Multiple Choice: (30 points total, 3 points each) Choose the best answer. Write in your blue book.

1) Suppose that total output in an economy consists of 50 Mankiw textbooks and 100 yellow highlighting pens, and suppose that the current price of a textbook is an outrageous $80, and the current price of a highlighting pen is $5. Then the:
   a) nominal GDP is $4500.
   b) real GDP is $4500.
   c) nominal GDP is 150.
   d) real GDP is 150.

2) Which of the following would count as investment expenditure in this year’s U.S. national accounts?
   a) I buy stock in IBM (a U.S. company).
   b) A Korean firm buys a computer from IBM.
   c) IBM builds computers this year to sell next year to private households.
   d) None of the above.

3) The consumer price index is different from the GDP deflator in that it:
   a) measures the average price of all goods and services.
   b) tends to overstate the level of inflation because of substitution bias.
   c) excludes imported goods.
   d) has weights that don’t change each year.

4) The equilibrium condition in the financial market is:
   a) saving equals Y – C – G.
   b) saving equals investment.
   c) saving equals zero.
   d) saving rate equals the interest rate.

5) According to the neoclassical model developed in class, when taxes are cut:
   a) private saving and government saving rise.
   b) private saving and government saving fall.
   c) private saving falls and government saving rises.
   d) private saving rises and government saving falls.

6) According to the neoclassical model, if there is a rise in investment demand at all interest rate levels (assuming consumption is not a function of the interest rate, r), then the equilibrium level of:
   a) investment rises and r rises.
   b) investment rises with no change in r.
   c) investment does not change, but r rises.
   d) none of the above.

7) Which of the following public policies could help reduce the natural rate of unemployment:
   a) Increase government-funded worker retraining programs.
   b) Raise the legal minimum wage.
   c) Raise the unemployment insurance benefits.
   d) All of the above.

8) Which of the following could explain why unemployment is so high in Europe:
   a) generous unemployment benefits.
   b) low degree of unionization.
   c) presence of efficiency wages.
   d) both a and c.

9) The endogenous growth model of \( y = Ak \) implies:
   a) the marginal product of capital is constant
   b) the growth rate of k is constant
   c) the growth rate of y is constant
   d) all of the above

10) Which of the following could explain why the U.S. has had sustained growth in output per person in steady state:
   a) a positive population growth rate
   b) continued growth in technology (A)
   c) a rise in the saving rate
   d) all of the above
Problem 1: Neoclassical Economy: (24 points total)
Suppose the supply side of an economy is characterized as follows:
\[ Y = 2K + 4L \]
\[ K = 200 \quad L = 100 \]
Suppose the demand side of the economy is characterized as follows (all in units of goods):
\[ G = 100 \]
\[ T = 100 \]
\[ C = 150 + 0.5(Y-T) \]
\[ I = 350 - 1000r \]
a) (12 points) Compute the equilibrium level of the following: real interest rate, investment, and consumption.
b) (6 points) Consider the effect of a rise in government purchases (with no change in taxes). For each of the variables you computed in part (a) above, state whether it rises, falls, or does not change. (No computations necessary).
c) (6 points) Suppose now that consumption is a negative function of the interest rate: assume the consumption function becomes: \[ C = 150 + 0.5(Y-T) - f(r) \]. How would your answers to part (b) above change? In particular, for each of the variables state whether it rises, falls, or doesn’t change; and also state if the movement in each variable is larger, smaller, or the same as your answer in (b). Explain.

Problem 2: Neoclassical Factors Market (18 points total, 6 points each part)
Consider an economy with the following Cobb-Douglas production function: \[ Y = F(K,L) = 8K^{1/2}L^{1/2} \].
The economy has 100 units of capital (K) and a labor force of 400 workers (L).
a) Compute the equilibrium real wage and the real rental rate for capital in this economy.
b) Suppose there is an increase in population due to immigration. How will this affect the real wage rate and the real rental rate (rise, fall, no change, uncertain)?
c) How will this immigration affect total national income (GDP), total payments to labor in the economy, and the share of total national income that is paid to labor? Explain briefly.

Problem 3: Solow Growth Model: (24 points total, 8 points each part)
Suppose the U.S. can be characterized by the production function: \[ Y = F(K,L) = 2K^{0.5}L^{0.5} \]. Suppose the depreciation rate is 8%, the population growth rate is 2%, and the saving rate is 10%. Assume there is no technological progress. Compute the following:
a) The steady state value of consumption per person.
b) The growth rate in steady state of total consumption (C) and of consumption per person (c).
c) The golden rule level of consumption per person.

Problem 4: Solow Growth Model Again (20 points total, 4 points each part)
Suppose there are two countries, A and B. For each of the cases below, state whether the steady state level of income per person in country A is higher, lower, or the same as in country B, or if it is impossible to tell for sure. Explain each case briefly. (Unless stated otherwise, you should assume that the two countries have the same underlying economic characteristics: same nonzero rates of saving, depreciation, and population growth, and the same production function in per-worker terms \[ y = k \] \((0 < \alpha < 1)\) with no technological progress.)
a) Country A has a higher saving rate.
b) Country A has a higher population growth rate.
c) Country A has a higher depreciation rate.
d) Country A has a higher capital share.
e) Country A has twice the saving rate and twice the depreciation rate of country B.

(10/23/01)