

MC \_\_\_\_\_  
EXE I \_\_\_\_\_  
EXE II \_\_\_\_\_  
TOTAL \_\_\_\_\_

**Econ 002 – INTRO MACRO – Prof. Luca Bossi – February 11, 2013**

**MIDTERM #1 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.

\_\_\_\_\_  
Student Name (printed)

\_\_\_\_\_  
PennID

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**INSTRUCTIONS**

The exam is composed of 21 multiple choice questions and two exercises. Unless stated otherwise on the exam, all multiple choice questions are worth 3 points (the total is 60 points for the multiple choice part). The exercises are worth 20 points each (the total is 40 points for the exercise 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.

**TOTAL POINTS = 100. TOTAL TIME = 60 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. NO ASKING THE PROCTORS ANY QUESTION OR HELP TO SOLVE THE EXAM. YOU CANNOT CONNECT TO THE INTERNET.**

**WRITE IN PENCIL OR IN PEN AS YOU LIKE, BUT IF YOU WRITE IN PENCIL THERE IS NO POSSIBILITY TO ASK FOR RE-GRADING. PLEASE WRITE YOUR NAME ON EVERY SINGLE PAGE OF THE EXAM.**

**PLEASE FOLLOW THE INSTRUCTIONS AS TO HOW TO SUBMIT YOUR EXAM AT THE END OF THE 60 MINUTES.**

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

**GOOD LUCK!**

YOUR NAME: \_\_\_\_\_

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### MULTIPLE CHOICE QUESTIONS

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

1) The residents of country A earn \$500 million of income from abroad. Residents of other countries earn \$200 million in country A. The earnings that Country A residents earn abroad are accounted for in country A's

- a. **GNP which is larger than GDP in country A.**
- b. GNP which is smaller than GDP in country A.
- c. GDP which is larger than GNP in country A.
- d. GDP which is smaller than GNP in country A.

2) James owns two houses. He lawfully rents one house to the Johnson family for \$10,000 per year. He lives in the other house. If he were to rent the house in which he lives, it has been estimated that he could earn \$12,000 per year in rent. How much do the housing services provided by these two houses contribute to GDP if he also rents the house in which he lives?

- a. \$0
- b. \$10,000
- c. \$12,000
- d. **\$22,000**

3) Which of the following transactions does *not* take place in the markets for the factors of production in the circular-flow diagram?

- a. Jason provides plumbing services for a plumbing company and receives an hourly wage from the company for his services.
- b. **Jennifer works as a marriage counselor and her clients pay her on a per-hour basis for her services.**
- c. Brody owns several shopping malls and receives rent payments from the companies that operate those malls.
- d. Bree sells advertising for a newspaper and receives a commission from the newspaper company for each advertisement that she sells.

4) Meredith recently graduated from college but has not yet started working. To be counted as unemployed she

- a. does not have to have looked for work.
- b. must have looked for work no more than a week ago.
- c. **must have looked for work no more than 4 weeks ago.**
- d. must have looked for work no more than 12 weeks ago.

5) Over time, people have come to rely more on market-produced goods and services and less on goods and services they produce for themselves. For example, busy people with high incomes, rather than cleaning their own houses, hire people to clean their houses. By itself, this change has

- a. caused measured GDP to fall.
- b. not caused any change in measured GDP.
- c. **caused measured GDP to rise.**
- d. probably changed measured GDP, but in an uncertain direction; the direction of the change depends on the difference in the quality of the cleaning that has resulted.

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**6)** A recession has traditionally been defined as a period during which

- a. nominal GDP declines for two consecutive quarters.
- b. nominal GDP declines for four consecutive quarters.
- c. **real GDP declines for two consecutive quarters.**
- d. real GDP declines for four consecutive quarters.

**7)** A good is produced by a firm in 2010, added to the firm's inventory in 2010, and sold to a household in 2011. It follows that

- a. **the value of the good is added to the investment category of 2010 GDP, added to the consumption category of 2011 GDP, and subtracted from the investment category of 2011 GDP.**
- b. the value of the good is added to the investment category of 2010 GDP, added to the consumption category of 2011 GDP, and not included in the investment category of 2011 GDP.
- c. the value of the good is added to the investment category of 2010 GDP, subtracted from the consumption category of 2011 GDP, and not included in the investment category of 2011 GDP.
- d. the value of the good is added to the investment category of 2010 GDP, subtracted from the consumption category of 2011 GDP, and added to the investment category of 2011 GDP.

**8)** During a presidential campaign, the incumbent argues that he should be reelected because nominal GDP grew by 12 percent during his 4-year term in office. You know that population grew by 4 percent over the period and that the GDP deflator increased by 6 percent during the past 4 years. You should conclude that real GDP per person

- a. grew by more than 12 percent.
- b. **grew, but by less than 12 percent.**
- c. was unchanged.
- d. decreased.

**9)** The second largest category, by relative importance, in the CPI basket calculation is

- a. housing.
- b. apparel.
- c. **transportation.**
- d. medical care.

**10)** Transfer payments

- a. are payments that flow from government to households.
- b. are not made in exchange for currently produced goods or services.
- c. alter household income, but they do not reflect the economy's production.
- d. **All of the above are correct.**

**11)** 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 and consumers' income is unchanged, 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.**

**YOUR NAME:** \_\_\_\_\_

**YOUR TA's NAME:** \_\_\_\_\_

**12)** Social Security payments are indexed for inflation using the CPI. A recent newspaper editorial claimed that Social Security recipients are harmed by years of low inflation because they do not receive as large an increase in their payments as they do in years of high inflation. Which of the following statements is correct?

- a. The newspaper editorial is correct under all circumstances.
- b. The newspaper editorial is correct if the market basket consumed by Social Security recipients is the same as the market basket used to compute the CPI.
- c. **The newspaper editorial could be correct if the prices of the goods consumed by Social Security recipients change at a different rate than the prices of the goods in the typical basket used to compute the CPI**
- d. The newspaper editorial is incorrect under all circumstances.

**13)** In an economy, 20 million people are full-time workers, 5 million are part-time workers, 2 million are unemployed, and 4 million are not in the labor force, but are of working age. What is approximately the employment-to-working age population ratio?

- a. 65 percent
- b. 83 percent
- c. **81 percent**
- d. 87 percent

**14)** Danielle has been steadily working at her job for the last 10 years. She did not work last week because flooding forced an evacuation of her workplace. The Bureau of Labor Statistics counts Danielle as

- a. unemployed and in the labor force.
- b. unemployed and not in the labor force.
- c. **employed and in the labor force.**
- d. employed and not in the labor force.

**15)** Other things the same, an increase in wages above their equilibrium level

- a. increases frictional unemployment but leaves the natural rate of unemployment unchanged.
- b. increases frictional unemployment and increases the natural rate of unemployment.
- c. increases structural unemployment but leaves the natural rate of unemployment unchanged.
- d. **increases structural unemployment and increases the natural rate of unemployment.**

**16)** Which of the following is not a reason that paying efficiency wages may increase a firm's profit?

- a. Efficiency wages increase worker health and therefore increase worker productivity.
- b. Efficiency wages decrease worker turnover and therefore decrease hiring and training costs.
- c. Efficiency wages decrease worker shirking and therefore increase worker productivity.
- d. **Efficiency wages decrease a country's natural rate of unemployment and therefore increase its standard of living.**

**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

**17)** Refer to Table 1. The labor force of Aridia in 2010 was

- a. 1400.
- b. **1600.**
- c. 1800.
- d. 2000.

YOUR NAME: \_\_\_\_\_

YOUR TA's NAME: \_\_\_\_\_

**18) Refer to Table 1.** The labor force participation rate of Aridia in 2011 was approximately

- a. 63%.
- b. 82%.
- c. 24%.
- d. 30%.

**19) Refer to Table 1.** The Employment to Population ratio of Aridia in 2012 was approximately




- a. 16%.
- b. 50%.
- c. 38%.
- d. 6%.

**20) (2 POINTS)** According to the reading I assigned you: "At-Home Dads Make Parenting More of a 'Guy' Thing", research shows that, over the long run, having an involved father is linked to:

- a. better self-control in children, more risky behavior and better grades.
- b. better self-control in children, less risky behavior and better grades.
- c. better self-control in children, less risky behavior and worse grades.
- d. worse self-control in children, less risky behavior and better grades.

**21) (1 POINT) CAREFUL!! CHOOSE THIS ONE WISELY ☺☺ (Klingon's Style)**

According to the Klingon's language GDP is approximately rendered as:

- a. 
- b. 
- c. 

d. Beam me up, Scotty.

**EVERYONE GETS ONE POINT HERE. ☺**

YOUR NAME: \_\_\_\_\_

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**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 reasoning involved in your computation).**

**EXERCISE I (20 points)**

The economy of Naboo has the following data:

Year	Adult Population	Labor Force	Employed	Unemployed	Unemployment Rate	Labor-Force Participation Rate
2010						
2011	100		50			75%
2012				30		

Fill out the table knowing that:

- i) The unemployment rate was kept constant at the same rate over the course of three years.
- ii) Adult Population and Labor Force grew exactly at the same constant rate in every year.

Use 2 decimals (rounding to the nearest one) whenever necessary in the computations.

**Answers:**

**You need to use the following formulas and the information provided in the text to solve for this exercise.**

**$LF = \#Unemployed + \#Employed$**

**$u\text{-rate} = 100 * \#Unemployed / LF$**

**$LFPR = 100 * LF / \text{Adult Population}$**

**First we can get the following solution just using the data you have:**

Year	Adult Population	Labor Force	Employed	Unemployed	Unemployment Rate	Labor-Force Participation Rate
2010						
2011	100	<b>75</b>	50	<b>25</b>	<b>33.33%</b>	75%
2012				30		

**Now we use the information in i) to retrieve the following:**

Year	Adult Population	Labor Force	Employed	Unemployed	Unemployment Rate	Labor-Force Participation Rate
2010					<b>33.33%</b>	
2011	100	<b>75</b>	50	<b>25</b>	<b>33.33%</b>	75%
2012		<b>90</b>	<b>60</b>	30	<b>33.33%</b>	

YOUR NAME: \_\_\_\_\_

YOUR TA's NAME: \_\_\_\_\_

Now notice that the growth of adult population from 2011 to 2012 is the same as the one from 2010 to 2011 – by ii) and that this rate is the same as the growth rate of the labor force. Hence the labor force participation rate is constant in all 3 years at 75% because numerator and denominator in the formula grow at the same rate.

Year	Adult Population	Labor Force	Employed	Unemployed	Unemployment Rate	Labor-Force Participation Rate
2010					<b>33.33%</b>	<b>75%</b>
2011	100	<b>75</b>	50	<b>25</b>	<b>33.33%</b>	75%
2012	<b>120</b>	<b>90</b>	<b>60</b>	30	<b>33.33%</b>	<b>75%</b>

The labor force growth is equal to the Adult population growth and it is 20%. Therefore we get:

Year	Adult Population	Labor Force	Employed	Unemployed	Unemployment Rate	Labor-Force Participation Rate
2010	<b>83.33</b>	<b>62.5</b>	<b>41.67</b>	<b>20.83</b>	<b>33.33%</b>	<b>75%</b>
2011	100	<b>75</b>	50	<b>25</b>	<b>33.33%</b>	75%
2012	<b>120</b>	<b>90</b>	<b>60</b>	30	<b>33.33%</b>	<b>75%</b>

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**EXERCISE II (20 points)**

The table below gives information about the Black Mamba (BM) economy for the period 2010-2012. Let 2011 be the base year. Use 2 decimals (rounding to the nearest one) whenever necessary in the computations.

	Cranes – produced in BM by the private sector. 50% of the value stays in BM's private sector and 50% is exported.		Olives – produced and consumed in BM by the private sector.	
Year	P	Q	P	Q
2010	\$4	9	\$1.5	15
2011	\$4	10	\$2	18
2012	\$6	15	\$3	18

	Military Weapons – Imported in BM		Pasta – Produced in BM by the private sector and sold abroad	
Year	P	Q	P	Q
2010	\$2	10	\$10	2
2011	\$2.5	8	\$12	1
2012	\$3	10	\$20	1

**a) (6 points)** For each year compute nominal GDP and Real GDP for BM.

**b) (7 points)** Foreigners legally residing in BM each year earned in total a nominal income that is equal to half of the value of government spending for BM. The citizens of BM located abroad earned each year a total nominal income that is equal to half of the value of the Net Exports for BM. Compute Nominal Gross National Product for BM in each year.

**c) (7 points)** You now have this extra information available for the Black Mamba (BM) economy now.

Year	Foreigners legally resident in BM	Citizens of BM located abroad
2010	10	5
2011	20	8
2012	30	12

The citizens of BM that are also residents of BM in each year are 3 times the sum of Foreigners legally resident in BM together with Citizens of BM located abroad. Compute RGDP per capita for each year in BM.

**Answers:**

**a. NGDP and RGDP consists of Cranes, Olives and Pasta because they are produced in Black Mamba. Military Weapons are not, so they do not affect the computations for GDP. To compute the RGDP, the base year is 2011, so pick the prices of 2011!**

Years	Nominal GDP	Real GDP
<b>2010</b>	<b><math>4 \times 9 + 1.5 \times 15 + 10 \times 2 = 78.5</math></b>	<b><math>4 \times 9 + 2 \times 15 + 12 \times 2 = 90</math></b>
<b>2011</b>	<b><math>4 \times 10 + 2 \times 18 + 12 \times 1 = 88</math></b>	<b><math>4 \times 10 + 2 \times 18 + 12 \times 1 = 88</math></b>
<b>2012</b>	<b><math>6 \times 15 + 3 \times 18 + 20 \times 1 = 164</math></b>	<b><math>4 \times 15 + 2 \times 18 + 12 \times 1 = 108</math></b>



**YOUR NAME:** \_\_\_\_\_

**YOUR TA's NAME:** \_\_\_\_\_

**b. Government spending in BM is clearly represented by the acquisition of military weapons:**

Years	Value of Weapons	Income earned by foreigners (half of value of Weapons)
2010	20	10
2011	20	10
2012	30	15

**NX is given by value of the pasta + 50% of value of cranes - value of military weapons**

Years	Value of NX	Income earned by Citizens of BM located abroad (half of value of NX)
2010	$20 + 18 - 20 = 18$	9
2011	$12 + 20 - 20 = 12$	6
2012	$20 + 45 - 30 = 35$	17.5

**NGNP = NGDP + Income earned by Citizens of BM located abroad - Income earned by foreigners**

Years	NGDP	NGNP
2010	78.5	$78.5 + 9 - 10 = 77.5$
2011	88	$88 + 6 - 10 = 84$
2012	164	$164 + 17.5 - 15 = 166.5$

**c. Here you need first to compute the total population of BM**

Years	Foreigners legally resident in BM + Citizens of BM located abroad	Citizens that are residents of BM (3x column 2)	Population of BM = Citizens that are residents of BM + Foreigners legally resident in BM
2010	15	45	$45 + 10 = 55$
2011	28	84	$84 + 20 = 104$
2012	42	126	$126 + 30 = 156$

YOUR NAME: \_\_\_\_\_

YOUR TA's NAME: \_\_\_\_\_

Years	RGDP	Pop. of BM	RGDP per capita
2010	90	55	$90/55 = 1.64$
2011	88	104	$88/104 = 0.85$
2012	108	156	$108/156 = 0.69$

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**WRITE THE LETTER OF YOUR CHOICE FOR THE MULTIPLE CHOICE QUESTIONS HERE;  
ONLY THIS PAGE WILL BE GRADED FOR THE MC PART.**

- |    |     |     |     |
|----|-----|-----|-----|
| 1) | 6)  | 11) | 16) |
| 2) | 7)  | 12) | 17) |
| 3) | 8)  | 13) | 18) |
| 4) | 9)  | 14) | 19) |
| 5) | 10) | 15) | 20) |
|    |     |     | 21) |