Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 150 points (to be scaled up to 210 points) and is scheduled to take 75 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I can give extra time, but not much.

1) (10 points) Answer EITHER Part A OR Part B.
A) Suppose GDP grew at 5%, the capital grew at 4%, and labor grew at 3%. How much did the technology improve? Explain your logic.
B) How do we measure the effects of technology on the economy? Briefly explain why we do it that way.

2) (12 points) Explain EITHER the equation in Part A OR the equation in Part B.
A) $\Delta Y/Y = \Delta A/A + a_K*\Delta K/K + a_N*\Delta N/N$. Do not worry about explaining a_K and a_N, but do state what they mean and what we know about their value.
B) $c = f(k) - (n+d)*k$. Explain both "k" entries.

3) (14 points) Answer EITHER Part A OR Part B.
A) When we used K* to find the level of investment, we explicitly assumed that $K* = K_{t+1}$. What does that mean? Why might it be false?
B) Explain why an increase in the depreciation rate may have an ambiguous effect upon the level of investment.

4) (16 points) Answer EITHER Part A OR Part B.
A) Draw the S/I diagram for a small country with a balanced current account. Use it to explain the term *twin deficits*.
B) Suppose the government spends more, under which situation would interest rates go up the most, if the country is a closed economy, the country is a small open economy, or the country is a large open economy? Explain your logic. In which case would the interest rates go up the least? Explain your logic.

5) (16 points) Answer EITHER Part A OR Part B.
A) Illustrate the effects of an increase in the interest rate on the MPK^f/uc_K diagram. Explain why the curve(s) moved as drawn. What happens to the desired amount of capital and the user cost of capital?
B) Illustrate the effects of an increase in the depreciation rate on the MPK^f/uc_K diagram. Explain why the curve(s) moved as drawn. What happens to the desired amount of capital and the user cost of capital?

6) (16 points) Answer EITHER Part A OR Part B.
A) Suppose we export $500 worth goods and import $400 worth of goods. We pay $30 worth of factor payments abroad and receive $20 worth from abroad. How much is the current account balance? Show all work and briefly explain what you did. Suppose the only action which offsets these is an export or import of bonds. Would that be an export or importation of bonds and of how much? Explain your logic.
B) Explain the logic why the capital-financial account should be equal to the negative of the current account. Is an increase of US-owned assets abroad entered as a negative or a positive in the accounts balances? Explain your logic.

7) (18 points) Answer EITHER Part A OR Part B.
A) The *Endogenous Growth Model* results in the equation $\Delta Y/Y = sA - d$. What is s? What can the government do to increase s? Explain how that would have the desired result. Make sure you give two methods.
B) The *Endogenous Growth Model* results in the equation $\Delta Y/Y = sA - d$. What is A? What can the government do to increase A? Explain how that would have the desired result. Make sure you give two methods.

8) (20 points) Answer EITHER Part A OR Part B.
A) Draw the Solow Growth Model diagram. Illustrate the effects of an increase in population's growth rate. Explain why it moves as drawn. What happens to the capital-labor ratio and the output per worker? What does this imply about countries like India and Mexico which have high birth rates?
B) Draw the Solow Growth Model diagram. Use it to prove that we probably will not have the optimum capital-labor ratio. Which side of k_G do you think we are on? Explain your logic.

9) (28 points) Answer EITHER Part A OR Part B.
A) Draw the S/I diagram for a large country with a KFA deficit and the S/I diagram for the rest of the world. Explain how you know the large country has a KFA deficit. Illustrate the effects of an increase in the corporate tax rate in the rest of the world. Explain why the curve(s) moved as drawn. What happens to the levels of savings in both countries, levels of investment in both countries, the interest rate, and the size of the KFA deficit?
B) Draw the S/I diagram for a large country with a CA deficit and the S/I diagram for the rest of the world. Explain how you know the large country has a CA deficit. Illustrate the effects of a negative supply shock in the rest of the world. Explain why the curve(s) moved as drawn. What happens to the levels of savings in both countries, levels of investment in both countries, the interest rate, and the size of the CA deficit?