

Midterm 1- Economics 105 – Fall 2003

You will have 48 minutes to complete this exam. It is divided into 86 points. Budget your time.

Multiple Choice: (30 points total, 3 points each) Choose the best answer, mark on the scantron sheet.

For questions 1-2, assume the following information for an economy that produces two goods. Use **2002** as your base year.

	2002	2003
<u>beer:</u>		
price	\$3	\$4
quantity	8	10
<u>burritos:</u>		
price	\$5	\$6
quantity	3	2

- 1) The CPI for 2003 is:
 - a) 52/39.
 - b) 52/40.
 - c) 40/52.
 - d) 50/39
 - e) 40/50.
- 2) The GDP deflator for 2003 is:
 - a) 52/39
 - b) 52/40.
 - c) 40/52.
 - d) 50/39.
 - e) 40/50.
- 3) Which of the following is true about the CPI?
 - a) It tends to understate inflation.
 - b) It includes imported goods.
 - c) It includes capital goods.
 - d) It's basket of goods changes each period.
- 4) Suppose that IBM bought 1 million dollars worth of computer chips produced in California to make 5 million dollars worth of computers, to be sold to U.S. households next year. How does this affect U.S. GDP and its components.
 - a) GDP does not change, nor any component.
 - b) GDP rises \$6 mil., consumption rises \$5 mil., investment rises \$1 mil.
 - c) GDP rises \$5 mil, investment rises \$5 mil.
 - d) GDP does not change, investment rises \$1 mil.
- 5) According to the neoclassical model studied in class, when government expenditure rises (assuming consumption is not a function of the interest rate)
 - a) total saving rises, which raises the interest rate.
 - b) total saving rises, which lowers the interest rate
 - c) the interest rate rises and investment falls.
 - d) the interest rate falls and investment rises.
- 6) Compared to the answer in (5) above, if consumption depended on the interest rate in a negative way, the interest rate would move:
 - a) In the opposite direction
 - b) In the same direction, but more so.
 - c) In the same direction, but less so.
 - d) Not at all.
- 7) According to the neoclassical theory of factor demand, a rise in the supply of capital (ceteris paribus) will:
 - a) raise real wage and raise the real rental rate.
 - b) raise real wage and lower the real rental rate.
 - c) lower real wage and lower the real rental rate
 - d) lower real wage and raise the real rental rate.
- 8) According to the Solow model, we can permanently increase the rate of growth in capital per person by
 - a) increasing national saving rate.
 - b) decreasing population growth rate.
 - c) decreasing depreciation rate.
 - d) none of the above.
- 9) Which of the following is not required for you to conclude that China and the U.S. eventually will converge to the same level of income per person, according to Solow growth theory:
 - a) same initial capital stock level per person
 - b) same production functions
 - c) same population growth rates
 - d) same saving rates
 - e) all of the above are required
- 10) Which of the following is true about the endogenous growth model (AK model)?
 - a) It assumes diminishing returns to capital.

- b) It predicts that poor countries will tend to grow faster than rich countries.
- c) The growth rate of output per worker converges to zero in the long run.
- d) None of the above.
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Write your answers for the following two problems in your blue book.

Problem 1: Neoclassical Theory (36 points total, 12 points each part).

Suppose the supply side of an economy is characterized as follows:

$$Y = 4 K^{0.3} L^{0.7} \quad K = 150 \quad L = 150$$

Suppose the demand side of the economy is characterized by the following:

$$G = 100 \quad T = 100 \\ C = 20 + 0.6(Y-T) \quad I = 300 - 1000r$$

- a) Compute the equilibrium levels of the following four variables: investment, private saving, real interest rate, and the real wage rate (Assume a closed economy.) Show your work.
- b) Consider the effect of a rise in taxes (assuming no change in government purchases). For each of the variables you found in part (a) above, state whether its equilibrium value will rise, fall, not change, or is ambiguous. No computations necessary. Explain briefly the economic intuition.
- c) Suppose instead a fall in the supply of labor in the economy. For each of the variables you found in part (a) above, state whether its equilibrium value will rise, fall, not change, or is ambiguous. No computations necessary. Explain briefly the economic intuition.
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Problem 2: Solow Growth Theory (20 points total)

Suppose that a country has the following production function $y = 0.8k^{1/2}$ (in per worker terms). Suppose the saving rate is 0.60 (60 percent) and the depreciation rate is 0.20 (20 percent), with no population growth and with no technological progress.

- a) (12 points) Compute the maximum level of consumption per person that this economy can enjoy in steady state. Show your work.
- b) (8 points) If this economy had a positive population growth rate, how would this affect your answer to (a) above regarding optimal consumption: higher, lower, unchanged, or ambiguous. (No computation necessary.) Explain in 2-3 sentences in terms of economic reasoning why population growth has this effect.
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