

**ECON 201: Introduction to Macroeconomics**  
**Professor Robert Gordon**  
**Midterm Exam 2:**  
**November 10, 2014**

NAME \_\_\_\_\_

Circle your TA's name:                      Max                      Samir                      Vishal

Circle your section time:                      9:00 am                      3:00 pm

**Directions:** This test is in two parts, a multiple choice question part and a short-answer part. Use this answer packet to complete the exam. Calculators are permitted. Books, notes, reference materials, etc. are prohibited. Good luck!

**Part 1:** Referring to the questions in the Multiple Choice Questions Packet, choose the one alternative that best completes the statement or answers the question. Each question is worth one point. There is no penalty to guessing, so be sure to answer all of them. Write your answers in the following table using capital letters.

1	6	11	16	21	26
2	7	12	17	22	27
3	8	13	18	23	28
4	9	14	19	24	29
5	10	15	20	25	30

1. Which one of the following transactions will be included in the official measurement of GDP?

- A) Stan sold his house at a huge gain.
- B) Monica illegally downloaded movies to her laptop.
- C) Ben won the state lottery.
- D) Sean bought a new iPhone.

2. If nominal GDP decreases from one year to the next:

- A) prices must have fallen from one year to the next.
- B) real GDP must have fallen from one year to the next.
- C) prices and real GDP must have fallen from one year to the next.
- D) either output or prices or both must have fallen from one year to the next.

3. A binding minimum wage results in:

- A) higher wages for those who were working prior to the minimum wage implementation.
- B) greater amounts of structural unemployment.
- C) a decrease in the amount of cyclical unemployment.
- D) lower actual unemployment rates since higher wages encourage more people to enter the work force.

4. An increase in government spending with no change in taxes causes

- A) An increase in private saving
- B) A decrease in national saving
- C) An increase in net capital inflows
- D) A) B) and C)
- E) B) and C)

5. Human capital refers to:

- A) output per worker.
- B) the education and knowledge embodied in the workforce.
- C) society's investment in capital goods.
- D) people working with capital goods.

6. Productivity declines when:

- A) the number of hours worked exceeds the number of workers.
- B) population growth exceeds real GDP growth.
- C) the ratio of adult civilians employed outside the home rises.
- D) real GDP growth exceeds the population growth.

7. An example of investment spending would be the:

- A) purchase of a bond.
- B) purchase of a loaf of bread.
- C) purchase of a new productive machine.
- D) purchase of a bond, a loaf of bread, or a new productive machine.

8. In the paradox of thrift:

- A) firms that are pessimistic about the future lay off the most saving-conscientious workers.
- B) when families and business are feeling pessimistic about the future, they spend more today.
- C) increased saving by individuals increases their chances of becoming unemployed.
- D) profligate behavior during economic tough times has large negative consequences for society.

9. If the economy grew at a 3% rate this year and average prices increased \_\_\_\_\_, people would be better off this year than last year.

- A) 3%
- B) faster than 3%
- C) less than 3%
- D) faster than 10%

10. Which of the following shifted the consumption function UP in 2002-05?

- A) Collapse of housing bubble
- B) Households went into debt, thus raising their liabilities
- C) Rise in housing prices
- D) A) and B)
- E) B) and C)

11. Discouraged workers are those individuals:

- A) who are getting paid too little.
- B) who do not like their job.
- C) who are working part time but are looking for a full-time job.
- D) who have given up looking for a job.

12. Diminishing returns to physical capital implies that when the human capital per worker and the state of technology remain fixed, each successive increase in physical capital leads to:

- A) a smaller increase in productivity.
- B) a larger increase in productivity.
- C) a decrease in productivity.
- D) negative productivity.

13. Which of the following is an example of an intermediate good?

- A) stocks and bonds purchased by a business executive
- B) a cellular telephone purchased by a college student
- C) a wedding ring purchased by an engineer for his fiancée
- D) tires purchased from Goodyear by General Motors for newly produced electric cars

14. Teenage unemployment is typically

- A) Half of adult unemployment
- B) Equal to adult unemployment
- C) 1.5 times adult unemployment
- D) 2 times adult unemployment
- E) 3 times adult unemployment

15. If during a period of several months the economy is simultaneously increasing its levels of output and employment, then the economy is in:

- A) a depression.
- B) an expansion.
- C) a recession.
- D) a turning point between a recovery and a downturn.

16. Suppose that roughly 8 million people in the United States were actively seeking jobs but had not found them this month, the same number as last month. Suppose that 2 million of the people who were unemployed last month gave up their search this month and stopped looking for work. What will happen to the unemployment rate this month, all other things unchanged?

- A) It will rise, because 2 million people are not in the labor force this month and are not counted as unemployed.
- B) It will fall, because 2 million people are not in the labor force this month and are not counted as unemployed.
- C) It will be unaffected, because the same number of people is unemployed.
- D) Not enough information is provided to determine what happens to the unemployment rate.

17. When intermediate goods are included in the GDP calculation, it is referred to as:

- A) the value-added method.
- B) double counting.
- C) deflating the value of GDP.
- D) the expenditure method of GDP calculation.

18. When the lecture stated that there were “10 million missing jobs,” what item of data was cited?

- A) employment-population ratio
- B) unemployment rate
- C) labor-force participation rate
- D) number of employees
- E) millions of those involuntarily working part time.

19. For the past several months, per capita output has increased, but at a slower and slower rate. Over the same period, the unemployment rate has been falling, but it appears to have leveled off and may soon rise. Where in the business cycle is the economy?

- A) the business-cycle peak
- B) a recession
- C) the business-cycle trough
- D) an expansion

20. A survey reveals that on a small island 40 people have jobs, 10 people are looking for jobs, and 30 people are neither working nor looking for work. The unemployment rate on the island is:

- A) 12.5%.
- B) 20%.
- C) 25%.
- D) 50%.

21. The best currently available measure of the standard of living in a country is:

- A) the nominal GDP per capita.
- B) the real GDP per capita.
- C) the unemployment rate.
- D) the growth rate of productivity.

**Use the following to answer questions 22-25:**

In an open economy the GDP is \$12 trillion this year. Consumption is \$8 trillion, and government spending is \$2 trillion. Taxes are \$0.5 trillion. Exports are \$1 trillion, and imports are \$3 trillion.

22. How much is national saving?

- A) \$4 trillion
- B) \$3.5 trillion
- C) \$2 trillion
- D) \$5.5 trillion

23. What is the government budget balance?

- A) a surplus of \$1.5 trillion
- B) a deficit of \$1.5 trillion
- C) a deficit of \$0.5 trillion
- D) a surplus of \$3.5 trillion

24. How much is the net capital inflow?

- A) \$1 trillion
- B) \$2 trillion
- C) \$3 trillion
- D) \$4 trillion

25. How much is private saving?

- A) \$4 trillion
- B) \$2.5 trillion
- C) \$3.5 trillion
- D) \$1.5 trillion

26. If real GDP doubles in 35 years, its average annual growth rate is approximately:

- A) 1%.
- B) 2%.
- C) 3%.
- D) 4%.

27. Which of the following is an example of investment spending?

- A) The owner of a Domino's Pizza store has employed two students to deliver pizzas.
- B) The manager of a local Domino's Pizza store has taken some cash to the bank to make a deposit.
- C) A local Domino's Pizza store has purchased a new pizza oven.
- D) The owner of the Domino's Pizza store has used some of her salary to buy shares of stock in the Domino's corporation.

28. Greater extent of long-term unemployment among men than women is attributed in the readings to

- A) Different industry mix of male employment
- B) Mismatch between boy culture and school culture
- C) 60 percent of college graduates are female
- D) Greater prevalence of men in part-time jobs

29. Unemployment that occurs because it takes workers and employees time to find each other is called:

- A) cyclical unemployment.
- B) structural unemployment.
- C) frictional unemployment.
- D) discouraged unemployment.

30. Which is the best measure of the role of innovation in economic growth?

- A) The output-to-labor ratio
- B) The ratio of output to capital and labor input
- C) The ratio of output to capital input
- D) None of the above

**Part 2:** Solve the following problems in the provided space. *Show all your work clearly.*

**Problem 1 (10 points)**

Think of yourself as a central banker. You are interested in calculating the growth rate of Country A from 2009 to 2010. However, you only have price and quantity values for goods produced for the two years. The prices have changed between years and there is an issue on how you will take this into account. Below is how you will proceed:

- A) (3 points) Complete the blanks in the box to calculate the nominal GDP and the real GDP using different prices:

	2009		2010	
	Price	Quantity	Price	Quantity
Apples	500	20	400	30
Oranges	10	1000	15	1200
Nominal GDP				
Real GDP in 2009 prices				
Real GDP in 2010 prices				

You are interested in calculating the **quarterly** growth rates (**as opposed to the annual ones as done in section**) for reporting reasons.

B) (2 points) Calculate the quarterly growth rate of real GDP using 2009 prices (**Hint: A year has 4 quarters**). Use the LN formula.

C) (2 points) Calculate the quarterly growth rate of real GDP using 2010 prices. Use the LN formula.

D) (3 points) However, the answers in b) and c) give you different values of the quarterly growth rate due to change in prices. As a result, you decide to use the chain weighted GDP as a result. Calculate the chain weighted quarterly growth rate.



## Problem 2 (10 points)

An investor currently has \$100. She is considering investing her \$100 in two possible investments, called A and B. Investment A pays an additional \$100 right away, and then grows at 2% per year. Investment B pays nothing up front, but grows at 10% per year.

- A) (2 points) If she invests in B, how long does it take for her investment to quadruple?
- B) Which of A or B should she choose if she wants to invest for:
- i) (2 points) 2 years?
  - ii) (2 points) 12 years?
- C) (3 points) How long does it take for investment B to catch up to investment A, if ever?
- D) (1 point) Now suppose investment B also pays \$100 up front. How long does it take for investment A to catch up to investment B, if ever?

**Problem 3 (10 points)**

Age	Full Time workers	Part Time workers	Don't have a job but are looking for one	Don't have a job and are not looking for one	Total
<16				150	150
16-20	20	60	30	150	260
21-30	40	25	15	30	110
31-50	150	60	70	20	300
51-70	85	20	40	20	165
>70	20	10	15	120	165
Total	315	175	170	490	1150

- A) (1 point) Calculate the Labor Force Participation Rate for this economy. *Report as a percentage to two decimal places.*
- B) (1 point) Calculate the Unemployment Rate for this economy. *Report as a percentage to two decimal places.*
- C) (1 point) What is the Employment to working age Population Ratio? *Report as a percentage to two decimal places.*
- D) (1 point) What is the Unemployment Rate for people aged 16-30? *Report as a percentage to two decimal places.*

E) (3 points) 200 people, none of them employed, leave the country. The Employment to working age Population Ratio is now 56% and the Labor Force Participation Rate is now 66.4%. Out of the 200 people that left the country, how many were in the labor force?

F) (3 points) **For this part, disregard what happened in part E.** 150 people that were employed left. The Unemployment Rate for people aged 16-30 is now 25%. What is the Unemployment Rate for people over the age of 30?

## SOLUTIONS

### Answer Key

1. D
2. D
3. B
4. D
5. B
6. B
7. C
8. C
9. C
10. E
11. D
12. A
13. D
14. D
15. B
16. B
17. B
18. A
19. A
20. B
21. B
22. C
23. B
24. B
25. C
26. B
27. C
28. B
29. C
30. B

### Problem 1

A)

	2009	2010
Nominal GDP	20,000	30,000
Real GDP 2009 prices	20,000	27,000
Real GDP 2010 prices	23,000	30,000

B)  $\ln(27000 / 20000) / 4 * 100 = 7.5\%$

C)  $\ln(30000 / 23000) / 4 * 100 = 6.64\%$

D)  $(6.64+7.5)/2=7.07\%$

**Problem 2**

a)  $100*\ln(4)/10 = 13.86$

b)

i)  $200*\exp(4/100) = 208.16, 100*\exp(2/10) = 122.14$ , so choose A

ii)  $200*\exp(24/100) = 254.24, 100*\exp(12/10) = 332.01$ , so choose B

c)  $200*\exp(2t/100) = 100*\exp(10t/100)$  re-arrange to get  $t = 100*\ln(2)/8 = 8.66$  years

d) Never catches up

**Problem 3**

A) 66%

B) 25.76%

C) 49%

D) 23.68%

E)  $EPR = \text{Employed} / \text{over16}$

$0.56 = 490 / \text{over16}$

$\text{Over16} = 875$

$LFPR = \text{Labor Force} / \text{over16}$

$0.664 = \text{Labor Force} / \text{over16}$

$\text{Labor Force} = 0.664 * 875 = 581$

Labor Force was 660, so the labor force went down by  $660 - 581 = 79$

F)  $UR(16-30) = \text{Unemployed}(16-30) / (\text{Employed}(16-30) + \text{Unemployed}(16-30))$

$0.25 = 45 / (\text{Employed}(16-30) + 45)$

$0.25 * 45 + 0.25 * \text{Employed}(16-30) = 45$

**Employed(16-30)=135**

**Before, Employed(16-30) was 145, so 10 of the people that left were between 16 and 30 years old. Which means that 140 people that left were older than 30.**

**UR(over 30)=Unemployed(over 30)/ ( Employed(over 30)+ Unemployed(over 30))**

**UR(over 30)=125/ (345-140+125)**

**UR(over 30)=37.88%**