Economics 11: Practice Final

September 20, 2009

Note: In order to give you extra practice on production and equilibrium, this practice final is skewed towards topics covered after the midterm. The actual final will test all the material.

Part I: Short Questions

Question 1

True or false? The allocation of tax burden between consumers and producers depends on whether the tax is imposed on consumers or producers. If true, explain why. If false, what does it depend on?

Question 2

Using a graph, discuss the welfare effects of an import tariff. Who gains, who loses from the tariff, and what are the net welfare effects?

Question 3

What is the supply function for a perfectly competitive industry with constant returns to scale? What will be the equilibrium price and equilibrium profits for this industry?

Question 4

State the First Welfare Theorem, and illustrate the result using a graph for a simple two–agent, two–good endowment economy.

Question 5

Assume utility is quasilinear in \( x \) and the demand is given by \( x = 10 - p \). Find the consumer surplus when \( p = 5 \).

Question 6
Show graphically the income and substitution effects, when the price of X decreases (assume X is a normal good).

**Part II: Exercises**

**Question 1**

An agent lives for 2 periods. In period 1 her income is 500. In period 2 her income is 0. The interest rate is 100%. The agent’s utility is given by 

\[ u(x_1, x_2) = x_1 x_2 \]

where \( x_1 \) is consumption in period 1 and \( x_2 \) is consumption in period 2.

Solve for the agent’s optimal consumption.

**Question 2**

A firm has production function \( f(z_1, z_2) = z_1^{1/4} z_2^{1/4} \). The prices of the inputs are \( r_1 \) and \( r_2 \).

a) Find the firm’s demand for inputs (as a function of output and the input prices).

b) Find the cost function of the firm.

c) For \( r_1 = 4 \) and \( r_2 = 1 \), find the firms supply function.

**Question 3**

Wheat is produced under perfectly competitive conditions. Individual wheat farmers have U-shaped, long-run average cost curves that reach a minimum average cost of $3 per bushel when 100 bushels are produced.

a) If market demand curve for wheat is given by \( Q = 2,600 - 200p \). What is the long-run equilibrium price of wheat? How much total wheat will be demanded and how many wheat firms will there be?
b) Suppose demand curve shifts outward to \( Q = 3,200 - 200p \). If farmers cannot adjust their output in the short run, what will market price be with this new demand curve? What will the profit of typical firm be?

c) Given the new demand curve described in part (b), what is the new long-run equilibrium price, quantity produced and equilibrium number of farmers?

**Question 4**

Consider a 2 \( \times \) 2 exchange economy with two individuals (A and B) and two goods \( (x \text{ and } y) \). A’s preferences are given by

\[
u_A = x_A^{1/5} y_A^{4/5}\]

B’s preferences are given by

\[
u_B = x_B^{4/5} y_A^{1/5}\]

The endowments are \( \omega^A = (8, 12) \) and \( \omega^B = (12, 8) \).

a) Find the equilibrium prices.

b) Find the equilibrium allocation.

c) Derive the equation of the contract curve.

d) Sketch an Edgeworth box showing endowments, competitive equilibrium prices and consumption choices, and indifference curves through the endowments and through the equilibrium consumption choices.

**Question 5**

Consider a 2 \( \times \) 2 exchange economy with two individuals (A and B) and two goods \( (x \text{ and } y) \). Each agent has utility function

\[
u = x^{1/2} + y^{1/2}\]

The endowments of the agents are \( \omega_A = (40, 0) \) and \( \omega_B = (0, 10) \).

Find the equilibrium prices and allocations.