Economics 102 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spring 2014 TA Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

04/14/2013 Discussion Section #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Second Midterm – Version **1** Student ID # \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**DO NOT BEGIN WORKING UNTIL THE INSTRUCTOR TELLS YOU TO DO SO**

**READ THESE INSTRUCTIONS FIRST.**

You have 50 minutes to complete the exam. The exam consists of **10 binary choice worth 2.5 points** and **15 multiple choice questions worth 5 points**. Please accurately and completely provide your **name**, **ID number**, **discussion section number, version number, and TA name** on the scantron sheet and the exam booklet. Answer all questions on the scantron sheet with a #2 pencil.

**NO CELL PHONES, CALCULATORS, OR FORMULA SHEETS ARE ALLOWED.**

**PICK THE BEST ANSWER FOR EACH QUESTION.**

**How to fill in the scantron sheet and other information:**

1. Print your last name, first name, and middle initial in the spaces marked "Last Name," "First Name," and "MI." Fill in the corresponding bubbles below.
2. Print your student ID number in the space marked "Identification Number." Fill in the bubbles.
3. Write the number of the discussion section you’ve been attending under "Special Codes" spaces ABC, and fill in the bubbles. You can find the discussion numbers below on this page.
4. Write the version number of your exam booklet under "Special Codes" space D, and fill in the bubble. The version number is on the top of this page.
* **If there is an error on the exam or you do not understand something, make a note on your exam booklet and the issue will be addressed AFTER the examination is complete. No questions regarding the exam can be addressed while the exam is being administered.**
* **When you are finished, please get up quietly and bring your scantron sheet and this exam booklet to the place indicated by the instructors.**

|  |  |  |  |
| --- | --- | --- | --- |
| Section Number | Time | Location | TA |
| 328 | R 3:30-4:20 | [SSB 6101](http://map.wisc.edu/s/gokayoe8) | Mitchell Morey |
| 336 | F 9:55-10:45 | [Sterling 2323](http://map.wisc.edu/s/g0l2vm39) | Mitchell Morey |
| 329 | F 12:05-12:55 | [Ingraham 123](http://map.wisc.edu/s/3bv86a0p) | Moheb Zidan |
| 331 | F 8:50-9:40 | [Ingraham 215](http://map.wisc.edu/s/3bv86a0p) | Moheb Zidan |
| 333 | R 2:25-3:15 | [SSB 6322](http://map.wisc.edu/s/gokayoe8) | Moheb Zidan |
| 337 | R 3:30-4:20 | [SSB 6314](http://map.wisc.edu/s/gokayoe8) | Moheb Zidan |
| 330 | F 12:05-12:55 | [Ingraham 215](http://map.wisc.edu/s/3bv86a0p) | Xun Gong |
| 334 | R 2:25-3:15 | [SSB 6203](http://map.wisc.edu/s/gokayoe8) | Xun Gong |
| 335 | F 11:00-11:50 | [Bascom 55](http://map.wisc.edu/s/v1laixfg) | Xun Gong |
| 338 | F 9:55-10:45 | [Sterling 2329](http://map.wisc.edu/s/g0l2vm39) | Xun Gong |

**I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, agree to neither give nor receive any help on this exam from other students. Furthermore, I understand that use of a calculator on this exam is an academic misconduct violation.**

**Signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Binary Choice (worth 2.5 points each)**

1. Starting in 2014, you invested $5,000 in a special program that guarantees you an increase in the return to your investment each time the amount doubles. Suppose you receive a constant 2% per year return on your investment during the first period of time (that is, the number of years until the amount doubles), a 5% per year return on your investment during the second period of time (that is, the number of years until the amount doubles again), and a 7% return on your investment over the third and final period. Using the Rule of 70, when will you have accumulated approximately $40,000 given this program?

 a. Before 2080

 b. After 2080

2. Suppose Country A experiences an increase in technology. At the same time, Country A receives an influx of workers from Country B. Which of the following statements is true?

a. These changes will cause labor productivity in Country A to increase.

b. The impact these changes have on labor productivity in Country A is indeterminate.

3. Sprockets and gears are both inputs for bicycles and are produced by different companies. Bicycles are purchased only by individuals and produced by a third company. Assume that sprockets and gears both use capital and labor while bicycles use only labor to assemble the parts. There are no other factors. Payments to factors as well as revenues from sales of these items are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Wages | Cost of Capital | Revenue from Sales |
| Gears | $500 | $400 | $1000 |
| Sprockets | $250 | $100 | $500 |
| Bicycles | $750 | $0 | $2500 |

What is the contribution to GDP from the companies that produce gears, sprockets, and bicycles?

 a. $2500

 b. $4000

4. Consider the following statement: “Long-run economic growth cannot happen in an economy that has no population growth or outside immigration.” This statement is

 a. True

 b. False

5. If a consumption good, for example, an automobile, is produced and consumed in the United States, an increase in its price will have which of the following results?

 a. The consumer price index will increase relatively less than the real GDP will.

 b. The consumer price index will increase relatively more than the real GDP will.

6. Consider the following production function



where L is labor, K is capital, and Y is output. Does this function exhibit diminishing marginal returns to capital?

 a. Yes, this function exhibits diminishing marginal returns to capital

 b. No, this function does not exhibit diminishing marginal returns to capital

7. Consider the following statement: “If the base year used in the calculation of the CPI is changed, the inflation rate will **not** change.” This statement is

 a. True

 b. False

8. Consider the following statement: “Unemployment only happens in the short-run.” This statement is

 a. True

 b. False

9. Use the following table to answer this question. The market basket in a simple economy consists of 4 units of good X and 2 units of good Y.

|  |  |  |  |
| --- | --- | --- | --- |
| Year | 1984 | 1994 | 2004 |
| Price of good X | 10 | 22 | 44 |
| Price of good Y | 5 | ? | 12 |

If the base year is 2004, what is the CPI of 1984?

 a. 50

 b. 25

10. The labor market demand (LD) and labor market supply (LS) in Country A are given by the following two equations where W is the real wage in dollars:





The aggregate production function in country A is given by , where (Y) is real GDP or output, (L) is labor, and (K) is capital. In Country A the capital stock is constant at K=81.

Given this information and holding everything else constant, what is the level of output in country A?

 a. 270

 b. 600

**Multiple Choice (worth 5 points each)**

11. Instead of teaching, Professor Kelly opens a sweet tea business. Using an old Southern recipe, she makes a very popular drink this year that sells 1000 bottles at a price of $1.50 per bottle. In addition, she bottles another 500 drinks that she intends to sell next year. Using some of the profits she makes from her sweet tea business, Professor Kelly buys a $400 iPad that was designed in California but assembled in China. She uses the rest of her profits to pay off the balance on an auto loan. What is Professor Kelly’s contribution to U.S. GDP this year?

 a. $1900

 b. $2650

 c. $1500

 d. $2250

12. Suppose the there is a high rate of unexpected inflation. Which group of people will benefit from this?

 a. People living off fixed (that is, unchanging) Social Security payments

 b. Banks who make loans

 c. Individuals who have a mortgage

 d. Workers who have a contracted wage (that is, a wage contract that is in effect for some set period of time: for example, a wage contract that is set for a three year period of time)

13. Considering options (i) – (iv), which investment scheme will be the *last* to reach $8000?

 (i) $2000 growing at 5% annually

 (ii) $1000 growing at 7% annually

 (ii) $500 growing at 10% annually

 (iv) $250 growing at 14% annually

 a. Plan (i)

 b. Plan (ii)

 c. Plan (iii)

 d. Plan (iv)

 e. Plans (i) and (iii) tie for last

14. Suppose the aggregate output in a given country is given by the following equation where Y is real GDP or output, K is the number of units of capital, and L is the number of units of labor:

 

Furthermore, suppose the labor market in this economy is represented by the following two equations, where L is the quantity of labor and W is the wage rate:

 Labor Demand: W=500- 2L

 Labor Supply: W=200+L

Suppose the labor market is in equilibrium and total output is equal to 100. Given this information and holding everything else constant, what is the capital productivity (Y/K) for this economy?

 a. 1 units of output per unit of capital

 b. 2 units of output per unit of capital

 c. 3 units of output per unit of capital

 d. Capital productivity for this economy cannot be determined from the given information.

15. Use the following table to answer this question. The market basket in a simple economy consists of 4 units of good X and 2 units of good Y.

|  |  |  |  |
| --- | --- | --- | --- |
| Year | 1984 | 1994 | 2004 |
| Price of good X | 10 | 22 | 44 |
| Price of good Y | 5 | ? | 12 |

You are also told that the inflation rate between the years 1984-2004 is 3 times the inflation rate between the years 1984-1994. Given this information and holding everything else constant, what is the price of Y in the year 1994?

 a. 6

 b. 6.5

 c. 7

 d. 8

16. The labor market demand and labor market supply in Country A are given by the following equations where W is the real wage in dollars:





The aggregate production function in country A is given by the following equation where (Y) is real GDP or output, (L) is labor, and (K) is capital:



You are also told that the capital stock is constant and equal to 81 units of capital.

Suppose now that the government sets a minimum wage of $1100. Given this information and holding everything else constant, which of the following statements is true?

 a. As a result, the marginal productivity of capital will increase

 b. As a result, the labor productivity will decrease

 c. As a result, the marginal productivity of labor will decrease

 d. As a result, the marginal productivity of capital will decrease

17. If the prices of Japanese-made cars imported into the United States increase,

 a. Both the GDP deflator and the consumer price index in the U.S. will increase.

 b. In the U.S., the GDP deflator will increase but the consumer price index will not increase.

 c. Neither the GDP deflator nor the consumer price index will increase in the U.S.

 d. In the U.S., the consumer price index will increase but the GDP deflator will not increase.

*Use the figure below to answer the following* ***two (2)*** *questions.*

*The country of Fantasy is on its aggregate production function at point W in the figure below.*



18. Suppose the quantity of labor employed in Fantasy increases with no change in technology. If the x-axis represents labor, the economy will\_\_\_\_\_; if the x-axis represents capital, the economy will \_\_\_\_\_.

a. move to a point such as Y if capital stays constant; move to a point such as X if capital increases.

b. move to a point such as Z if capital stays constant; move to a point such as X if labor increases.

c. move to a point such as X if capital stays constant; move to a point such as Y if capital increases.

d. move to a point such as X if capital stays constant; move to a point such as Z if labor increases.

19. Suppose the x-axis represents labor and Fantasy is right now at point W. Suppose Fantasy is choosing from the following proposals with the single goal of picking a proposal that will result in higher labor productivity than it is currently experiencing. Which of the following proposals will definitely accomplish this goal?

a. Fantasy should engage in an R&D campaign in order to realize a higher level of technology and greater use of labor while holding its level of capital constant.

b. Fantasy should decrease its use of labor while increasing its use of capital. Fantasy should also hold technology constant.

c. Fantasy should increase its level of technology while decreasing its use of capital and holding its use of labor constant.

d. Fantasy should decrease its level of technology, increase its use of labor, and hold its level of capital constant.

20. Suppose that the market for private loans is given by the following equations:

 Demand: i = 20 – (1/5)Q

 Supply: i = Q - 10

where *Q* is the quantity of loans and *i* is the interest rate (the price of loans). Initially, only private individuals demand loans. Then, the government decides to run a budget deficit such that the government’s demand for loans is given by the equation:

 Demand: 

Initially, the equilibrium quantity of private loans was \_\_\_\_\_\_\_ and the interest rate was \_\_\_\_\_\_\_. After the government begins to run it’s deficit, the new quantity of *private* loans is \_\_\_\_\_\_\_ and the new interest rate is \_\_\_\_\_\_\_.

 a. 25; 15; 37; 27

 b. 15; 17; 25; 15

 c. 25; 15; 15; 17

 d. 15; 17; 23; 13

21. Suppose there are 4 people initially who do not have jobs. Suppose that 2 of them apply for jobs and the other 2 do not, and then 1 of them gets a job while the other does not. Given this information and holding everything else constant, what is the unemployment rate among these four people?

 a. 0%

 b. 25%

 c. 50%

 d. 75%

22. The tropical island of Surfland produces two goods, bananas (B) and surfboards (S). The following table summarizes the economy of Surfland in 2009 and 2010.

|  |  |  |
| --- | --- | --- |
|  | **2009** | **2010** |
| **Quantity (B)** | 10,000 | 11,000 |
| **Price (B)** | $0.75 | $1 |
| **Quantity (S)** | 200 | 150 |
| **Price (S)** | $150 | $100 |

Given the information above, what is the real GDP in 2010 in 2009 dollars?

 a. $11,150

 b. $21,800

 c. $26,000

 d. $30,750

 e. $40,000

23. Labor, L, in an economy is currently at 300 units. The following graph represents the economy’s output, Y, in terms of labor.



If capital is fixed, which slope represents the economy’s MPL at the current level of labor? The slope of line:

 a. A

 b. B

 c. C

 d. D

24. Assume the U.S. Congress writes a budget bill that requires the government to run a deficit of $1 billion. How would you characterize the government’s elasticity of demand with respect to this deficit?

 a. Perfectly inelastic

 b. Unit elasticity

 c. Perfectly elastic

 d. Without knowing the interest rate, we can’t know the elasticity

25. The residents in the country of Nimh typically consume 2 pieces of cheese, 3 slices of bread, and 1 house. Use the table regarding prices to answer the following two questions. (Hint: There is more than one way to solve this problem—the easy path is the better choice.)

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1985 | 1990 | 1995 |
| Price of a Unit of Cheese | $3.10 | $3.5 | $4 |
| Price of a Slice of Bread | $1.95 | $2 | $6 |
| Price of a House | $10.50 | $15 | $16 |

What is the inflation rate from 1990 to 1995 using 1985 as the base year?

 a. 33%

 b. 133%

 c. 50%

 d. 150%

Version 1 Answers:

1. a

2. b

3. a

4. b

5. b

6. b

7. a

8. b

9. b

10. a

11. d

12. c

13. b

14. a

15. a

16. d

17. d

18. d

19. b

20. c

21. c

22. d

23. c

24. a

25. c