

Test 1
Econ322 Section 002
Chappell
February 16, 2009

Name _____

Last 5 Digits _____

Instructions

Fill in your name and last five digits of your student number on this test sheet.

Multiple Choice questions must be answered on the test form. Please fill in your last name and your first name in the spaces provided. Then bubble in the appropriate letters below your name.

You must also fill in the last 5 digits of your student number in the field called "ID Number." Use the 5 columns on the left when you fill in these digits. Then bubble in the appropriate spaces below your number.

Problems and Analytical Questions should be answered directly on the test sheet. You must show your work. If you do not show your work, you may not get full credit even if your numerical answer is correct.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Average labor productivity is the 1) _____
- A) amount of output per worker.
 - B) amount of workers per machine.
 - C) ratio of employed to unemployed workers.
 - D) amount of machines per worker.

Definition

- 2) The unemployment rate is the 2) _____
- A) number of unemployed divided by the labor force.
 - B) number of employed divided by the number of unemployed.
 - C) labor force divided by the number of unemployed.
 - D) number of unemployed divided by the number of employed.

Definition

- 3) The three approaches to measuring economic aggregate activity are the 3) _____
- A) consumer, business, and government approaches.
 - B) private, public, and international approaches.
 - C) product, income, and expenditure approaches.
 - D) cost, income, and expenditure approaches.

One can define GDP, a measure of overall economic activity, as the dollar value of final goods and services produced in an economy in a period of time. This is the product approach. Since output produced is also purchased, one could also measure by expenditure. And since revenues that flow into firms when purchases are made must ultimately be paid out as income, in principle one can also measure activity by adding up incomes.

- 4) Intermediate goods are 4) _____
- A) either capital goods or inventories.
 - B) goods that are used up in the production of other goods in the same period that they were produced.
 - C) capital goods, which are used up in the production of other goods but were produced in earlier periods.
 - D) final goods that remain in inventories.

For example, wheat used to make bread is an intermediate good, while bread purchased by a household is a final good.

- 5) Suppose that private saving is \$1590 billion, investment is \$1945 billion, and net exports is -\$489 billion. Net factor payments from abroad is equal to zero. How much is government saving? 5) _____
- A) \$844 billion
 - B) -\$134 billion
 - C) \$134 billion
 - D) -\$844 billion

$$S = S_{govt} + S_{pvt}$$

$$S_{govt} + S_{pvt} = I + NX + NFP$$

$$S_{govt} + 1590 = 1945 - 489 + 0$$

$$S_{govt} = -134$$

- 6) Nominal GDP in 1970 was \$1,035.6 billion, and in 1980 it was \$2,784.2 billion. The GDP price index was 30.6 for 1970 and 60.4 for 1980, where 1992 was the base year. Calculate the percent change in real GDP in the decade from 1970 to 1980. Round off to the nearest percentage point.
- A) 36% B) 97% C) 169% D) 136%

Real GDP = 100 * (Nominal GDP / Deflator)

So Real GDP (1970) = 100 * (1035.6 / 30.6) = 3382.35

And Real GDP (1980) = 100 * (2784.2 / 60.4) = 4609.6

Percentage rate of change = 100% * [(4609.6 - 3382.35) / 3382.35] = 36%

- 7) A variable that tends to move at the same time as aggregate economic activity is called
- A) a leading variable. B) an acyclical variable.
C) a lagging variable. D) a coincident variable.

Definition

- 8) Which of the following is true?
- A) Employment is countercyclical and unemployment is coincident with the business cycle.
B) Employment and unemployment are both procyclical.
C) Employment is procyclical and unemployment is countercyclical.
D) Employment and unemployment are both coincident with the business cycle.

Over a business cycle, when GDP rises (same direction), employment rises, but unemployment falls (opposite direction).

- 9) The two main characteristics of a graph of the production function, plotting output (vertical axis) against the quantity of labor input (horizontal axis), are
- A) it slopes upward from left to right, and the slope becomes flatter as the input increases.
B) it slopes downward from left to right, and the slope becomes flatter as the input increases.
C) it slopes upward from left to right, and the slope becomes steeper as the input increases.
D) it slopes downward from left to right, and the slope becomes steeper as the input increases.

With more input the economy produces more output; however labor is subject to a diminishing marginal product (and marginal product is the slope of the production function).

- 10) An adverse (negative) supply shock would

- A) shift the production function down and increase marginal products at every level of employment.
- B) **shift the production function down and decrease marginal products at every level of employment.**
- C) shift the production function up and increase marginal products at every level of employment.
- D) shift the production function up and decrease marginal products at every level of employment.

A negative supply shock implies that we get less output for given inputs, which causes the production function to shift downward. Normally, this also lowers the slope at any input level (for example, this must be true if the supply shock is modeled as a reduction in "A")

- 11) An increase in the real wage rate will cause 11) _____
- A) the quantity of labor demanded to rise.
 - B) the labor demand curve to shift to the left.
 - C) **a movement along the labor demand curve.**
 - D) the labor demand curve to shift to the right.

The labor demand curve plots the quantity of labor demanded versus the real wage. So, as w varies we are moving along a labor demand curve.

- 12) The Widget Company has the following production function. 12) _____

<u>Number of Workers</u>	<u>Number of Cases Produced</u>
0	0
1	9
2	17
3	24
4	30
5	35

If widgets sell for \$6 each and the wage rate is \$33, how many workers will the company hire?

- A) 0
- B) **4**
- C) 2
- D) 1

For profit maximization, hire labor so long as $P \cdot MPN \geq W$. For the fourth worker added, MPN is 6, and $P \cdot MPN$ is 6×6 or $\$36 > \33 . So the fourth worker will be hired. However, a fifth worker would have $P \cdot MPN = 30 < 33$ and will not be hired.

- 13) An adverse supply shock, such as a reduced supply of raw materials, would 13) _____
- A) not affect the marginal product of labor.
 - B) decrease the marginal product of capital, but have no effect on the marginal product of labor.
 - C) **decrease the marginal product of labor.**
 - D) increase the marginal product of labor.

See question 10.

- 14) If Jeff's wage rate rises, he decides to work fewer hours. From this, we can infer that 14) _____
- A) for Jeff, the substitution effect is less than the income effect.
 - B) for Jeff, the substitution effect is greater than the income effect.
 - C) for Jeff, the substitution effect is equal to the income effect.
 - D) Jeff is a nitwit.

A higher wage makes leisure more expensive, and Jeff will take less leisure (and work more) according to the substitution effect. However, since he works less, the income effect must dominate. With more income, usually a person consumes more of both goods and leisure, and more leisure means less work.

- 15) A sharp increase in stock prices makes people much wealthier. If the main effect of this increased wealth is felt on labor supply, what happens to current employment and the real wage rate? 15) _____
- A) Both employment and the real wage rate would decrease.
 - B) Employment would increase and the real wage would decrease.
 - C) Both employment and the real wage rate would increase.
 - D) Employment would decrease and the real wage would increase.

The effect on labor supply is that people work less, shifting labor supply left, and putting upward pressure on the real wage.

- 16) With no inflation and a nominal interest rate (i) of .03, a person can trade off one unit of current consumption for _____ units of future consumption. 16) _____
- A) .03 B) 0.97 C) -.03 D) 1.03

One real dollar today gives me (trades for) \$1.03 real dollars tomorrow (\$1 principal plus .03 interest).

- 17) An increase in expected future output while holding today's output constant would 17) _____
- A) decrease today's desired consumption and decrease desired national saving.
 - B) increase today's desired consumption and decrease desired national saving.
 - C) increase today's desired consumption and increase desired national saving.
 - D) decrease today's desired consumption and increase desired national saving.

This is like an increase in wealth, which leads me to consume more and save less.

- 18) If the substitution effect of the real interest rate on saving is larger than the income effect of the real interest rate on saving, then a rise in the real interest rate leads to a _____

_____ 18)
in
desired
consump
tion and
a

_____ in
desired
saving,
for
someone
who's a
lender.

- A) rise; rise B) **fall; rise** C) fall; fall D) rise; fall

An increase in the real rate of interest makes current consumption more expensive, and, by the substitution effect, encourages less consumption and more saving.

- 19) If the government cuts taxes today, issuing debt today and repaying the debt plus interest next year, a rational taxpayer will 19) _____
A) increase consumption today, before taxes go up next year.
B) spend the full amount of the tax cut today and reduce consumption next year.
C) leave a smaller gross bequest to her or his heirs.
D) **increase saving today, leaving consumption unchanged.**

A rational consumer recognizes that the current tax cut has no effect on his wealth and therefore does not change his consumption. Rather, he saves the amount of the tax cut in order to be able to pay the future tax.

- 20) Calculate the user cost of capital of a machine that has a price of \$5000 and depreciates at a rate of 25%, when the expected real interest rate is 5%. 20) _____
A) \$150 B) \$500 C) \$5000 D) **\$1500**

$$uc=(r+d)Pk=(.05+.25)5000=1500$$

- 21) Suppose your company is in equilibrium, with its capital stock at its desired level. A permanent decline in the expected real interest rate now has what effect on your desired capital stock? 21) _____
A) Lowers it, because the user cost of capital is now higher
B) **Raises it, because the user cost of capital is now lower**
C) Raises it, because the future marginal productivity of capital is higher
D) Lowers it, because the future marginal productivity of capital is lower

This event lowers the user cost of capital and therefore increases the desired capital stock (capital must rise if we are to continue to satisfy the profit maximization condition that the expected future marginal product of capital is to equal the user cost of capital)

- 22) You are trying to figure out how much capacity to add to your factory. 22) _____
You will increase capacity as long as
- A) the expected marginal product of capital is greater than or equal to the expected marginal product of labor.
 - B) the expected marginal product of capital is greater than or equal to the marginal product of capital.
 - C) the expected marginal product of capital is positive.
 - D) the expected marginal product of capital is greater than or equal to the user cost of capital.

The explanation for the previous question indicates that this is the condition for profit maximization in the use of capital.

- 23) Any change in the economy that raises desired national saving for a given value of the real interest rate will shift the desired national saving curve to 23) _____
- A) the right and increase the real interest rate.
 - B) the left and decrease the real interest rate.
 - C) the left and increase the real interest rate.
 - D) the right and decrease the real interest rate.

We plot saving (horizontal axis) versus the interest rate (vertical axis). So if saving is larger for a given interest rate, the curve must shift right. We slide down the desired investment curve to a lower rate of interest.

- 24) A temporary decrease in government purchases would cause 24) _____
- A) a rightward shift in the saving curve and a rightward shift in the investment curve.
 - B) a rightward shift in the saving curve and a leftward shift in the investment curve.
 - C) a rightward shift in the saving curve, but no shift in the investment curve.
 - D) no shift in the saving curve, but a leftward shift in the investment curve.

A decrease in government spending directly increases government saving. The private sector would consume more, but because of the consumption smoothing motive, the reduction in private saving would not fully offset the increase in government saving.. So the saving curve shifts right. The investment curve does not shift. Nothing has affected the expected future marginal product of capital or the user cost of capital.

- 25) An invention that raises the future marginal product of capital would cause an increase in desired investment, which would cause the investment curve to shift to the _____ and would cause the real interest rate to _____.

- A) left; increase
- C) right; decrease

- B) left; decrease
- D) right; increase

More desired investment shifts the desired investment curve to the right (Investment is on the horizontal axis). We slide up the saving curve to a higher rate of interest.

Problems and Analytical Questions

Show all of your work on all problems and analytical questions.

Question 1

Suppose that you purchase a government bond for \$400. One year later, you receive principal and interest totaling \$436. During the year, the consumer price index rose from 150 to 162.

(a) Calculate the nominal rate of interest paid by this bond.

(b) Calculate the real rate of interest paid by this bond.

Question 2

Suppose that the marginal product of labor is:

$$MPN = 200 - 0.5N$$

The aggregate quantity of labor supplied is:

$$N = 300 + 8w$$

In these equations, N refers to the number of workers employed and w is the real wage rate.

(a) What is the equilibrium real wage?

(b) What is the equilibrium level of the number of workers employed?

Question 3

An economy has a full employment level of output, Y , equal to 5000. Government purchases, G , are equal to 1000.

Desired consumption is given by:

$$C^d = 3000 - 2000r + 0.10Y$$

Desired investment is given by:

$$I^d = 1000 - 4000r$$

In the equations above, Y is real output and r is the expected real rate of interest.

(a) What is the equilibrium level of the expected real rate of interest?

(b) What is the equilibrium level of desired consumption?