * 1000}{10} = 10,000$$

b) If the growth is 5% the new GDP level is:

$$\begin{aligned} \frac{Y_{2015} - Y_{2014}}{Y_{2014}} &= 0.05 \\ Y_{2015} - 1,000 &= 0.05 * 1,000 \\ Y_{2015} &= 1050 \end{aligned}$$

And then the price level in 2015 has to satisfy:

$$\begin{aligned} Y_{2015} &= Y_N + 10(P_{2015} - P_{2014}) \\ 1,050 &= 1,000 + 10(P_{2015} - 100) \\ P_{2015} &= 105 \\ \frac{P_{2015} - P_{2014}}{P_{2014}} &= \frac{105 - 100}{100} = 0.05 = 5\% \end{aligned}$$

Therefore the money supply has to be:

$$M_{2015} = \frac{P_{2015} Y_{2015}}{V} = \frac{105 * 1050}{10} = 11,025$$

c) If the growth is 5% the new GDP level is:

$$Y_{2016} = 1050 * 1.05 = 1,102.5$$

And then the price level has to satisfy:

$$\begin{aligned} Y_{2016} &= Y_N + 10(P_{2016} - P_{2015}) \\ 1,102.5 &= 1000 + 10(P_{2016} - 105) \\ 10.25 &= P_{2016} - 105 \end{aligned}$$

$$\frac{P_{2016} - P_{2015}}{P_{2015}} = \frac{P_{2016} = 115.25}{115.25 - 105} = \frac{115.25 - 105}{105} = 0.098 = 9.8\%$$

Therefore the money supply has to be:

$$M_{2016} = \frac{P_{2016} Y_{2016}}{V} = \frac{115.25 * 1,102.5}{10} = 12,706,31$$

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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.

Table 1 A hypothetical country of Lalaland produces only movies and popcorn. Quantities and prices of these goods for the last several years are shown below. The base year is 2015 .

Year	Price of Movies	Quantity of Movies	Price of Popcorn	Quantity of Popcorn
2014	\$10.00	500	\$5	1000
2015	\$11.00	600	\$4	900
2016	\$12.00	650	\$5	950
2017	\$12.00	625	\$6	925

1) Refer to Table 1. In which year was this country's nominal GDP highest?

- a. 2014
- b. 2015
- c. 2016
- d. 2017

2) Refer to Table 1. In which year was this country's real GDP highest?

- a. 2014
- b. 2015
- c. 2016
- d. 2017

3) Refer to Table 1. What was this country's GDP deflator in 2017?

- a. 123.4
- b. 116.7
- c. 120.0
- d. None of the above is correct.

4) The residents of Ireland earn \$200 million of income from abroad. Residents of other countries earn \$300 million in Ireland. Therefore, Ireland's

- a. net factor payments from abroad are positive, and its GDP is larger than its GNP.
- b. net factor payments from abroad are positive, and its GNP is larger than its GDP.
- c. net factor payments from abroad are negative, and its GDP is larger than its GNP.
- d. net factor payments from abroad are negative, and its GNP is larger than its GDP.

5) Consider two items that might be included in GDP: (1) the estimated rental value of owner-occupied housing and (2) purchases of newly-constructed homes. How are these two items accounted for when GDP is calculated?

- a. Both item (1) and item (2) are included in the consumption component of GDP.
- b. Item (1) is included in the consumption component of GDP, while item (2) is included in the investment component of GDP.
- c. Item (1) is included in the investment component of GDP, while item (2) is included in the consumption component of GDP.
- d. Only item (2) is included in GDP, and it is included in the investment component.

6) Mary has just graduated from college with a degree in marketing and is looking for her first job. She is:

- a. Structurally unemployed
- b. **Frictionally unemployed**
- c. Seasonally unemployed
- d. Cyclically unemployed

Frictional unemployment is the temporary unemployment that occurs as people enter the labor market or change jobs.

7) An increase in the minimum wage would

- a. increase both the quantity demanded and the quantity supplied of labor.
- b. decrease both the quantity demanded and the quantity supplied of labor.
- c. increase the quantity of labor demanded while decreasing the quantity supplied.
- d. **decrease the quantity of labor demanded while increasing the quantity supplied.**

Table 2 - Use the (hypothetical) information in the following table to answer the following questions.

Country	Currency	Currency per U.S. Dollar	U.S. Price Index	Country Price Index
Britain	Pound	0.6	200	120
Germany	Euro	0.8	200	200
Japan	Yen	100	200	18,000
Saudi Arabia	Riyal	4	200	900
Venezuela	Bolivar	6	200	1200

8) Refer to Table 2. For which country(ies) in the table does purchasing-power parity with the U.S. hold?

- a. Germany and Japan
- b. Japan and Saudi Arabia
- c. **Britain and Venezuela**
- d. Germany

9) Refer to Table 2. Which currency(ies) is(are) have a higher nominal exchange rate than predicted by the doctrine of purchasing-power parity?

- a. the bolivar and the pound
- b. the euro and the riyal
- c. **the yen**
- d. the pound

10) Refer to Table 2. In real terms, U.S. goods are more expensive than goods in which country(ies)?

- a. Britain
- b. Germany and Japan
- c. **Japan**
- d. Germany and Venezuela

11) Consider an open economy, like the US, with the following situation:
Savings = 1200, Domestic Investments = 700, Exports = 600, Capital Inflows = 200
Then:

- a. Imports = 100
- b. Capital Outflows = 300
- c. Net Exports = 310
- d. Both a and b are correct

12) If at a given real interest rate desired national saving is \$200 billion, domestic investment is \$100 billion, and net capital outflow is \$80 billion, then at that real interest rate in the loanable funds market there is a

- a. surplus. The real interest rate will rise.
- b. surplus. The real interest rate will fall.
- c. shortage. The real interest rate will rise.
- d. shortage. The real interest rate will fall.

13) Last year the imaginary country of Bahkan had a population of 10,000, 6,000 people worked 8 hours a day and produced a real GDP of \$30,000,000. The imaginary country of San Andreo had a population of 15,000, 8,000 people worked 7 hours a day and produced a real GDP of \$33,000,000. Which of the following is correct?

- a. Bahkan had the higher productivity and the higher real GDP per person.
- b. San Andreo had the higher productivity and the higher real GDP per person.
- c. Bahkan had the higher productivity while San Andreo had the higher real GDP per person.
- d. San Andreo had the higher productivity while Bahkan had the higher real GDP per person.

14) Consider an identical basket of goods in both the U.S. and India. If the nominal exchange rate is unchanged, which of the following will definitely decrease the U.S. real exchange rate with India?

- a. the price of the basket of goods rises in the U.S. and India.
- b. the price of the basket of goods rises in the U.S. and falls in India.
- c. the price of the basket of goods falls in the U.S. and rises in India.
- d. the price of the basket of goods falls in both India and the U.S..

15) If U.S. citizens decide to purchase more foreign assets at each interest rate, the U.S. real interest rate

- a. increases, the real exchange rate of the dollar appreciates, and U.S. net capital outflow decreases.
- b. increases, the real exchange rate of the dollar depreciates, and U.S. net capital outflow increases.
- c. decreases, the real exchange rate of the dollar depreciates, and U.S. net capital outflow decreases.
- d. decreases, the real exchange rate of the dollar appreciates, and U.S. net capital outflow increases.

16) If the supply of loanable funds curve shifts right, then the equilibrium

- a. interest rate and level of net capital outflows rise.
- b. interest rate rises and the equilibrium level of net capital outflow falls.
- c. interest rate falls and the equilibrium level of net capital outflow rises.
- d. interest rate and level of net capital outflows fall.

17) In a closed economy, if Y remained the same, but G rose, T rose by the same amount as G, and C fell but by less than the increase in T, what would happen to private saving and overall national saving?

- a. national saving would fall and private saving would rise
- b. national saving would rise and private saving would fall
- c. both national saving and private saving would fall
- d. None of the above is correct.

18) In the 1980s, the U.S. budget deficit rose. At the same time the U.S. trade deficit grew larger, the real exchange rate of the dollar appreciated, and U.S. net capital outflow decreased. Which of these events contradicts what the open-economy macroeconomic model predicts will happen, following an increase in the budget deficit?

- a. The U.S. trade deficit grew.
- b. The real exchange rate of the dollar appreciated.
- c. U.S. net capital outflow fell.
- d. **None of the above is contrary to the predictions of the model.**

19) If the people who take early retirement were not counted in the working-age population, then

- a. the labor force participation rate would be lower.
- b. the unemployment rate would be lower.
- c. the unemployment rate would be higher.
- d. **the labor force participation rate would be higher.**

20) Suppose that there are diminishing returns to capital and constant returns to scale. Suppose also that two countries are identical except one has less initial capital and so less real GDP per person. Suppose that both increase their saving rate from 3 percent to 4 percent. In the long run

- a. both countries will have permanently higher growth rates of real GDP per person, and the growth rate will be higher in the country with more capital.
- b. both countries will have permanently higher growth rates of real GDP per person, and the growth rate will be higher in the country with less capital.
- c. both countries will have higher levels of real GDP per person, and the temporary increase in growth in the level of real GDP per person will have been greater in the country with more capital.
- d. **both countries will have higher levels of real GDP per person, and the temporary increase in growth in the level of real GDP per person will have been greater in the country with less capital.**

21) You put money into an account and earn an after-tax real interest rate of 2.5 percent. If the nominal interest rate on the account is 8 percent and the inflation rate is 2 percent, then what is the tax rate?

- a. 28.00 percent
- b. 36.25 percent
- c. **43.75 percent**
- d. 67.50 percent

22) ABC Co. sells newly issued bonds. JLG Co. sells newly issued stocks. Which company is raising funds in financial markets?

- a. only ABC
- b. only JLG
- c. **both ABC and JLG**
- d. neither ABC nor JLG

- 23)** An important difference between the GDP deflator and the consumer price index is that
- the GDP deflator reflects the prices of goods and services bought by private producers, whereas the consumer price index reflects the prices of goods and services bought by consumers.
 - the GDP deflator reflects the prices of all goods and services bought by private producers and consumers, whereas the consumer price index reflects the prices of final goods and services bought by consumers.
 - the GDP deflator reflects the prices of all final goods and services produced by a nation's citizens, whereas the consumer price index reflects the prices of final goods and services bought by consumers.
 - the GDP deflator reflects the prices of all final goods and services produced domestically, whereas the consumer price index reflects the prices of some goods and services bought by consumers.**

- 24)** Tom and Lilly rented a house for \$12,000 last year. At the start of this year they bought the house they had been renting directly from the owner for \$250,000. This year, they believe they could rent the house out for \$12,000, but decide not to and live in it instead. How much does Tom and Lilly's decision to buy the house change GDP?
- it reduces GDP by \$12,000
 - it does not change GDP**
 - it raises GDP by \$238,000
 - it raises GDP by \$250,000

- 25)** To increase the money supply, the Fed can
- buy government bonds or increase the discount rate.
 - buy government bonds or decrease the discount rate.**
 - sell government bonds or increase the discount rate.
 - sell government bonds or decrease the discount rate.

- 26)** A U.S. based company sells semiconductors to an Italian firm. The U.S. company uses all of the revenues from this sale to purchase automobiles from Italian firms. These transactions
- increase both U.S. net exports and U.S. net capital outflow.
 - decrease both U.S. net exports and U.S. net capital outflow.
 - increase U.S. net exports and do not affect U.S. net capital outflow.
 - None of the above is correct.**

- 27)** Other things the same, when the interest rate rises, the present value of future revenues from investment projects
- rises, so investment spending rises.
 - falls, so investment spending rises.
 - rises, so investment spending falls.
 - falls, so investment spending falls.**

- 28)** Wealth is redistributed from creditors to debtors when inflation was expected to be
- high and it turns out to be high.
 - low and it turns out to be low.
 - low and it turns out to be high.**
 - high and it turns out to be low.

Table 3 2010 Labor Data for Adults (age 16 and older) in Meditor

Males not in labor force	45 million
Females not in labor force	35 million
Males unemployed	5 million
Females unemployed	5 million
Males employed	85 million
Females employed	65 million

29) Refer to Table 3. What is the adult male unemployment rate in Meditor?

- a. 3.7 percent
- b. **5.6 percent**
- c. 6 percent
- d. 7 percent

30) Refer to Table 3. What is the adult male labor-force participation rate in Meditor?

- a. 37 percent
- b. **66.7 percent**
- c. 73 percent
- d. 96.3 percent

31) Refer to Table 3. What is the adult female population in Meditor?

- a. 40 million
- b. 70 million
- c. 100 million
- d. **105 million**

32) Refer to Table 3. What is the adult female labor force in Meditor?

- a. 40 million
- b. 65 million
- c. **70 million**
- d. 100 million

33) The price of a basket of goods and services in the U.S. is \$600. In Canada the same basket of goods costs 700 Canadian dollars. If the nominal exchange rate were 1.2 Canadian dollars per 1 U.S. dollar, what would be the real exchange rate?

- a. 700/600
- b. 600/700
- c. 700/720
- d. **None of the above is correct.**

34) 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. **1.8 percent**
- b. 3.1 percent
- c. 4.3 percent
- d. 1.2 percent

- 35)** A government reduces its budget deficit, but at the same time people become concerned that the outlook for future government expenditures and revenues increase the chance it will default. Which of the following is correct.
- a. The reduced budget deficit will raise interest rates in general. The increased risk of default will raise interest rates on government bonds.
 - b. The reduced budget deficit will raise interest rates in general. The increased risk of default will reduce interest rates on government bonds.
 - c. **The reduced budget deficit will reduce interest rates in general. The increased risk of default will raise interest rates on government bonds.**
 - d. The reduced budget deficit will reduce interest rates in general. The increased risk of default will reduce interest rates on government bonds.

- 36)** If people decide to hold more currency relative to deposits, the money supply
- a. falls. The larger the reserve ratio is, the more the money supply falls.
 - b. **falls. The larger the reserve ratio is, the less the money supply falls.**
 - c. rises. The larger the reserve ratio is, the more the money supply rises.
 - d. rises. The larger the reserve ratio is, the less the money supply rises.

- 37)** When the money market is drawn with the value of money on the vertical axis, if the price level is above the equilibrium level, there is an
- a. excess demand for money, so the price level will rise.
 - b. excess supply of money, so the price level will fall.
 - c. excess supply of money, so the price level will rise.
 - d. **excess demand for money, so the price level will fall.**

Scenario 1 Sue Holloway was an accountant in 1944 and earned \$12,000 that year. Her son, Josh Holloway, is an accountant today and he earned \$210,000 in 2013. The price index was 17.6 in 1944 and 218.4 in 2013.

- 38) Refer to Scenario 1.** Sue Holloway's 1944 income in 2013 dollars is
- a. \$23,033.
 - b. \$136,909.
 - c. **\$148,909.**
 - d. \$240,960.

- 39) Refer to Scenario 1.** Josh Holloway's 2013 income in 1944 dollars is
- a. \$11,528.
 - b. **\$16,923.**
 - c. \$149,009.
 - d. \$26,059.

- 40) Refer to Scenario 1.** In real terms, Josh Holloway's income amounts to about what percentage of Sue Holloway's income?
- a. 71 percent
 - b. **141 percent**
 - c. 165 percent
 - d. 198 percent

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) |