ECO5002 Introduction to Economics

# Quiz 2

(Total Points: 30, Due on August 11$^{\text{th}}$, 2024)

## 1 Question 1

Answer the following questions with necessary explanations:

1. **(2pts)** How does a lump-sum tax affect the budget constraint?
2. **(2pts)** Show one example in which the transitivity of preferences does not hold.
3. **(2pts)** What is the difference between Giffen good and inferior good?
4. **(2pts)** What is the relationship between long-run costs and short-run costs?
5. **(2pts)** Evaluate the statement: *since market power induces dead-weight loss, the patent system should be banned to prevent monopoly.*

## 2 Question 2

You consume only soda and pizza. One day, the price of soda goes up, the price of pizza goes down, and you are just as happy as you were before the price changes. Soda and pizza are not perfect complements.

1. **(2pts)** Illustrate this situation on a graph.
2. **(2pts)** How does your consumption of the two goods change?
3. **(2pts)** Can you afford the bundle of soda and pizza you consumed before?

## 3 Question 3

Consider a consumer with preferences defined by the utility function

$$u(x_1, x_2; \xi) = -\max\{|x_1 - \xi|, |x_2 - \xi|\}, \quad \xi > 0.$$

1. **(2pts)** Plot the indifference curves of this utility function.
2. **(2pts)** Suppose the budget constraint is $p_1 x_1 + p_2 x_2 \leq m$. For all possible values of $p_1, p_2 > 0$, find the Marshallian demands for such a consumer.

# 4 Question 4

Henry Potter owns the only well in town that produces clean drinking water. He faces the following demand, marginal revenue, and marginal cost curves:

$$\text{Demand:}P = 70 - Q,$$
$$\text{Marginal Revenue:}MR = 70 - 2Q,$$
$$\text{Marginal Cost:}MC = 10 + Q.$$

1. **(2pts)** Graph these three curves. Assuming that Mr. Potter maximizes profit, what quantity does he produce? What price does he charge? Show these results on your graph.
2. **(2pts)** Mayor George Bailey, concerned about water consumers, is considering a price ceiling that is 10 percent below the monopoly price derived in part 1. What quantity would be demanded at this new price? Would the profit-maximizing Mr. Potter produce that amount? Explain. *(Hint: Think about marginal cost.)*
3. **(2pts)** George's Uncle Billy says that a price ceiling is a bad idea because price ceilings cause shortages. Is he right in this case? What size shortage would the price ceiling create? Explain.

# 5 Question 5

A small nation of ten people idolizes the TV show *The Voice*. All they produce and consume are karaoke machines and CDs, in the following amounts:

| | $Q_{\text{Karaoke}}$ | $P_{\text{Karaoke}}$ | $Q_{\text{CD}}$ | $P_{\text{CD}}$ |
|---|---|---|---|---|
| 2017 | 10 | 40 | 30 | 10 |
| 2018 | 12 | 60 | 50 | 12 |

where $Q$ denotes quantity and $P$ denotes price.

1. **(2pts)** Using a method similar to the CPI, compute the percentage change in the overall price level. Use 2017 as the base year and fix the basket at 1 karaoke machine and 3 CDs.
2. **(2pts)** Using a method similar to the GDP deflator, compute the percentage change in the overall price level. Also use 2017 as the base year.