

**Final**

A. Short problems

You should allocate eighty minutes of exam time (about ten minutes per problem) to this section.

- (1) Depict graphically (i.e., bid rent curves) the effects of the following changes on city radius and on the division of city land between the CBD and the SRD. Just consider the first-round effect rather than any additional effects (i.e., a partial equilibrium rather than general equilibrium analysis):
  - a) Holographic technology is improved, allowing for 3-D videoconferencing.
  - b) The workweek is shortened from five days per week to four days per week.
  - c) Agricultural tariffs rise, causing the price of agricultural products to rise.
  
- (2) Consider the monocentric city of New Swampville, a city that recently experienced flooding in its center which has permanently decreased the supply of developable CBD land by 10 percent. Predict the effects of the flooding on New Swampville, where you might want to consider in particular the effects on: land rent in the CBD; land rent in the residential district; employment density; residential density; the equilibrium wage; total employment.
  
- (3) In the city of Newfield, all new housing is built on the city's edge (10 miles from the city center). The city institutes the following policy: Every new house will be subject to a \$1000 development tax. The tax is paid by the firm that builds the house.
  - a) Who will actually pay the development tax?
  - b) Will the development tax affect the radius of the city? Explain (use a graph if you like).
  - c) What would be the economic justification for the city's instituting this practice? Do you agree with this policy? Discuss.

- (4) Consider an apartment building that does not generate enough rental revenue to cover the landlord's costs.
- Use a graph to show this situation.
  - Suppose the local government provides a 50 percent subsidy for operating, maintenance, and repair costs. Show the effects of the subsidy program on your graph. What happens to the optimum quantity of housing services  $Q$  and the likelihood of retirement?
  - What would be a justification for the local government's operating this type of subsidy program?
- (5) Draw a budget constraint showing the tradeoff between housing consumption and all other goods. Show a household's choice (point A) along the budget constraint, including the indifference curve corresponding to this point.
- Now show what happens to the budget constraint and to the household's choice if the government gives the household \$100 cash. Draw this budget constraint, label the household's new choice point B, and draw the indifference curve corresponding to this point.
  - Suppose the government instead provides a housing subsidy voucher that lowers the effective cost per unit of housing that the household buys, such that it could afford B (i.e., B is a point on the new budget constraint as well). Draw this new budget constraint.
  - Explain why the household will now consume more housing, i.e., pick a point on the new budget constraint to the right of B. Mark such a point (C) on the budget constraint from (b) and draw the indifference curve corresponding to this point.
- (6) Consider the city of Congestiopia, which has both a congestion problem and fixed traffic volume.
- Depict graphically the model of auto travel in Congestiopia.
  - What happens in Congestiopia when a congestion tax of \$5 per trip is imposed?
  - Andrew, a resident of Congestiopia, complains that the tax has now made him worse off by \$5 per trip, so he opposes the congestion tax. Is this a valid complaint? Discuss.
  - What might Congestiopia want to do with the revenue from the congestion tax?

- (7) The city of Transitopolis is debating whether or not to privatize its mass transit system.
- a) Draw a graph showing the mass transit system's average and marginal cost curves and demand curve, under the assumption that mass transit is a natural monopoly
  - b) What should the price be per ride? Discuss. How could Transitopolis compel the operator of the mass transit system to charge this price?
- (8) Suppose that Gotham City doubles the required prison sentence for burglary (its only crime). Consider the following quote from Robin: "If my assumptions are correct, the longer prison sentence will increase the crime rate."
- a) What are Robin's assumptions?
  - b) Use a graph to illustrate his prediction.
  - c) Suggest an alternative policy that, given Robin's assumptions, would reduce the crime rate in Gotham City.

**Final**

B. Essay questions

You should allocate eighty minutes of exam time to this section, twenty minutes to answering each question. Your grade on these answers will depend on the coherence and completeness of the answer and on your demonstrating knowledge of the material covered in this course. Use equations, graphs, or diagrams to illustrate your points when helpful.

(1) xx

(2) xx

(3) xx

(4) xx