

Name:

QUIZ 3: Econ 102

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Please answer the following 10 questions for 50 points. Be as BRIEF as you can. You have 30 minutes.

1. (4 points) Define a balanced growth path and compare this definition with that of a steady state.
2. (8 points) Indicate whether and how could a Solow growth model with technological progress at a constant rate satisfy the Kaldor growth facts.
3. (4 points) Consider two countries. In both of them there is investment of 20% of output, in both of them depreciation is 7%. In country A population grows at 1% and in country B it grows at 2%. What does the Solow model predict about their long run output differences in the absence of technical change? What about the long run difference in capital.

4. (4 points) Describe what happens in the growth model with technological growth if a country that is in a balanced growth path is hit by a horrible hurricane that wipes out half the valuables in the country but, fortunately, kills no people.

5. (2 points) Given the following law of motion for per capita capital $\dot{k} = sk^\alpha - \delta k$, find the steady state value of k .

6. (4 points) In the context of the Solow growth model without technological change, a positive constant growth rate of capital is both feasible and consistent with a constant growth rate of output. True? false? Briefly discuss.

7. (5 points) Imagine, in the context of the Solow growth model without technological change, that two countries start quite poor but one country is even poorer than the other. Please describe their performance over time.

8. (4 points) Write a human capital accumulation equation where output is used and another where the only way to have more human capital is by studying more.
9. (9 points) Imagine that there are two countries. One of them has an output per capita 10 times larger than the other. Imagine that they have the same birth rate (2%), saving rate (20%), depreciation rate (10%) and capital share (1/3) and total factor productivity A .
- Using the standard Solow model, write an expression for the ratio between the two rates of return of capital.
 - State why this may be puzzling.
 - If the production function were $Y = K^\alpha H^\beta L^{1-\alpha-\beta}$, explain how differences in human capital could resolve this puzzle.
10. (6 points) The Solow growth model with exogenous technological change is capable of accounting for the performance in the last century of OECD countries. True? False? discuss.