

ECON 1010 Principles of Macroeconomics
Exam #2

Section A: Multiple Choice Questions. (30 points; 2 pts each)

#1. If the price level in the economy and the nominal wages both doubled, then real wages would

- a) also double.
- b) increase by half.
- c) remain unchanged.**
- d) decrease by half.

#2. Assume that the real GDP of the United States is approximately \$12 trillion and the population of the United States is approximately 300 million. What is per capita real GDP?

- a) \$4000
- b) \$36,000
- c) \$40,000**
- d) \$360 million

#3. The current unemployment rate in the U.S. is approximately

- a) 1%.
- b) 5%.**
- c) 10%.
- d) 50%

Table: Pizza Economy III

	Gino's pizza	Bruno's spaghetti	Carlo's cookies	Aldo's salad
2010 units of output	4,000	3,000	2,000	5,000
2010 price per unit	\$10	\$9	\$6	\$7
2011 units of output	4,000	1,000	1,000	2,000
2011 price per unit	\$8	\$6	\$1	\$4

#4. Using 2010 as the base year in the table above, nominal GDP in 2010 was:

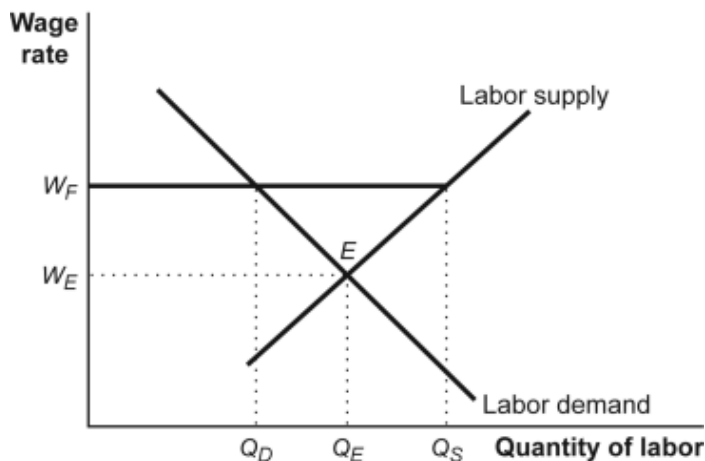
- a) \$114,000.**
- b) \$72,000.
- c) \$69,000.
- d) \$47,000.

#5. If the labor force totals 100 million workers and 90 million are actively working, then the unemployment rate is:

- a) 1 percent.
- b) 5 percent.
- c) 10 percent.
- d) 90 percent.

#6. Looking at past data, one finds that when the unemployment rate has increased, the annual growth rate of real GDP has usually:

- a) increased.
- b) decreased.
- c) not changed.
- d) no relationship with changes in the unemployment rate.



#7. Look at the figure above. Suppose the labor market is in equilibrium at E when the government imposes a minimum wage of W_F . Structural unemployment will equal:

- a) $Q_S - Q_D$.
- b) $Q_E - Q_D$.
- c) $Q_S - Q_E$.
- d) 0.

#8. If deflation occurs and your income is fixed, your real income:

- a) will fall.
- b) will go up.
- c) will still be equal to your nominal income.
- d) is constant.

#9. Efficiency wages are usually set by employers to:

- a) reduce unemployment.
- b) increase employment.
- c) provide an incentive for better performance.
- d) increase employment and provide better incentives for performance.

#10. If the CPI is 120 in year 1 and 150 in year 2, then the inflation rate from year 1 to year 2 is:

- a) 10 percent.
- b) 20 percent.
- c) 25 percent.
- d) 50 percent.

#11. Which decade was characterized by accelerating inflation in the United States?

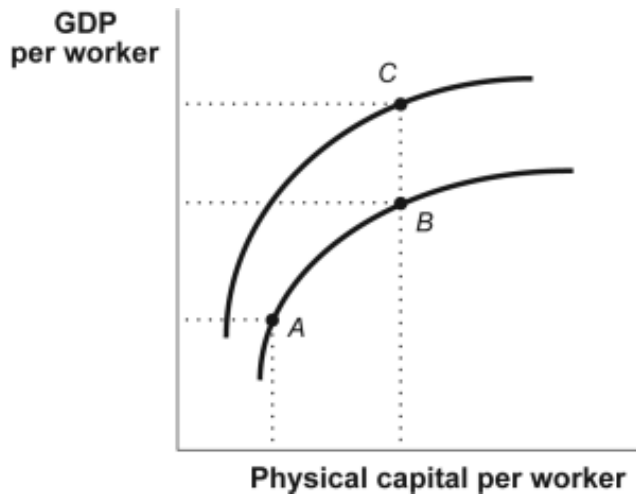
- a) 1950s
- b) 1980s
- c) 1990s
- d) 1970s

#12. A key statistic to measure economic growth is:

- a) the Dow Jones stock market index.
- b) life expectancy.
- c) real GDP per capita.
- d) the size of the government's budget.

#13. Diminishing returns to physical capital means that as more and more physical capital is combined with a fixed amount of human capital and a fixed technology, eventually:

- a) aggregate output or real GDP declines.
- b) aggregate output or real GDP grows.
- c) additions to aggregate output or real GDP decline.
- d) additions to aggregate output or real GDP increase.



#14. Using the figure above, an improvement in technology with everything else remaining unchanged is shown as a movement from:

- a) B to A.
- b) A to B.
- c) B to C.
- d) A to C.

#15. Again using the figure above, economic growth due to investment in the stock of physical capital is shown as a movement from:

- a) B to A.
- b) A to B.
- c) B to C.
- d) A to C.

Section B: Short Answer Questions. (60 points)

1. (20 pts) The labor market data in the table below is approximately correct for the United States and measured in millions of people.

Year	Population	Unemployed	Employed
2005	225	7	135
2010	240	15	130
2015	250	8	140

- a) (10 pts) Calculate the labor force participation rate and unemployment rate in each year.

**2005: Labor force participation rate = $(142 / 225) \times 100 = 63.1\%$
Unemployment rate = $(7/142) \times 100 = 4.9\%$**

**2010: Labor force participation rate = $(145 / 240) \times 100 = 60.4\%$
Unemployment rate = $(15/145) \times 100 = 10.3\%$**

**2015: Labor force participation rate = $(148 / 250) \times 100 = 59.2\%$
Unemployment rate = $(8/148) \times 100 = 5.4\%$**

- b) (10 pts) The 2008 Great Recession and financial crisis had an enormous impact on the U.S. labor market (both in terms of the number unemployed and the size of the labor force). In light of the numbers you calculated in part (a), comment on the change in the labor market between 2005 and 2010. Also, some people have argued that the 2015 labor market has not fully recovered. Do these arguments have any merit? Defend your answer.

Between 2005 and 2010, the unemployment rate more than doubled and the labor force participation rate declined sharply. This was likely due to firms laying off workers and hiring fewer new workers. Also, many workers may have become discouraged and stop seeking employment, causing a fall in the labor force participation rate. Although not shown above, the U.S. BLS data show that the number of marginally attached and part-time workers also increased during this period.

Has the 2015 labor market fully recovered from the financial crisis? In terms of the unemployment rate, the answer is “yes”. The unemployment rate is only slightly higher than its 2005 level and near estimates for the natural rate of unemployment. However, in terms of labor force participation, the rates are still much lower than in 2005. This could be due to workers continuing to drop out of the labor force because of a stagnant economy. Alternatively, it could be due to changing demographics in the United States as a higher proportion of the population nears retirement age.

2. (40 pts) The table below shows production and prices for a stylized economy. Assume the base year is 2005.

Year	Production of X	Price per unit of X (\$)	Production of Y	Price per unit of Y (\$)
2005	200 units	10	500 units	5
2010	300 units	15	400 units	4
2015	400 units	20	200 units	2

- a) (10 pts) Calculate nominal and real GDP for 2005, 2010 and 2015 assuming the base year is 2005.

2005 (base year):

$$\text{Nominal GDP} = (200 \times \$10) + (500 \times \$5) = \$4500$$

$$\text{Real GDP} = (200 \times \$10) + (500 \times \$5) = \$4500$$

2010:

$$\text{Nominal GDP} = (300 \times \$15) + (400 \times \$4) = \$6100$$

$$\text{Real GDP} = (300 \times \$10) + (400 \times \$5) = \$5000$$

2015:

$$\text{Nominal GDP} = (400 \times \$20) + (200 \times \$2) = \$8400$$

$$\text{Real GDP} = (400 \times \$10) + (200 \times \$5) = \$5000$$

- b) (10 pts) Calculate the GDP deflator for 2005, 2010, and 2015. What is the inflation rate between 2005 and 2010? Between 2010 and 2015?

2005 (base year):

$$\text{GDP Deflator} = (\$4500/\$4500) \times 100 = 100$$

2010:

$$\text{GDP Deflator} = (\$6100/\$5000) \times 100 = 122$$

2015:

$$\text{GDP Deflator} = (\$8400/\$5000) \times 100 = 168$$

$$\text{GDP Deflator inflation rate in 2010} = ((122 - 100)/100) \times 100 = 22.0\%$$

$$\text{GDP Deflator inflation rate in 2015} = ((168 - 122)/122) \times 100 = 37.7\%$$

- c) (10 pts) Assume that the market basket for the typical consumer is given by the quantities in 2005. Calculate the CPI for 2005, 2010, and 2015. What is the inflation rate between 2005 and 2010? Between 2010 and 2015?

$$\text{Consumer Price index in 2005} = (\$4500/\$4500) \times 100 = 100$$

$$\text{Consumer Price index in 2010} = (\$5000/\$4500) \times 100 = 111.1$$

$$\text{CPI Inflation rate in 2010} = ((111.1 - 100)/100) \times 100 = 11.1\%$$

$$\text{Consumer Price index in 2015} = (\$5000/\$4500) \times 100 = 111.1$$

$$\text{CPI Inflation rate in 2015} = ((111.1 - 111.1)/111.1) \times 100 = 0\%$$

- d) (10 pts) On an annual basis, how fast has the real economy grown between 2005 and 2015? Using this rate, how long will it take the economy to double in size? Defend your answer.

$$\text{The growth rate in real GDP for 2005 - 2015 is } ((\$5000 - \$4500)/\$4500) \times 100 = 11.1\%.$$

$$\text{The approximate annual real GDP growth rate is therefore } 11.1/10 = 1.11\%.$$

$$\text{Using the Rule of 70, the number of years for real GDP to double} = 70/1.11 = 63.6 \text{ years.}$$

3. (10 pts) TRUE or FALSE.

- Social Security recipients will receive a 5% cost-of-living increase next year due to high inflation.

FALSE.

- The **curse of natural resources** states that economies with abundant natural resources tend to exhibit slower growth in real GDP per capita.

TRUE.

- Over the past 15 years, the growth rates in real GDP per capita have been approximately equal in the U.S., India, and China.

FALSE.

- One of the primary differences between the GDP deflator and the CPI is the inclusion of imports in the latter measure.

TRUE.

- Inflation refers to an increase in aggregate price level.

TRUE.