

Urban Economics (ECO333) Term Test

February 3, 2015 – 6:10pm - 7:10pm

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Instructions: on your answer book, your surname must be printed clearly on the left side of the cover page's name line (where you see "surname" under the line); your given name must be printed clearly on the right side of that line (where you see "given names" under the line — only one given name is required); the given name you use must be the same given name shown on the class registration list next to your surname. Non-programmable calculators and drawing instruments are allowed.

Answer either Question 1 or Question 2; each question is worth 100 percent. You should write "Q1" or "Q2" on the cover page to identify the question you selected.

1. This question is based on the rectangular city manufacturing model. The usual assumptions and notation apply.

You are told that in equilibrium, 100 land owners are renting their land to manufacturing firms. Each land owner owns 10 hectares of land, which rent for a total of \$1425 per day (\$142.50 per hectare).

Supply and demand functions for manufactured output (bicycles) are:

Supply: $P = 25 + 0.025 B$.

Demand $P = 160 - 0.020 B$.

Calculate the marginal and average cost of non-land production inputs.

And calculate the marginal and average cost of freight.

2. Using diagrams, apply the factor substitution (office building) model to show the impact of a tax on each firm's capital input. One of your diagrams should illustrate the case where factor substitution is possible. The other diagram should illustrate the case where factor substitution is not possible.

The firm's land cost, and land rent per hectare, should be shown in both diagrams. Your discussion should compare these amounts with the corresponding amounts in no-tax equilibrium.

Use your diagrams to show that the capital tax always reduces land rent per hectare, compared with no-tax equilibrium.

(Your answer to this question should not exceed three pages double spaced, in addition to the page or pages you use for the diagrams.)