

**Cooleconomics
Macroeconomics**

Exam 1 Answers

1. (20 points) Behold the following information:

compensation of employees	5000
net interest	500
gross private domestic investment	800
private savings	400
net factor payments to rest of world	75
government purchases of goods and services	910
government spending	1235
net exports	-325
exports	800
corporate profits	620
depreciation	43
proprietors' income	679
(net) indirect business taxes	127
rental income	433

Use some of the above information to calculate

GDP _____

GNP _____

NI _____

private disposable income _____

$$NI = 5000 + 500 + 620 + 679 + 433 = 7232$$

$$GDP = 7232 + 75 + 43 + 127 = 7477$$

$$GNP = 7477 - 75 = 7402$$

$$\text{private disposable income} = C + S_{pvt}$$

$$\text{private disposable income} = C + 400$$

What is C?

$$C = GDP - I - G - (EX - IM)$$

$$= 7477 - 800 - 910 - (-325) = 6092$$

$$\text{private disposable income} = 6092 + 400 = 6492$$

2. (30 points) Behold the following table (an economy with only 2 final goods--bread and butter):

base year = 1996

Year	Bread		Butter		Real GDP	Nominal GDP	Nominal Wages	GDP Deflator
	Price	Quantity	Price	Quantity				
1995	\$1	10	___	20	360	___	74	75
1996	\$2	15	___	10	___	___	84	___

a) Fill in the blank spaces

base year = 1996

Year	Bread		Butter		Real GDP	Nominal GDP	Nominal Wages	GDP Deflator
	Price	Quantity	Price	Quantity				
1995	\$1	10	<u>13</u>	20	360	<u>270</u>	74	75
1996	\$2	15	<u>17</u>	10	<u>200</u>	<u>200</u>	84	<u>100</u>

b) Calculate the 1995-96 growth rate of production: _____ $(200-360)/360 = -44.4\%$

c) Has the purchasing power of wages risen or fallen during 1995-96? Support your answer with a calculation.

fallen

nominal wages have increased less than prices have risen:

nominal wages rose by $(84-74)/74 = 13.51\%$

prices rose by $(100 - 75)/75 = 33.33\%$

3. (20 points) Behold the following equation describing production in an economy

$$Y = 10K^4N^6$$

Currently, N is 1000 and K is 2000.

Calculate:

$$GDP = 10(2000^4)(1000^6)$$

13195.08

$$MPN = 6(2000^4)(1000^5)$$

7.917047

$$MPK = 4(2000^3)(1000^6)$$

2.639016

w/p _____ 7.917047, since firms hire labor until $MPN = (w/p)$

4. (10 points) Congressman A. Goofball says "our goal should be an unemployment rate of 0%." Evaluate Goofball's claim, and discuss three categories of unemployment in your response.

This person is a goofball. Frictional unemployment—unemployment caused by people with good job skills taking time to find a good job—is good unemployment and should not be eliminated. Structural unemployment, caused by obsolete job skills, is bad and it'd be nice to reduce it. Same goes for cyclical unemployment, caused by insufficient GDP.

In addition, attempts to reduce unemployment too much can result in inflation.

5. (10 points) A firm has an expected future marginal product of capital of
 $MPK^f = 500 - 5K$

The price of capital is 200, the real interest rate is 5% and the rate of depreciation is 15%

Calculate:

user cost of capital $(.05 + .15)200 = 40$

desired capital stock $500 - 5K = 40 \rightarrow 5K = 460 \rightarrow K = 92$

6. (10 points) An economy has full employment output of 10,000.

Desired consumption is $C^d = 5000 - 4000r + .1Y$

Desired investment is $I = 3000 - 8000r$

Government purchases are 2000

There is no foreign trade

a. Derive an equation relating S^d to r and Y

$$S_d = Y - C^d - G = Y - (5000 - 4000r + .1Y) - 2000$$

$$S_d = -7000 + 4000r + .9Y$$

b. Calculate equilibrium (full employment) r

$$S_d = I_d$$

$$-7000 + 4000r + .9Y = 3000 - 8000r$$

$$12,000r = 10,000 - .9(10,000)$$

$$12,000r = 1,000$$

$$r = .083333333333$$