UNIVERSITY OF AGDER

SCHOOL OF BUSINESS AND LAW

EXAM

Course code: **BE-409**
Course name: **Real Estate Economics**

Date: October 13, 2016
Duration: 4 hours

Number of pages incl. front page: 2

Resources allowed: None

Notes: You may answer either in English or Norwegian

Assignment 1 (25%).

Assume a city with one central business district (CBD).

a) Discuss which factors influence a firm's decision on where to locate within the city.

Now, assume that there are a number of different types of profit maximizing firms, and there is perfect competition in the economy.

Let:

Q = quantity produced
P = price of product
A = variable unit costs of production
C = structure rent (fixed)
d = distance to center
f = lot size
s = transportation costs per unit of product
$r_c(d)$ = rent per unit of land

By assumption P, A and C do not vary across locations within this city.

b) Derive and illustrate the zero-profit land-rent function of a profit maximizing firm.
c) What is the explanation of this land-rent gradient?
d) Why would an industry firm typically locate at more distant locations from the city center? Explain.
e) Illustrate the land rent gradient for two different types of firms: commercial and industrial.
f) What is required for a spatial equilibrium?

Assignment 2 (30%).

Please provide short and precise answers to the following:

a) Explain the housing wealth effect and discuss the different channels through which a housing wealth effect may materialize.
b) From the perspective of an individual buyer or investor in the housing market, what are the major risks the buyer will be exposed to when buying a house?
c) What defines a house-price bubble, and what are the conventional signs of a house-price bubble?
d) What is required for a house-price bubble to burst and why is a house-price bubble problematic?
e) Who will carry the burden of a land value tax? Explain.

Assignment 3 (45%)

Density of development is an important determinant of the location rent that can be obtained from a site. Assume a profit maximizing landowner who develops a site for residential use only.

a) What will the landowner have to take into account when deciding on the optimal level of density?

Let density be given by the ratio *F*, where *F* denotes the ratio of housing floor area to land area. Assume that housing price (per floor area) and cost of construction (per floor area) are given by:

$$P = \propto -\beta F \text{ and } C = \mu + \omega F \, .$$

b) Make the additional assumptions necessary and derive by means of a model the profit maximizing landowner's optimal level of *F*. Show this result also graphically, and identify on the illustration both the corresponding value of land and housing profit.

Assume that for some reason, the landowner's site is considered more desirable. This is reflected by an increase in α.

c) How will this alter the optimal level of density (*F*)? Explain and show graphically.
d) What will be the effect on housing prices and land value?

Let demolition costs associated with clearing a square foot of land be given by δF^0, where F^0 denotes the preexisting level of density.

e) Under which condition will redevelopment occur?