

Instructions:

1. This part of the exam is to be taken in class. It is closed-book; no outside materials may be consulted.
 2. Answer each question concisely. None requires a long answer. Add a graph or equation if it clarifies your answer, but be sure to label axes and curves and to define variables that might be ambiguous.
 3. You have until 9:50 to finish the exam. If time seems scarce, use it where its marginal product is highest. Try to get at least a sentence or two written for every question before you elaborate at length on any single answer.
 4. You are responsible for making sure that you understand each question clearly. In case of any ambiguity, be sure to consult the instructor.
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1. (30 points) Briefly define each of the following:
 - a. Saddle-point equilibrium
 - b. Steady-state balanced growth path
 - c. Ricardian equivalence
 - d. Convergence (in a growth-model context)
 - e. Knowledge vs. human capital
 - f. Transversality condition
2. (10 points) In the Ramsey growth model, what does it mean (in terms of an individual's preferences and choices) if there is a decrease in the marginal rate of time preference (ρ)? How is per-capita consumption affected by the resulting shift in the $\dot{k} = 0$ line both immediately and in the steady state? Explain the latter answers intuitively in terms of the former.
3. (10 points) Explain the intuition of the following equation, which holds in the Ramsey model if the depreciation rate is δ :

$$\frac{\dot{C}(t)}{C(t)} = \frac{1}{\theta} (f'[k(t)] - \delta - \rho).$$

4. (10 points) Consider the following model:

$$Y(t) = K(t)^\alpha H(t)^{1-\alpha} L,$$

$$\dot{K}(t) = s_K Y(t),$$

$$\dot{H}(t) = s_H Y(t),$$

where α , s_K , and s_H are constants and the labor force is not growing. Is there any source of exogenous growth in this model? Without solving the equations for the model, do you expect endogenous growth at a positive rate or do you expect this economy to converge to a steady state with growth dictated by exogenous factors? Explain the rationale for your answer as completely as possible.

5. (10 points) In Diamond's overlapping-generations model, accumulation of capital is the only means of provision for retirement. Explain why this fact may lead to dynamic inefficiency. What government policy could improve a dynamically inefficient economy?