Microeconomics - S3

Midterm Exam – November 2019

Note: 200 points can be achieved in this exam. The grade is computed by dividing the number of points achieved by 10. It is forbidden to use a scientific calculator.

Questions about the lecture (100 points)

Please restrict your answer to 15 lines maximum. Any text written beyond 15 lines will not be considered.

1) (50 points) How did we define market power in this course, for instance in the case of a monopoly? What is the link between market power and the elasticity of demand? Define the Lerner index and give the formula that links it to the elasticity of demand at the optimum of the monopolist. Is the difference P-MC (the mark-up) increasing or decreasing in (the absolute value of) the elasticity of demand holding MC constant? Why does this make sense from the point of view of the monopolist?

2) (50 points) Imagine a perfectly competitive market where the supply curve is increasing and the demand curve decreasing. Describe the effect that a price ceiling lower than the equilibrium price has on: the price and the quantity exchanged, consumer surplus, producer surplus and total surplus. Which units of goods are responsible for this change in surplus? Why could these units of goods generate surplus and why does the price ceiling prevent these units from being traded?

Exercise 1, Competition in the Short Run (30 points)

Consider a firm that has a short-run cost function C(y)=2y²+4y+2. The firm operates in a competitive market.

1. (8 points) What are the marginal cost function, the average cost function, the average variable cost function and the average fixed cost function?
2. (6 points) Define the threshold of short-run shutdown and long-run shutdown. What are these threshold?
3. (8 points) Draw in the same graph the short-run cost function, the average cost function and the average variable cost function.
4. (5 points) What is the firm's supply function? Draw it in the preceding graph.
5. (3 points) Assume that 36 firms are active in this market. What is the industry supply function?

Exercise 2, Production quotas (30 points)

In the market for a good, the demand function is given by $Q_d(p)$=30-2p and the supply function is given by $Q_s(p)$=p-6.

1. (4 points) Please provide the values of the equilibrium price and the equilibrium quantity.
2. (6 points) What are the consumer surplus and the producer surplus?
3. (4 points) Is there a deadweight loss? Explain why and if yes, calculate it.
4. (6 points) Assume that the government imposes a quota of 4 units on the production. What will be the traded quantity and the price?
5. (6 points) How much is the consumer surplus and the producer surplus?
6. (4 points) Is there a deadweight loss? If yes, how much is it?

Exercise 3, Monopoly (40 points)

Consider a monopolist with a cost function $C(q) = q^2 + 6q$. The monopolist faces a demand $D(p) = 18 - p$.

1. (4 points) What is the average revenue, the marginal revenue and the marginal cost?
2. (8 points) What quantity would a monopolist choose? What is the monopoly price?
3. (8 points) What would be the socially efficient equilibrium price and equilibrium quantity?
4. (12 points) Compute the deadweight loss of monopoly.
5. (8 points) The government sets a price ceiling of 12. What quantity would the monopolist produce? Also compute the deadweight loss.