**Econ 102 – Summer 2012 Exam 2 – Professor Kelly**

**Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section Day and Time:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**On this exam it is important that you show your work to get FULL CREDIT.**

**On this exam you should write any verbal answer using standard English grammar: that is, please write in complete sentences.**

The exam consists of 20 multiple choice questions worth 2.5 points for a total of 50 points, and three problems worth a total of 50 points.

Multiple Choice Score Your Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 1 – 15 points Your Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 2 – 20 points Your Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 3 – 15 points Your Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total: 100 points Your Total: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

No calculators are allowed for the exam. Cell phones should be silenced and in your backpacks, away from your seat.

You will have 100 minutes to work. Good luck.

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

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

**MULTIPLE CHOICE QUESTIONS (20 questions worth 2.5 points each)**

1. In Germany, workers get up to 4 weeks of paid vacation time while in the U.S., workers get only 2 weeks. In addition, in Germany there are many more public holidays than in the U.S. However, Germany’s GDP per capita is about 2/3 of that of the U.S. Which of the following statements is a valid conclusion from the information given?
   1. Germany’s technology is inferior to U.S. technology.
   2. Germans are better off than Americans, because they work a lot less.
   3. Americans are better off than Germans, because their income is much higher.
   4. It is not clear which nation is better off.
2. In 2008, Lisa bought a used Cadillac from her local automobile dealer. The Cadillac was originally produced in the year 2000 and sold for $50,000 to the first owner who bought the car in 2000. The used car dealer bought the car in 2008 for $5000 from the original owner. Then, the dealer washed and waxed the car right before selling it to Lisa. Which of the following is counted towards GDP in 2008?
3. The total price paid by Lisa for the car.
4. The original market price of the car.
5. The amount the dealer paid the previous owner for the car.
6. The value of the wash and wax right before selling the car.
7. Which of the following is an example of a final good or service?
8. Paint purchased by Ford, Inc. used to paint their new fleet of Mustangs.
9. Beef bought by a restaurant owner from a wholesale food distributor.
10. A brand new economics text book purchased by an UW student.
11. Jet Fuel bought by Northwest Airlines to power its fleet of planes.
12. The University of Chicago, a privately owned school, is currently building a new hospital. This will be classified in U.S. GDP as \_\_\_\_\_\_\_\_, because \_\_\_\_\_\_\_\_\_\_\_\_.
13. investment; it increases the capital stock
14. consumption; it will provide medical services to consumers
15. government purchases; the construction constitutes government expenditure
16. net exports; most construction workers are foreigners
17. Which of the following transactions would be included in GDP for 2011?
    1. On January 5, 2011, Maya sold 100 shares of stock in IBM Corporation.
    2. Bonita purchases a brand new 2011 Honda Civic car on March 10, 2011.
    3. Daniel buys a used desk from Craigslist.com on May 9, 2011.
    4. Levi purchases a 75-year-old penthouse on Lake Shore Drive in Chicago, Illinois, on June 23, 2011.
18. Suppose GDP for 2003 was $1500, wages and salaries were $800, rent payments were $200, consumption was $1000, and interest payments were $200. What was the value of profits for 2003?
    1. $200
    2. $500
    3. $100
    4. $300
19. You have been asked to measure Gross Domestic Product. You are informed that the sum of consumption, domestic investment, government purchases, and exports is $24 trillion. You then learn that imports are $2 trillion. To get GDP, you should
    1. add $2 trillion to $24 trillion because imports are purchased by consumers, firms, and the government.
    2. add $2 trillion to $24 trillion because imports are used as inputs in the production of other goods.
    3. subtract $2 trillion from $24 trillion because imports are purchased by consumers, firms, and the government.
    4. subtract $2 trillion from $24 trillion because imports cost domestic jobs.

|  |  |
| --- | --- |
| **EMPLOYMENT INFORMATION** | |
| Labor force participation rate | 50% |
| Total population 16 years of age and older | 210 million |
| Unemployment rate | 5% |

1. Referring to the employment information above, the size of the labor force
2. equals 75.5 million
3. equals 105 million
4. equals 150 million
5. equals 65 million
6. Suppose in 2009 the unemployment rate in a country is 50%. **Holding everything else equal**, suppose that 1/4 of the unemployed people found a job in 2010. What is the unemployment rate in 2010?
7. 25%
8. 37.5%
9. 40%
10. The unemployment rate in 2010 cannot be determined from the information given.
11. Suppose that over time, the country of Agra switched from being an agriculturally-based economy to a technologically-based economy. As a result, many people lost their jobs because they lacked the skills to use the new technology. These people would be considered a part of the
    1. frictionally unemployed.
    2. structurally unemployed.
    3. cyclically unemployed.
    4. discouraged workers.
12. Joe decided to quit his job at the University of Wisconsin DoIt Lab because he did not find the work challenging enough. Joe is currently looking for a better job. Therefore, Joe would be labeled as a
    1. frictionally unemployed.
    2. structurally unemployed.
    3. cyclically unemployed.
    4. discouraged workers.
13. Suppose your roommate tells you the following: “If I have to pay a fixed interest rate of 5% on my student loans, then an increase in inflation will make me better off”. This statement is
14. true, because your roommate will repay her loan with less valuable dollars.
15. true, because inflation increases her purchasing power.
16. uncertain, because it depends on whether inflation is more or less than 5%.
17. false, because a 5% interest rate is a good deal, no matter what the inflation rate is.

*Use the following information to answer the next* ***three*** *questions.*

Suppose the residents of country P consume only peaches and pecans. The table below shows the prices and quantity of peaches and pecans consumed for two consecutive years. Note that all prices are per bushel. **Suppose that the typical consumer basket consists of 10 bushels of peaches and 15 bushels of pecans**. Assume 2000 is the base year.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Peaches** | | **Pecans** | |
| **Year** | **Price** | **Quantity** | **Price** | **Quantity** |
| 2000 | $11 | 10 | $6 | 10 |
| 2001 | $9 | 20 | $10 | 10 |

1. What is the consumer price index for 2001?
   1. 100
   2. 120
   3. 200
   4. 240
2. What was the inflation rate in 2001?
   1. 20 percent
   2. 16.7 percent
   3. 10 percent
   4. 8 percent
3. What is the Nominal GDP in 2001?
   1. $180
   2. $190
   3. $280
   4. $100
4. An increase in the price of goods bought only by firms and the government will show up in:
   1. the GDP deflator but not in the CPI.
   2. the CPI but not in the GDP deflator.
   3. both the CPI and the GDP deflator.
   4. neither the CPI nor the GDP deflator.
5. Suppose the real GDP per capita of country Y grows at a constant rate of 7%. In addition, you are given the following snapshot of the state of the economy and the population in country Y:

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Real GDP per capita** | **Real GDP**  **(in millions of dollars)** | **Population**  **(in millions)** |
| 1990 |  | 5000 | 50 |
| 2010 |  |  | 100 |

What is the Real GDP per capita in 2010?

* 1. $20
  2. $200
  3. $400
  4. Cannot be determined from the information given.

1. The production function of Tanzania is given by Y=2/3\*(K0.5L0.5), where Y is real GDP, K corresponds to units of capital, and L is units of labor. In Tanzania, capital is fixed at 81 units for all periods. What is the marginal product of labor (MPL) in year 2 if you know that in period 1, Tanzania has 4 units of labor and in period 2, it has 25 units of labor?
   1. 1/7
   2. 6/7
   3. 7
   4. 7/6
2. The 49th state to be added to the United States was Alaska, a state abundant in renewable resources. According to the long run growth model, how does the long run state of the economy after the addition of Alaska compare to the long run state of the economy had Alaska not joined the United States?
   1. The addition of Alaska resulted in a permanent decrease in labor productivity in the long run
   2. The addition of Alaska resulted in a permanent increase in the growth rate of real GDP in the long run
   3. The addition of Alaska resulted in a permanent decrease in real per capita GDP in the long run
   4. The addition of Alaska resulted in a permanently higher level of real GDP in the long run
3. Suppose an epidemic wipes out a quarter of the labor force in the country of Nova Land. Which of the following statements are TRUE?
   * 1. Labor supply in Nova Land decreases.
     2. Real wages in Nova Land decrease.
     3. Nova Land’s aggregate production function drawn with respect to labor shifts downward.
     4. Real GDP (total output) in Nova Land decreases.
4. I only
5. I and III
6. I and IV
7. I, II, III, and IV

**ANSWERS TO SHORT ANSWER PROBLEMS (worth 50 points in all)**

1. (15 points in all) In the country of Burundi, there are only 3 goods that households consume: food, clothes, and water. To calculate the CPI, the Burundi government uses a basket of goods consisting of 10 million units of water, 5 million units of food, and 2 million units of clothes. You are also given the following additional information (note that in the table the prices are per unit and the quantity is in millions of units).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Water** | | **Food** | | **Clothes** | |
| Year | **Price** | **Quantity** | **Price** | **Quantity** | **Price** | **Quantity** |
| Base Year | $4 | 10 | $10 | 2 | $5 | 5 |
| Current Year | $5 | 10 | $12 | 6 | $10 | 5 |

a. (3 points) Find the CPI in the base year and the current year using a 100 point scale. Show any general formulas you use and all your work at arriving at your answer. Place your answer in the following table.

|  |  |
| --- | --- |
|  | CPI |
| Base Year |  |
| Current Year |  |

Answer:

CPI for any year = [(Cost of market basket in current year)/(Cost of market basket in base year)] \* 100

Cost of market basket in base year = (10 million units of water)($4 per unit of water) + (5 million units of food)($10 per unit of food) + (2 million units of clothes)($5 per unit of clothes)

Cost of market basket in base year = $40 million + $50 million + $10 million = $100 million

Cost of market basket in current year = (10 million units of water)($5 per unit of water) + (5 million units of food )($12 per unit of food) + (2 million units of clothes)($10 per unit of clothes)

Cost of market basket in current year = $50 million + $60 million + $20 million = $130 million

CPI in base year = ($100 million/$100 million) \* 100 = 100

CPI in current year = ($130 million/$100 million) \* 100 = 130

|  |  |
| --- | --- |
|  | CPI |
| Base Year | 100 |
| Current Year | 130 |

b. (3 points) Calculate the inflation rate between the base year and the current year. Show any general formulas you use and all your work at arriving at your answer.

Answer:

Inflation rate between the base year and the current year = [(CPI current year – CPI previous year)/(CPI previous year)] \* 100

Inflation rate between the base year and the current year = [(130 – 100)/100] \* 100 = 30%

c. (3 points) The inflation rate next year is forecasted to be 5%. Given this, what do forecasters expect the CPI to be? Show how you found your answer to get full credit.

Answer:

Inflation rate between next year and this year = [(CPI next year – CPI this year)/(CPI this year)] \* 100

5% = [(CPI next year – 130)/130] \* 100

CPI next year = 136. 5

Alternatively, you know the CPI for this year is 130. Next year’s CPI should be 5% greater than this year’s CPI. So, 130\*.05 = 6.5. Add this to the current CPI of 130 and you get 136.5.

Now suppose that Burundi’s Bureau of Labor Statistics has released the labor data below. Note that the wages in the table below are yearly wages measured in thousands of francs (francs is the official currency of Burundi).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Food Industry | | Clothing Industry | |
| Year | Real Wage | Nominal Wage | Real Wage | Nominal Wage |
| Base Year |  |  | XX | 265 |
| Current Year | 200 | X |  |  |

d. (3 points) What is the nominal wage in the Food Industry in the current year (marked as X in the table above)? Show all formulas and all work you do to get full credit for this question.

Answer:

For a given year t, Real wage\_t=((Nominal wage\_t)/CPI\_t)\*100. Thus Nominal wage in the Food industry in the current year is Nominal wage=((Real wage)\*CPI)/100=(200\*130)/100=260.

e. (3 points) What was the real wage in the Clothing Industry in the base year (marked as XX in the table above)? Provide a proof of your answer to get full credit for this question. That is, provide the underlying formula(s) you are using to derive your final answer.

Answer:

For a given year t, Real wage\_t=((Nominal wage\_t)/CPI\_t)\*100. Thus Real wage in the Clothing industry in the base year was Real wage\_base year=(265/100)\*100.=265

2. (20 points in all) Consider Country Timbuktu whose economy produces only three items: Tomatoes, Tofu and Tacos. The base year is arbitrarily chosen as 2004.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Good** | **Quantity (2004)** | **Price (2004)** | **Quantity (2005)** | **Price (2005)** |
| Tomatoes | 1,000 | $1.00 | 1,200 | $1.50 |
| Tofu | 2,000 | $3.00 | 1,800 | $4.00 |
| Tacos | 600 | $5.00 | 500 | $6.00 |

a. (3 points) Find nominal GDP in the current year (2005) and in the base year (2004). Show any general formulas you use to find this answer and show all your work in finding your answer.

Answer:

Nominal GDP for 2004 = (Price of Tomatoes)(Quantity of Tomatoes) + (Price of Tofu)(Quantity of Tofu) + (Price of Tacos)(Quantity of Tacos)

Nominal GDP for 2004 = ($1.50 per tomato)(1000 tomatoes) + ($3 per unit of tofu)(2000 units of tofu) + ($5 per unit of tacos)(600 units of tacos)

Nominal GDP for 2004 = $1000 + $6000 + $3000

Nominal GDP for 2004 = $10,000

Nominal GDP for 2005 = (Price of Tomatoes)(Quantity of Tomatoes) + (Price of Tofu)(Quantity of Tofu) + (Price of Tacos)(Quantity of Tacos)

Nominal GDP for 2005 = ($1.5 per tomato)(1200 tomatoes) + ($4 per unit of tofu)(1800 units of tofu) + ($6 per unit of tacos)(500 units of tacos)

Nominal GDP for 2005 = $1800 + $7200 + $3000

Nominal GDP for 2005 = $12,000

b. (3 points) What is the percentage change in nominal GDP from 2004 to 2005? Show any general formulas you use to find this answer and show all your work in finding your answer.

Answer:

Percentage change in nominal GDP from 2004 to 2005 = {[(Nominal GDP in 2005) – (Nominal GDP in 2004)]/(Nominal GDP in 2004)} \* 100

Percentage change in nominal GDP from 2004 to 2005 = [(12,000 – 10,000)/10,000] \* 100

Percentage change in nominal GDP from 2004 to 2005 = 20%

c. (3 points) Find real GDP in the current year (2005) and the base year (2004) on a 100 point scale. Show any general formulas you use to find this answer and show all your work in finding your answer.

Answer:

Real GDP in current year = the sum of the products of (Price of item i from the base year)(Quantity of item I from the current year)

Real GDP in base year = the sum of the products of (Price of item i from the base year)(Quantity of item I from the current year) and since the current year is the base year we have,

Real GDP in base year = nominal GDP in base year

So, Real GDP in 2004 = $10,000

Real GDP in 2005 = the sum of the products of (Price of item i from the base year)(Quantity of item I from the current year)

Real GDP in 2005 = (1200 tomatoes)($1 per unit of tomatoes) + (1800 units of tofu)($3 per unit of tofu) + (500 units of tacos)($5 per unit of tacos)

Real GDP in 2005 = $9100

d. (3 points) What is the percentage change in real GDP from 2004 to 2005? Show any general formulas you use and your work to receive full credit. Provide an interpretation of your answer.

Answer:

Percentage change in real GDP from 2004 to 2005 = {[(Real GDP in 2005) – (Real GDP in 2004)]/(Real GDP in 2004)} \* 100

Percentage change in real GDP from 2004 to 2005 = [(9100 – 10,000)/10,000] \* 100

Percentage change in real GDP from 2004 to 2005 = -9 %

Real GDP in this economy fell by 9% between 2004 and 2005: this means that the total value of production in this economy measured using constant dollars has fallen.

e. (3 points) Find the GDP deflator for the current year (2005) and the base year (2004). Show any general formulas you use to find this answer and show all your work in finding your answer. Round your answer to the nearest tenth.

Recall that real GDP in the base year is equal to nominal GDP in the base year. Or, alternatively recall that

Real GDP in current year = [(Nominal GDP in current year)/(Inflation Index in current year)] \* (scale factor)

Rearrange this equation to have

Inflation Index in current year = [(Nominal GDP in current year)/(Real GDP in current year)] \* (scale factor)

The GDP deflator is just another inflation index so,

GDP deflator in current year = [(Nominal GDP in current year)/(Real GDP in current year)] \* (scale factor)

GDP deflator in 2004 = [10,000/10,000] \* 100 = 100

GDP deflator in 2005 = [12,000/9100] \* 100 = 131.9

f. (2 points) By what percentage does the price level change from the base year to the current year using the GDP deflator? Show any general formulas you use to find this answer and show all your work in finding your answer.

Answer:

Percentage change in price level from base year to current year using the GDP deflator = {[(Current year GDP deflator) – (Base year GDP deflator)]/(Base Year GDP deflator)} \* 100

Percentage change in price level from base year to current year using the GDP deflator = [(131.9 – 100)/100] \* 100 = 31.9%

g. (3 points) Would you say that the percentage increase in nominal GDP in this economy from 2004 to 2005 is due more to increases in prices or increases in the amount of output?

Answer:

Prices went up by 31.9% and real GDP went down by 9%. Clearly, the increase in nominal GDP is associated primarily with a change in prices.

3. (15 points in all) The country of Uzbekistan has 1 million people. Of those 1 million people, 200 thousand are under 16 years of age, 500 thousand are working, 200 thousand are unemployed according to the Uzbekistani Bureau of Labor Statistics, and 100 thousand are not actively looking for work but would be willing to take a job if they were offered one.

a. (3 points) What is the size of the labor force in Uzbekistan? Provide a general definition of the labor force and then show the work you did to find this value.

Answer:

Labor Force = Unemployed + Employed

Labor Force = 200,000 + 500,000

Labor Force = 700,000

b. (3 points) What is the labor force participation rate in Uzbekistan? Provide a general definition of the labor force participation rate and then show the work you did to find this value. Round your answer to the nearest tenth.

Answer:

Labor Force Participation Rate = [(Labor Force)/(Population over 16)] \* 100

Labor Force Participation Rate = [700,000/(1,000,000-200,000)]\*100 = 87.5%

c. (3 points) What is the unemployment rate in Uzbekistan? Round your answer to the nearest whole number.

Answer:

Unemployment Rate = [(Number of unemployed people)/(Labor Force)] \* 100 = (200,000/700,000) \* 100 = (2/7) \* 100 = 29%. Thus the unemployment rate is 29%. Note that the 100,000 discouraged workers (not actively looking for work but would be willing to take a job if they were offered one) are NOT included in the number of unemployed people.

d. (3 points) Members of Uzbekistan’s government are up for re-election and challengers for government seats are claiming that the unemployment rate is not accurate because discouraged workers are not considered. Are the political challengers correct in saying that the unemployment rate in Uzbekistan is not accurate?

Answer:

The unemployment rate gets defined a certain way by government statisticians and that definition affects the size of the unemployment rate. The rate may increase or decrease depending upon its definition. In this example the treatment of discouraged workers as not part of the unemployed results in a lower unemployment rate than you would get if these discouraged workers were included in the unemployed.

e. (3 points) Recently, the citizens of Uzbekistan have started having smaller families. As a result, the number of day care jobs has decreased tremendously. What type of unemployment is increasing because of this situation?

Answer:

Structural unemployment is increasing since the unemployment is a result of the dynamics of the labor market.

**Answers to Multiple Choice Questions**

1. D
2. D
3. C
4. A
5. B
6. D
7. C
8. B
9. B
10. B
11. A
12. A
13. B
14. A
15. C
16. A
17. C
18. B
19. D
20. C