# Exam Questions

*Introductory Economics*

Fall 2025

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**Question 1:** Which of the following activities have zero opportunity cost?

A. To see a concert with a free ticket obtained from a lucky draw

B. To attend college fully on scholarships

C. To participate in the demonstration for equality in Nyhavn, Copenhagen

D. **None of the above. All of the events above have opportunity costs.**

**Question 2:** Changes in the price of a good lead to:

A. **Change in the quantity supplied of the good.**

B. Changes in supply.

C. Changes in demand.

D. No effects in quantity supplied or demanded.

ANSWER

A. Changing *only* the price leads to changes in the **quantity supplied**. This is graphically represented as a movement *along* a given supply curve. Hence, **answer A** is correct.

$$P_X \text{ changes } \Rightarrow Q_X^S \text{ changes as a function of } P_X$$

B/C. 'Supply' and demand' are the entire curves/relationships, not single points. A change in *supply* refers to a **shift** of the *entire* supply curve. This is caused by changing factors *other* than the price of the good itself, such as input prices, technology, the number of firms, or taxes. Similary, a change in *demand* refers to a **shift** of the *entire* demand curve caused by factors like income, tastes, or prices of related goods. A change in the good's own price leads to a change in the *quantity demanded* (movement along the curve), not a change in demand.

D. Economic theory (Law of Supply and Law of Demand) states that price is the primary determinant of both quantity supplied and quantity demanded; therefore, a price change definitely has an effect.

**Question 3:** To solve the traffic congestion problem in Copenhagen, the government is considering policies to reduce private cars on the road. Which of the following policy will **NOT** be helpful in achieving this goal?

A. To provide subsidy to the people who ride a bike.

B. To implement a higher tax on car purchase.

C. To implement a higher tax on gasoline.

D. **To charge a higher price on public transport.**

**Question 4:** The quantity demanded of a good decreases by 20% when its price increase by 2%. Which of the followings best fit this good?

A. This good has no close substitutes.

B. This is a necessity good.

C. **This is more likely to happen in a short-run.**

D. This is an inferior good.

ANSWER

The definition of an inferior good is a good for which $I \uparrow \implies Q_X^d \downarrow$
On the other hand, a normal good satisfies $I \uparrow \implies Q_X^d \uparrow$
Neither of these are applicable here.

A necessity good is a good is an elastic good: $|E_{Q_X^d, P_X}| < 1$
A luxury good is a good that is inelastic: $|E_{Q_X^d, P_X}| > 1$

**Question 5:** Suppose we observe a decrease of the equilibrium price of potato and an increase of the equilibrium quantity. Which of the following best fit the observed data?

A. An increase in demand with supply unchanged

B. A decrease in supply with demand unchanged

C. **An increase in supply with demand unchanged**

D. An increase in demand coupled with a decrease in supply

ANSWER

Equilibrium quantity moves in the same direction as the curve shift for both supply and demand, but price moves in opposite directions:

- Demand ↑: $P \uparrow, Q \uparrow$
- Supply ↑: $P \downarrow, Q \uparrow$

Since $P$ fell and $Q$ rose, this must be a positive supply shift.

**Question 6:** The cross price elasticity between good x and good y is found to be positive. We conclude that good x and good y are:

A. normal goods

B. inferior goods

C. **substitutes**

D. complements

ANSWER

Cross price elasticity $\epsilon_{xy} > 0$ means that if the price of $Y$ goes up, the demand for $X$ goes up. This implies consumers are switching from $Y$ to $X$, making them substitutes.

**Question 7:** The CEO of a large restaurant chain said, "For each 1 percent price increase, we lose 5 percent of our diners." We can conclude that:

A. demand is price inelastic.

B. a price increase will decrease total revenue.

C. the price elasticity is -0.5.

D. **a price increase will decrease total revenue.**

ANSWER

The elasticity is $\epsilon = \frac{-5\%}{+1\%} = -5$. Since $|\epsilon| > 1$, demand is elastic. When demand is elastic, the percentage drop in quantity outweighs the percentage rise in price, causing Total Revenue ($P \times Q$) to fall. (Note: While the elasticity is technically -5, not -0.5, the most robust inference about revenue is the correct choice here).

**Question 8:** Suppose the (inverse) demand for a product is $P = 40 - Q$ and (inverse) supply of the product is $P = 4 + 2Q$. The equilibrium quantity, price, and consumer surplus (CS) would be:

A. $Q = 12, P = 28, CS = 72$

B. $Q = 8, P = 14, CS = 36$

C. $Q = 12, P = 28, CS = 72$

D. $Q = 8, P = 14, CS = 72$

ANSWER

Set Demand = Supply:

$$40 - Q = 4 + 2Q \implies 36 = 3Q \implies Q = 12$$

Substitute $Q$ back to find $P$:

$$P = 40 - 12 = 28$$

Consumer Surplus is the area of the triangle below the demand intercept ($P = 40$) and above the market price ($P = 28$):

$$CS = 0.5 \times \text{Base} \times \text{Height} = 0.5 \times 12 \times (40 - 28) = 0.5 \times 12 \times 12 = 72$$

**Question 9:** A price ceiling is

A. the minimum legal price that can be charged in a market.

B. **the maximum legal price that can be charged in a market.**

C. higher than the initial equilibrium price.

D. equal to the initial equilibrium price.

**Question 10:** Suppose the production function is given by $Q = \min[3K, 4L]$. What is name of this production function form and what is the average product of labor ($AP_L$) when 15 units of capital and 10 units of labor are employed?

A. Cobb-Douglas, $AP_L = 4$

B. **Leontief,** $AP_L = 4$

C. Cobb-Douglas, $AP_L = 3$

D. Leontief, $AP_L = 3$

ANSWER

The form $Q = \min[aK, bL]$ is a **Leontief** (fixed proportion) function. Substitute $K = 15, L = 10$:

$$Q = \min[3(15), 4(10)] = \min[45, 40] = 40$$

Average Product of Labor:

$$AP_L = \frac{Q}{L} = \frac{40}{10} = 4$$

**Question 11:** Suppose the production function is $Q = 3K + 4L$. The marginal rate of technical substitution is:

A. **4/3**

B. 2/3

C. 8/3

D. 5/6

ANSWER

For a linear production function $Q = aK + bL$, the marginal products are constant: $MP_K = 3$ and $MP_L = 4$.

$$MRTS_{LK} = \frac{MP_L}{MP_K} = \frac{4}{3}$$

**Question 12:** A firm uses labor (L) and capital (K) as inputs to produce. If the price of inputs are $w = 60$ DKK, $r = 200$ DKK, and marginal products are $MP_L = 30, MP_K = 100$, the firm:

A. **is cost minimizing.**

B. should use less L and more K to cost minimize.

C. should use less K and more L to cost minimize.

D. is profit maximizing but not cost minimizing.

ANSWER

Cost minimization requires the "bang for the buck" to be equal across inputs:

$$\frac{MP_L}{w} = \frac{30}{60} = 0.5$$

$$\frac{MP_K}{r} = \frac{100}{200} = 0.5$$

Since the ratios are equal, the firm is optimizing.

**Question 13:** Regarding isoquants and isocosts, which of the followings is NOT correct?

A. An isoquant defines the combinations of inputs that yield the producer the same level of output.

B. An isocost line defines the combinations of inputs that yield the producer the same cost.

C. **An isoquant should never intersect with an isocost line.**

D. The producer is cost minimizing at the point of tangency between an isoquant and an isocost line.

**Question 14:** Regarding the average and marginal costs, which of the following is NOT correct?

A. Average total cost increases when marginal cost curve is above the average total cost curve.

B. The marginal cost curve intersects the average total cost curve at the minimum point of average total cost curve.

C. The marginal cost curve intersects the average variable cost curve at the minimum point of average variable cost curve.

D. **Marginal cost decreases when average fixed cost decreases.**

ANSWER

Average Fixed Cost (AFC) *always* decreases as output increases. Marginal Cost (MC), however, is typically U-shaped (it eventually rises due to diminishing returns). There is no rule stating MC must fall just because AFC is falling. The other three statements are fundamental laws of cost curves.

**Question 15:** Economies of scale exist when

A. **average total costs decline as output increases.**

B. average total costs increase as output increases.

C. average total costs remains constant as output increases.

D. average fixed costs decline as output increases.

**Question 16:** Generally, an increase in the number of vegetarians will cause the demand curve for meat to

A. shift rightward.

B. **shift leftward.**

C. become flatter.

D. become steeper.

**Question 17:** Which of the following would cause the current supply curve of iPhone to shift rightward?

A. an economic boom, which increases the amount that people are willing to spend on personal electronics

B. a decrease in the price of songs on Apple music

C. **the producer's expectation that the future price of iPhone will decrease**

D. an increase in the wages of labor in iPhone manufacturers

ANSWER

- A and B affect **demand**, not supply.
- D (higher wages) increases costs, shifting supply **left**.
- C suggests sellers want to sell now before prices drop, increasing current supply (shifting **right**).

**Question 18:** Regarding accounting and economic profits/costs, which of the following is NOT correct?

A. Accounting profits generally overstate economic profits.

B. Accounting profits do not take opportunity cost into account.

C. Economic costs include not only the accounting costs but also the opportunity costs of the resources used in production.

D. **Managers should only care about accounting profits.**

**Question 19:** A firm in a competitive market sells its product at a price of 60 DKK and its cost function is $C(Q) = 20 + 5Q^2$. The maximum profits for the firm would be:

A. **160 DKK**

B. 100 DKK

C. 360 DKK

D. 200 DKK

ANSWER

Profit maximization in perfect competition occurs where $P = MC$.

$$MC = \frac{dC}{dQ} = 10Q$$

$$60 = 10Q \implies Q = 6$$

Now calculate Profit ($TR - TC$):

$$TR = 60 \times 6 = 360$$

$$TC = 20 + 5(6)^2 = 20 + 5(36) = 200$$

$$\text{Profit} = 360 - 200 = 160$$

**Question 20:** Suppose you are a supervisor of PhD student, which of the following is NOT a solution to the principle-agent problem of supervisor-student?

A. To give bonus for publication in journals/conferences

B. To give bonus for project reports

C. Spot checks at the office of PhD student

D. **Fixed salary regardless of performance**

**Question 21:** Regarding fixed costs and sunk costs, which of the following is NOT correct?

A. Sunk costs are those costs that are forever lost after they have been paid.

B. Fixed costs do not vary with output.

C. A lost ticket before a movie starts is an example of sunk cost.

D. **Sunk costs could be part of the marginal costs.**

ANSWER

Marginal cost looks forward (the cost of the *next* unit). Sunk costs are in the past. Therefore, sunk costs can never be part of marginal costs.

**Question 22:** The sources of monopoly power for a monopoly could be:

A. economies of scale.

B. economies of scope.

C. patents.

D. **all of the above.**

**Question 23:** The long-run equilibrium of a perfectly competitive market is characterized by:

A. $P >$ minimum of ATC

B. $P <$ AVC

C. $P > MR$

D. **P = minimum of ATC (average total cost)**

**Question 24:** A perfectly competitive firm will shut down (stop producing) when:

A. market price is lower than the average total cost (ATC).

B. total revenue is less than the total cost.

C. **market price is lower than the average variable cost (AVC).**

D. fixed cost is too high.

**Question 25:** Which of the following statements about a monopoly is NOT correct?

A. A monopoly does not have a supply curve.

B. The demand curve of a monopoly is the market demand curve.

C. **A monopoly has no market power.**

D. A monopoly produces at $MR = MC$.

**Question 26:** A monopoly faces a demand curve described by $P = 90 - 3Q$ and has a total cost of $C(Q) = 5 + 10Q + Q^2$. The profit-maximizing price for the monopoly is:

A. **60**

B. 10

C. 30

D. 20

ANSWER

1. Derive MR: $P = 90 - 3Q \implies MR = 90 - 6Q$.
2. Derive MC: $C(Q) = 5 + 10Q + Q^2 \implies MC = 10 + 2Q$.
3. Set $MR = MC$:
$$90 - 6Q = 10 + 2Q \implies 80 = 8Q \implies Q = 10$$
4. Find Price:
$$P = 90 - 3(10) = 60$$

**Question 27:** Which of the following is NOT an example of negative externalities?

A. Air pollution from a factory

B. The neighbor's barking dog

C. Health risk to others from second-hand smoke

D. **Being vaccinated against Covid-19 protects not only you, but also the people around you.**

**Question 28:** Consider a monopoly where the inverse demand for its product is given by $P = 50 - 2Q$. Total costs for this monopolist is $C(Q) = 100 + 2Q + Q^2$. At the profit-maximizing combination of output and price, deadweight loss is:

A. **32**

B. 64

C. 128

D. cannot be determined with the given information.

ANSWER

**Monopoly Outcome ($Q_m$):** $MR = 50 - 4Q$ and $MC = 2 + 2Q$.

$$50 - 4Q = 2 + 2Q \implies 48 = 6Q \implies Q_m = 8$$

$$P_m = 50 - 2(8) = 34$$

**Social Optimum ($Q_{soc}$):** Set $P = MC$:

$$50 - 2Q = 2 + 2Q \implies 48 = 4Q \implies Q_{soc} = 12$$

**Deadweight Loss (DWL):** Area of triangle between $Q_m$ and $Q_{soc}$. Height of triangle at $Q_m = 8$ is the difference between Demand and MC:

$$P(8) - MC(8) = 34 - (2 + 2(8)) = 34 - 18 = 16$$

$$DWL = 0.5 \times \text{Base} \times \text{Height} = 0.5 \times (12 - 8) \times 16 = 32$$

**Question 29:** Which of the following is NOT a transaction cost associated with using inputs?

A. Time spent negotiating labor contracts with union workers

B. Opportunity costs of negotiating the price of renting machines.

C. **Wages paid to labor**

D. Costs of searching for new supplier of machines

ANSWER

Transaction costs are the costs of making an economic exchange (search, bargaining, enforcement). The wage itself is the **price** of the input, not a transaction cost.

**Question 30:** In a free market in which an equilibrium price and quantity prevails:

A. consumer surplus is less than producer surplus.

B. consumer surplus is greater than producer surplus.

C. consumer surplus is the same as producer surplus.

D. **the sum of consumer surplus and producer surplus are maximized.**

**Question 31:** You are a division manager at Toyota. If your marketing department estimates that the semiannual demand for the Highlander is $Q = 150,000 - 1.5P$, what price should you charge in order to maximize revenues from sales of the Highlander?

A. **50,000**

B. 30,000

C. 100,000

D. 60,000

ANSWER

Revenue is maximized at the midpoint of a linear demand curve (where elasticity = -1). Inverse demand: $1.5P = 150,000 - Q \implies P = 100,000 - \frac{2}{3}Q$. The intercept is 100,000. The midpoint price is half the intercept:

$$P = \frac{100,000}{2} = 50,000$$

Alternatively, solve $MR = 0$.

**Question 32:** In a competitive market, the market demand is $Q^d = 70 - 3P$ and the market supply is $Q^S = 6P$. A price ceiling of 4 will result in a

A. shortage of 24 units.

B. **shortage of 34 units.**

C. surplus of 24 units.

D. surplus of 34 units.

ANSWER

First, check equilibrium price: $70 - 3P = 6P \implies 70 = 9P \implies P \approx 7.77$. Since the ceiling ($P = 4$) is below equilibrium, it binds.

$$Q_d = 70 - 3(4) = 58$$

$$Q_s = 6(4) = 24$$

$$\text{Shortage} = Q_d - Q_s = 58 - 24 = 34$$

**Question 33:** Andy, a college student, loves eating burger. As a college student with no income, he is used to eating at McDonald. After graduation, Andy gets a job. As such, his income is now 200,000 DKK a year. He ends up eating burger at Sporvejen. In economic terms, the burger at McDonald is a(n) ___, while the burger at Sporvejen is a(n) ___.

A. normal good; normal good.

B. inferior good; inferior good.

C. normal good; inferior good.

D. **inferior good; normal good.**

**Question 34:** Consider a monopoly where the inverse demand for its product is given by $P = 100 - 3Q$. Base on this information, the marginal revenue function is:

A. $MR(Q) = 200 - 1.5Q$

B. $MR(Q) = 100 - 6Q$

C. $MR(Q) = 100 - 1.5Q$

D. $MR(Q) = 200 - 6Q$

ANSWER

For a linear demand curve $P = a - bQ$, the Marginal Revenue curve has the same intercept ($a$) but twice the slope ($2b$).

$$P = 100 - 3Q \implies MR = 100 - 2(3)Q = 100 - 6Q$$

**Question 35:** The recipe that defines the maximum amount of output that can be produced with K units of capital and L units of labor is the

A. **production function.**

B. cost function.

C. marginal product.

D. average product.

**Question 36:** Suppose the demand for a product is $\ln Q^d = 20 - 2 \ln P$, then this product is

A. **elastic**

B. inelastic

C. unitary elastic

D. cannot be determined.

ANSWER

This is a log-linear demand function of the form $Q = AP^{\epsilon}$. The coefficient of $\ln P$ is the price elasticity of demand. Here, $\epsilon = -2$. Since $|\epsilon|[cite_start] = 2 > 1$, the demand is **elastic** [cite: 393-397].

**Question 37:** When a demand curve is linear,

A. the elasticity is the same as the slope of the demand curve.

B. **demand is elastic at high prices.**

C. demand is unitary elastic at low prices.

D. the elasticity is constant at all prices.

**Question 38:** If a firm's production function is Leontief and the wage rates goes up, the

A. **cost minimizing combination of capital and labor does not change.**

B. firm would use more labor to minimize the cost for a given output

C. firm would use more capital to minimize the cost for a given output

D. firm would use less labor to minimize the cost for a given output

ANSWER

A Leontief production function has L-shaped isoquants (perfect complements). There is zero substitutability between inputs. Therefore, even if relative input prices change, the firm cannot substitute capital for labor; the optimal ratio remains fixed.