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

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

04/14/2014 Discussion Section #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Second Midterm Student ID # \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Version 1**

**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 |
| 350 | F 11 - 11:50 | Ingraham 113 | Pedro Hancevic |
| 352 | R 2:25 – 3:15 | SSB 4308 | Pedro Hancevic |
| 353 | R 3:30 – 4:20  | SSB 6322 | Pedro Hancevic |
| 354 | F 8:50 – 9:40 | Ingraham 225 | Zach Flynn |
| 351 | F 11 - 11:50 | Ingraham 215 | Zach Flynn |
| 356 | F 9:55 - 10:45 | Van Hise 240 | Zach Flynn |
| 359 | F 12:05 – 12:55 | Ingraham 223 | Zach Flynn |
| 355 | F 9:55 - 10:45 | Van Hise 374 | Emily Walden |
| 358 | F 12:05 – 12:55 | Ingraham 115 | Emily Walden |

**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. The two equations characterizing the labor market of country Omega are as follows, where L is units of labor and W is the wage rate:

LD=100

LS=W

Suppose 20 foreign workers with exactly the same skills and same education level as domestic workers immigrate to country Omega and try to find a job. Holding everything else constant, what will happen to capital productivity in Omega?

1. **It will be unaffected.**
2. It will increase.
3. The following table shows the nominal interest rate and CPI for 2013 and 2014.

|  |  |  |
| --- | --- | --- |
| **Year** | **CPI** | **Nominal Interest Rate** |
| 2013 | 110 | 5 |
| 2014 | 121 | 8 |

Given this information, the real interest rate in 2014 is

1. **-2%**
2. 3%
3. Starting in 2014, you invested $1,000 in a bond that has different preset annual interest rates over different periods. Suppose your money doubles to $2,000 after 14 years, doubles again to $4,000 after 10 years, and doubles a third time to $8,000 in the year 2066. Given this information and holding everything else constant, what is the annual interest rate in the third and final period?
4. 2%
5. **2.5%**
6. Consider the following data for an economy that produces only two goods: apples and hamburgers.

|  |  |  |
| --- | --- | --- |
| **Year** | **Apples** | **Hamburgers** |
| **Quantity** | **Price** | **Quantity** | **Price** |
| 2010 | 100 | 3 | 200 | 0.5 |
| 2013 | 150 | 2 | 100 | 3 |

Given the information in the table above, the GDP deflator for 2013 using 2010 as the base year is:

a) 66.67

**b) 120**

1. In a certain economy, production is done using only technology and labor (with diminishing returns to labor). Assume that the population in an economy grows larger and larger forever without bound. To ensure that labor productivity stays constant as the population grows, what must happen?
2. Given the above information, it is not possible for labor productivity to stay constant.
3. **Technology must improve as well.**
4. Suppose a full-time college student is an athlete who practices 40-hours-per-week in addition to doing coursework in order to receive a scholarship to attend college. According to the Bureau of Labor Statistics is this person employed?
5. Yes, this person is employed.
6. **No, this person is not employed.**
7. Assume that there is an economy that has three firms: a flour company, a vegetable oil company, and a doughnut company. Assume that doughnuts are made from only flour and vegetable oil. Flour and vegetable oil are each produced by a distinct firm with each firm using only labor and capital to produce their good. The doughnut company buys the flour and the vegetable oil from the first two companies then uses labor, capital and land to create the doughnuts. The factor payments from these activities are as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Wages** | **Payments for Capital** | **Rent for Land** | **Profit** |
| Flour Company | $200 | $100 | $0 | X |
| Vegetable Oil Company | $300 | $100 | $0 | X |
| Doughnut Company | $200 | $200 | $100 | $100 |

You are also told that the Doughnut Company sells $1500 worth of final product in the form of doughnuts and that the Flour Company and the Vegetable Oil Company earn equal profits of $X. Given this information and holding everything else constant, what is the level of profits equal to for the Flour Company?

**a) $100**

b) $200

1. The level of capital in an economy decreases. Holding everything else constant, capital productivity in this economy may remain unchanged if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **technology decreases.**
3. the number of workers employed in the economy increases.
4. After the government implements a new policy, we observe an increase in the real wage rate and an increase in capital productivity. We are told that the policy shifted only one of the labor market curves. Given this information and holding everything else constant, which of the following policies could have resulted in this outcome?
5. **The government increases purchases of domestic goods.**
6. The government imposes a ban on exports.
7. Suppose you are told that the nominal GDP in Switzerland decreased by 25 percent between 2013 and 2014. If labor and technology are fixed, then given this information and holding everything else constant, capital productivity must have increased between 2013 and 2014.
8. True
9. **False**

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

**Use the following information to answer the next TWO (2) questions.**

The aggregate output in a given country is represented by the following equation where Y is real GDP, K is units of capital, and L is units of labor:

 $Y=\sqrt{KL}$

The labor market is characterized by the following two equations, where L is the quantity of labor and W is the wage rate:

W = 500 – 2LD

W = 200 + LS

1. Suppose the government sets a minimum wage $80, and capital stock is K=100. Given this information, and holding everything else constant, what is the equilibrium output level?
2. 80
3. **100**
4. 150
5. 200
6. Now suppose the government decides to eliminate the minimum wage. With the elimination of the minimum wage and the given information, which of the following statements is true?
7. Capital productivity is equal to 10 units of output per unit of capital.
8. Capital productivity is equal to 100 units of output per unit of capital.
9. **Labor productivity is equal to 1 unit of output per unit of labor.**
10. Labor productivity is equal to 10 units of labor per unit of output.
11. Substitution bias is a well-known problem that affects the accuracy of the Consumer Price Index. It refers to the following situation:
12. **Consumers switch away from consuming goods that have become relatively more expensive.**
13. Consumers switch away from consuming low quality goods.
14. Consumers switch towards consuming new goods not present in the market basket.
15. Producers switch away from producing goods that have become relatively less expensive.
16. Sinclair Tires in 2014 produced 500,000 tires and each tire had a market value of $100 per tire. Sinclair sold some of its tires as intermediate goods to be used in the production of new 2014 cars and it kept 20% of its entire tire production as inventory for 2015. It sold the rest of the tires as replacement tires. Holding everything else constant, if the contribution to total GDP using the expenditure approach by Sinclair in 2014 is equal to $20,000,000, then the value of the tires sold as intermediate goods could be calculated as
17. $20,000,000
18. $10,000,000
19. $40,000,000
20. **$30,000,000**
21. Consider the three following countries with their current populations and population growth rates. Which country’s population will reach 1 billion first?

|  |  |  |
| --- | --- | --- |
|  | **Current Population** | **Annual Population Growth Rate** |
| Country A | 62.5 million | 7% |
| Country B | 125 million | 5% |
| Country C | 31.25 million | 10% |

1. Country A
2. Country B
3. **Country C**
4. There are two countries that reach a population of 1 billion at the same time.
5. Real GDP will decrease
6. Only if the price level decreases.
7. If either the price level decreases or the quantity of final goods and services produced decreases.
8. Only if the price level increases.
9. **Only if the quantity of final goods and services produced decreases**.

**Use the following figure to answer the next TWO (2) questions.**

The graph depicts the two aggregate production functions for the economy of Fantasy. Currently Fantasy is producing at point W.



1. Fantasy has chosen a target for next year’s real GDP to be at point Z. Which of the following proposals will help them reach their target?
2. If we assume that in the above graph the x-axis represents labor, then Fantasy should invest in a higher level of technology, while holding capital and labor constant, in order to reach their target.
3. If we assume that in the above graph the x-axis represents capital, then Fantasy should increase their level of capital, while holding labor and technology constant, in order to reach their target.
4. **If we assume that in the above graph the x-axis represents labor, then Fantasy should increase its level of labor and capital, while holding its technology constant, in order to reach their target.**
5. If we assume that in the above graph the x-axis represents capital, then Fantasy should increase its use of labor and technology, while holding its capital constant, in order to reach their target.
6. Suppose the x-axis represents capital and Fantasy is right now at point W. Which of the following proposals will guarantee that Fantasy increases its capital productivity from its current level?
7. **Invest in a policy that through research and development improves the level of technology.**
8. Invest in a policy that increases the use of labor and the use of capital.
9. Invest in a policy that increases the level of technology and the use of capital.
10. Invest in a policy that decreases the use of labor and the use of capital.
11. Land, Capital, and Labor are inputs used in an economy's production function which has diminishing marginal returns. War would allow the country to acquire additional land and capital at the expense of losing units of labor. Given this information, what happens to labor productivity if the country decides to go to war?
12. Labor productivity decreases.
13. **Labor productivity increases.**
14. Labor productivity stays the same.
15. The change in labor productivity is indeterminate.
16. There are lots of available jobs in North Dakota. Suppose the government decides that it will not count an individual as part of the labor force if this individual currently does not have a job, has applied for jobs, but has failed to apply for a job in North Dakota. Now to be eligible for unemployment benefits, you must be declared unemployed by this new standard. Given this new standard and holding everything else constant, what happens to the labor market in Wisconsin and what happens to the amount the state of Wisconsin pays out in unemployment benefits?
17. Labor supply shifts to the left and unemployment payments rise.
18. Labor supply shifts to the right and unemployment payments rise.
19. **Labor supply shifts to the left and unemployment payments fall.**
20. Labor supply shifts to the right and unemployment payments fall.
21. A small economy produces only two goods, apples (A) and bananas (B). The following table summarizes the economy in the previous two years.

|  |  |  |
| --- | --- | --- |
|  | **2012** | **2013** |
| **Quantity (A)** | 3,000 | 2,000 |
| **Price (A)** | $1 | $1.25 |
| **Quantity (B)** | 1,000 | 500 |
| **Price (B)** | $0.50 | $0.25 |

Given the information above, what is the real GDP in 2012 using 2013 as the base year?

1. $2,250
2. $2,625
3. $3,500
4. **$4,000**
5. Capital, K, in an economy is currently at 100 units. The following graph represents the economy’s output, Y, in terms of capital.



If labor is fixed, the slope of line \_\_\_\_ represents the economy’s MPK at the current level of capital.

1. A
2. **B**
3. C
4. D

**Use the following figure to answer the next TWO (2) questions.**

The market basket in a simple economy consists of 3 units of good X and 5 units of good Y.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1990** | **2000** | **2010** |
| Price of good X | $20 | $20 | $15 |
| Price of good Y | ? | $8 | $16 |

1. If the base year is 2010, what is the CPI of 2000 if the CPI is measured on a 100 point scale?
2. **80**
3. 75
4. 100
5. 125
6. Given that the inflation rate between the years 2000-2010 is the same as the inflation rate between the years 1990-2000, what is the price of Y in the year 1990?
7. $4.50
8. $5.00
9. $**4.00**
10. $5.50
11. The following equations characterize the the demand and supply of loanable funds, where the only source of demand comes from **private** borrowers:

i = 12 – (1/2)QD

i = QS

where Q is the quantity of loans in billions of dollars and i is the interest rate.

Suppose that the government runs a deficit of $6 billion. Given this information and holding everything else constant, what is the quantity of loans demanded by private borrowers?

1. $0 billion
2. **$4 billion**
3. $8 billion
4. $10 billion