Please sign the following oath:

The answers on this test are entirely my own work. I neither gave nor received any aid while taking this test. I will not discuss the questions on this test until after 7:30 p.m. on June 7, 2005.

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Signature

Any test turned in without a signature indicating that you have taken this oath will be assigned a grade of zero.

Graph Instructions

When drawing diagrams, the following rules apply:

a. Completely, clearly and accurately label all axis, lines, curves, and equilibrium points.

b. The original diagram and equilibrium points must be drawn in black.

c. The first shift of any line(s) and the new equilibrium points must be drawn in red.

d. Any subsequent shifts in curves and new equilibrium points must be drawn in another color, preferably blue and then green.

Do NOT open this test until instructed to do so.
A. **Multiple Choice Questions.** Circle the letter corresponding to the best answer. (30 points.)

1. Portugal and Greece have identical economic attributes except that Portugal has a higher private saving rate. If both countries are below their steady states, then:
   
   a. Portugal will grow faster than Greece.
   b. Greece will grow faster than Portugal.
   c. Portugal and Greece will grow at the same rate.
   d. The relative growth rates of Portugal and Greece are indeterminate.

2. According to the *Quantity Theory of Money*, a doubling of the money supply will lead to:
   
   a. A decrease in interest rates because the money supply is now larger.
   b. An increase in real GDP and a higher price level.
   c. A permanent rise in inflation.
   d. A doubling of nominal GDP and no change in the velocity of money.

3. Suppose that the government budget is always in balance and consumption rises as a proportion of economic output. If investment remains the same, then:
   
   a. The current account balance must fall.
   b. The current account balance must rise.
   c. Exports must fall.
   d. Inflows of funds from abroad must decrease.

4. According to the *New Growth Theory*, all of the following should lead to more innovation and technological progress and, hence, faster growth in income-per-worker EXCEPT:
   
   a. More protection of intellectual property rights.
   b. A greater openness to international trade.
   c. A law making it easier to imitate competitors’ inventions.
   d. More government subsidies for research and development.
5. Suppose that real economic growth is zero and the central bank permanently increases the rate of money growth by 2%. According to the *Quantity Theory of Money*, what happens in the long run to the level of real money balances, the ratio M/P?

   a. It will rise.
   b. It will fall.
   c. It will remain at the same initial rate.
   d. It is indeterminate.

6. Suppose the central bank has a policy of price level targeting, i.e., stabilizing the price level at a given level. If economic output suddenly rises to a higher level due to greater productivity with no change in velocity, then the central bank should:

   a. Increase the level of the money supply.
   b. Decrease the level of the money supply.
   c. Permanently increase the rate of growth of the money supply.
   d. Permanently decrease the rate of growth of the money supply.

7. According to the theory of conditional convergence of income-per-worker, we should expect:

   a. Countries in Africa to converge to the industrialized countries.
   b. South American countries to converge to North American countries.
   c. Southern U.S. states to converge to northern U.S. states.
   d. South Korea to converge to North Korea.

8. In the *Solow Growth Model*, all of the following are true EXCEPT:

   a. Steady state growth is independent of current income levels.
   b. Higher saving rates lead to permanently higher growth rates.
   c. Current growth in standards of living depends on the distance from the steady state.
   d. If the labor force doubles, then the size of the capital stock and income will also double in the long run.
9. According to Real Business Cycle Theory, a rise in productivity raises wages and thus leads to a rise in hours worked. Suppose that there is a 1% increase in productivity growth and this stimulates a 2% increase in employment. Then, overall, the rise in productivity will raise economic growth by:

   a. 1%.
   b. 1.4%.
   c. 2.0%.
   d. 2.4%.
   e. 3.0%.

10. All of the following are true EXCEPT:

    a. In a closed economy, budget deficits reduce investment and income-per-worker.
    b. According to the growth accounting formula, a 1% increase in the capital stock in the U.S. will increase economic output by 0.3%.
    c. If exports remain the same, the implementation of import restrictions on Chinese goods would lower savings and investment in the U.S.
    d. If national savings (Sp + Sg) fall, then investment will necessarily fall.
B. Solow Growth Model Problems. Answer both of the following questions.

1. In 1996, Greece was at its steady state. That same year, Athens was awarded the 2004 Summer Olympics. Over the next 8 years, Greece experienced a massive investment boom. (30 points.)

   a. Use a basic Solow Growth Model to clearly show what effects the investment boom had on income-per-worker in Greece.
b. Provide a brief economic explanation for the adjustment process that took place during the transition period. Be sure to also discuss the pace of economic growth during the transition period and in the long run.

c. Provide a brief economic explanation of how the investment boom was financed.
d. Once the 2004 Olympics were successfully completed, the investment boom abruptly stopped and returned to its 1996 level. On your diagram for part a, clearly show how these events would affect the steady state and income-per-worker.

e. Provide a brief economic explanation of what will happen to economic growth and income-per-worker during the transition period in the years following the Olympics.
2. President Bush has been advocating the reform of Social Security because Americans are deemed to be under-saving for their retirements. Suppose that the U.S. economy is at its steady state in 2004 and that job skills and productivity rise with age. In response to the President’s warnings about Social Security, the private saving rate in the U.S. increases. At the same time, the large Baby Boom generation starts retiring in substantial numbers, a process that will take place over 20 years. This lowers the average age of the workforce. Assume that the effects from the increase in savings dominate all other effects. (40 points.)

a. Use a basic Solow Growth Model to clearly show what effects these events will have on the U.S.’s level of income-per-worker.
b. Provide a brief economic explanation of the adjustment process that occurs during the transition period. Be sure to discuss what happens to the level of income-per-worker and to the rate of economic growth during both the transition period and in the long run.