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

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

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>beach towels</td>
<td>price</td>
<td>$5</td>
</tr>
<tr>
<td></td>
<td>quantity</td>
<td>3</td>
</tr>
<tr>
<td>suntan lotion</td>
<td>price</td>
<td>$3</td>
</tr>
<tr>
<td></td>
<td>quantity</td>
<td>8</td>
</tr>
</tbody>
</table>

1) The GDP deflator for 2003 is:
   a) 40/52.
   b) 40/50.
   c) 50/39.
   d) 52/40.
   e) 39/50.

2) The CPI for 2003 is:
   a) 40/52.
   b) 40/50.
   c) 50/39.
   d) 52/40.
   e) 39/50.

3) The consumer price index
   a) Measures the average price of all goods and services produced in the economy.
   b) Ignores imported goods.
   c) Tends to understate the level of inflation because of substitution bias.
   d) None of the above.

4) All of the following actions are classified as investment in macroeconomics, except:
   a) You buy shares of stock in Intel (a company)
   b) Intel builds a new factory in Sacramento.
   c) Café Roma buys a new espresso machine.
   d) Your uncle buys a new home.

5) According to the neoclassical model of the factors market, a rise in supply of labor will _____ the real rental rate on capital and _____ the real wage:
   a) raise, raise
   b) raise, lower
   c) lower, raise
   d) lower, lower

6) According to the quantity theory of money, which of the following would tend to cause high inflation:
   a) low growth rate in money supply
   b) fall in money velocity
   c) low growth rate in GDP
   d) a high CPI
   e) none of the above

7) Which of the following might lower the natural rate of unemployment in France:
   a) Reduced work week at the same salary
   b) Cuts in unemployment benefits
   c) Cuts in worker retraining programs
   d) Efficiency wages

8) Which of the following are reasons for structural unemployment?
   a) Workers have different skills and interests.
   b) Geographic mobility takes time.
   c) Minimum wage laws may set real wages above the market-clearing level.
   d) Unemployment insurance may make workers unwilling to take available jobs.

9) How can the Solow model explain the trend of growth in output per person observed in U.S. data over the last century or longer?
   a) Increase in capital stock as the economy converges to steady state
   b) Population growth
   c) Technological progress
   d) All of the above

10) Endogenous Growth Theory (AK model) implies:
    a) A diminishing marginal product of capital
    b) Poorer countries tend to grow faster than rich ones, all else the same.
    c) The capital stock stops growing in the long run.
    d) The growth rate in capital per person is constant over time.
Problem 1: (44 points total)

Suppose the supply side of the California macroeconomy is characterized as follows:
\[ Y = 4 K^{1/3} L^{2/3} \]
\[ K = 125 \quad L = 125 \]
Suppose the demand side of the economy is characterized by the following:
\[ G = 100 \quad T = 100 \]
\[ C = 60 + 0.6(Y-T) \quad I = 200 - 1000r \]

a) (8 points) Compute the equilibrium levels of the following four variables: investment, consumption, private saving, and the real interest rate. (Assume a closed economy.) Show your work.

b) (8 points) Governor Schwarzenegger has promised to cut taxes. What effect will this have on the California economy – in particular state for each of the variables you found in part (a) above whether its equilibrium value will rise relative to the answer in part (a), fall, not change, or is ambiguous. No computations necessary. Explain briefly the economic intuition.

c) (8 points) How would your answer to (b) above change if consumption in California were a negative function of the interest rate. For each of the four variables state: rises more, rises less, rises same, falls less, falls more, falls same, no change, or ambiguous. No computations necessary. In 2-3 sentences explain why this assumption for consumer behavior might be more realistic.

d) (8 points) Return again to the consumption function given above. Governor Schwarzenegger has promised also to cut government spending. Assume that taxes and government spending both are cut an equal amount, so that there is no government budget deficit. How will this affect the four variables compared to their values computed in (a): rise, fall, no change, ambiguous? No computations necessary.

e) (12 points) Finally, consider the effect of an earthquake in the state, which destroys part of the capital stock. How should this affect the four variables compared to their values computed in (a): rise, fall, no change, ambiguous. How will it affect the real wage and the real rental rate on capital in the economy? No computations necessary. (Assume consumption function from part a.)

Problem 2: 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 saving rate is 10%, the population growth rate is 2%, and there is no technological progress. Using the Solow growth model, compute the following:

a) The steady state values of GDP per person and consumption per person.

b) The golden rule levels of GDP per person and consumption per person.

c) How would each of your answers in (a) change if the U.S. raised its saving rate by some amount: rise, fall, no change, ambiguous? Explain why in 2-3 sentences.
Problem 3: Growth and Convergence (15 points total, 5 points each)

Although the U.S. and Mexico share a large common border, Mexico has a significantly lower level of income per person than the U.S. Use the growth theories studied in class to analyze the prospects for convergence between the U.S. and Mexico, as directed below. (Assume unless stated otherwise that the underlying features of the two economies are the same: same saving rate (s), depreciation rate (δ), Cobb-Douglas production function (AKαL1-α), population growth rate (n), with no technological progress.)

a) Suppose that Mexico has a lower population growth rate than the U.S. State whether the level of income per person in Mexico in the long run will be higher than in the U.S., lower, the same, or if it is impossible to tell. Discuss your reasoning briefly.

b) Now re-answer the question in part (a) assuming instead that there is technological progress, and the rate of this progress is equal in both Mexico and the U.S. (Return to assuming population growth rates are equal for both countries.) Discuss your reasoning briefly.

c) Now re-answer the question in part (a) if you know instead that labor in Mexico receives a smaller share of national GDP than in the U.S. (Equal population growth rates again, with no technological progress.) Assume constant returns to scale in production, Euler’s Theorem holds, and assume that sA > (δ + n). Show your work and explain your reasoning.

(10/17b03)