UNIVERSITÉ DE GENÈVE

SECTION DES SCIENCES ÉCONOMIQUES
UNIVERSITÉ DE GENÈVE

# INTRODUCTION TO MICROECONOMICS

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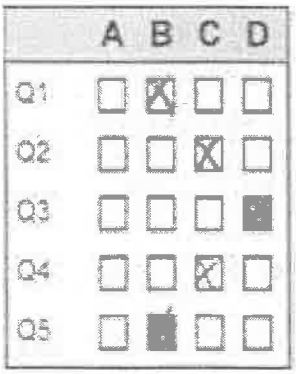
Duration of the exam : 2 hours (30 questions).
Authorized material : **non-programmable** calculator, one non-electronic bilingual dictionary (non annotated).

**Please read carefully the following instructions:**

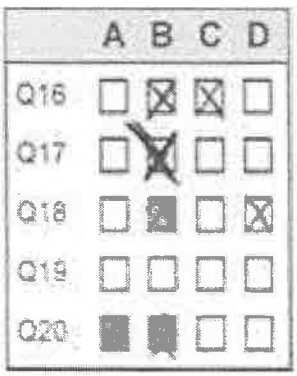
- The answer sheet is stapled at the end of the exam. Please detach it carefully. The answer sheet ***must*** be handed in at the end of the exam. The questionnaire may be kept.
- On the answer sheet, write down your family name, given name and "code candidat" (= 8-digit student number without scores) clearly and in block letters.
- The box corresponding to the chosen letter (A to D) must be checked or properly filled in black or blue pen.
- Corrections, if any, must be made carefully. The answer must be clearly identifiable and unique. If this is not the case, it will be counted as wrong.
- In order not to waste your chances, answer all questions. There are no negative points. There is only one correct answer per question.

Example:

Correct




Incorrect



### Question 1

During this summer, a particularly important heatwave was observed. At the same time, the invention of new technology has lowered production costs for ice cream.
What can you predict with certainty ?

(a) The price and quantity traded of ice cream increased.

(b) The price and quantity traded of ice cream decreased.

(c) The price of ice cream decreased while the quantity traded increased.

(d) The quantity traded increases and the effect on the price is uncertain.

### Question 2

On the market for matches (which are considered an inferior good), we registered two successive shifts in the demand curve : it first moves to the origin (to the left) and then outwards (to the right). Among the following alternatives, which could explain these shifts :

(a) Shift 1 : an increase in the price of lighters ; Shift 2 : an increase in consumer income.

(b) Shift 1 : an increase in the price of lighters ; Shift 2 : a decrease in consumer income.

(c) Shift 1 : a decrease in consumer income ; Shift 2 : an increase in the price of lighters.

(d) Shift 1 : an increase in consumer income ; Shift 2 : a decrease in the price of cigarettes.

### Question 3

Consider the market for *Granny Smith* apples. Following an increase in consumer income, the equilibrium quantity remains constant. Which of the following statements provides an explanation ?

(a) *Granny Smith* apples are inferior goods.

(b) The supply of *Granny Smith* apples is perfectly inelastic.

(c) The demand for *Granny Smith* apples is perfectly inelastic.

(d) The income elasticity of demand for *Granny Smith* apples is equal to 0.

### Question 4

Given the folllowing demand function

$$Q^D(P) = \frac{1}{2} - 2P,$$

what is the price elasticity of this demand function ?

(a) $-2$

(b) $-1$

(c) $-\frac{1}{2}$

(d) The information provided is not sufficient to answer the question.

### Question 5

The following table shows the quantities demanded of goods $X$ and $Y$ ($Q_X, Q_Y$), the prices of these goods ($Q_X, Q_Y$), and consumer income ($R$) over the last four years.

| Year | $P_X$ | $Q_X$ | $P_Y$ | $Q_Y$ | R |
|---|---|---|---|---|---|
| 2005 | 5 | 172 | 2 | 67 | 20 |
| 2006 | 5 | 252 | 2 | 47 | 40 |
| 2007 | 10 | 242 | 2 | 52 | 40 |
| 2008 | 10 | 241 | 1 | 56 | 40 |

Which of the following propositions is correct ?

(a) $X$ and $Y$ are normal goods.

(b) The demand for good $X$ is not related to the demand for good $Y$.

(c) $X$ and $Y$ are substitutes.

(d) The price elasticity of demand for good $X$ is low (less than 1 in absolute value), high for good $Y$ (higher than 1 in absolute value).

### Question 6

The government introduces a price floor above the equilibrium on a perfectly competitive market. Which of the following statements is correct ?

(a) There will be a shortage on the market due to the excess of demand over supply.

(b) Due to the introduction of the price floor, we observe a shift in the supply curve to the left.

(c) The impact of the price floor on market price and quantity exchanged could have been obtained by taxing the producers.

(d) No effect will be observed.

### Question 7

Consider a market where demand is given by $Q^D = 66 - P$ and supply by $Q^S = P/2$. The market is initially in competitive equilibrium. Following the introduction of a price ceiling at 30 :

(a) There is an excess supply of 21.

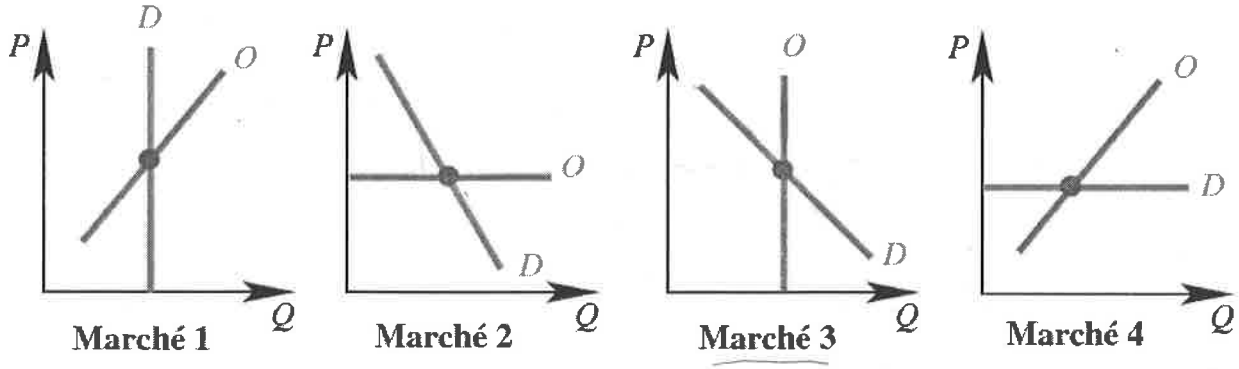
(b) The quantity traded increases by 14.

(c) The quantity supplied decreases by 7.

(d) No change is observed in this market.

## Question 8

In which of the four markets shown below, do consumers bear the full tax burden resulting from the introduction of a unit tax?




(a) In markets 1 and 2.

(b) Only in market 3.

(c) In markets 3 and 4.

(d) In markets 1 and 4.

## Question 9

Indirect taxes generate tax revenue for the state but involve a social loss for the community (deadweight loss). *Ceteris paribus*, a more elastic demand generates :

(a) lower tax revenue and higher deadweight loss.

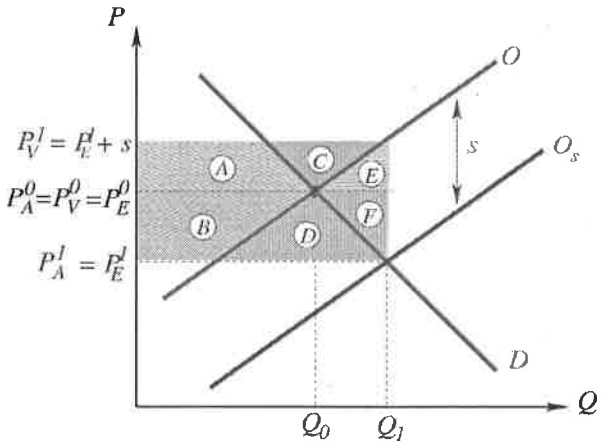
(b) higher tax revenue and higher deadweight loss.

(c) higher or lower tax revenue depending on whether the market is for a normal or an inferior good.

(d) larger tax revenue and lower deadweight loss.

## Question 10

The chart below shows the wheat market on which suppliers receive a unit subsidy of $s$ :




Which of the following statements is correct ?

(a) Producers increase their surplus by $A, B$ and $C$.

(b) Consumers will increase their surplus by $B$, $D$ and $F$.

(c) The loss to the community is given by areas $E$ and $F$.

(d) The total amount of the subsidy ($s \times Q_1$) is lower than the surplus gains of producers and consumers combined.

## Question 11

A company uses a production factor (labor) to produce a good. The table below shows the production level according to the quantities of labor used.

| Number of workers | Production |
|---|---|
| 0 | 0 |
| 1 | 100 |
| 2 | 300 |
| 3 | 540 |
| 4 | 800 |

Assume the company grows and hire more staff. Knowing that the monthly salary of each worker is 100 francs and that the fixed costs of the company is 100 francs, which of the following statements is **false** ?

(a) The marginal productivity of the second worker is twice that of the first.

(b) The average productivity of the company with a staff of four is twice that of the company with a staff of one.

(c) Average production cost rises with output.

(d) Average production cost is equal to 2 when the company produces 100 units.

### Question 12

In the long run, on a perfectly competitive market, which of the following statements applies ?

(a) The supply function is perfectly elastic due to the assumption of free entry and exit.

(b) The long-run equilibrium price is equal to the minimum of the marginal cost.

(c) The supply function is inelastic because of a hypothesis of a very high number of buyers and sellers on the market.

(d) The most successful companies produce at minimum average cost and generate profits.

### Question 13

On a perfectly competitive market, which of the following statements is correct ?

(a) In the short run, profits are zero.

(b) In the long run, the company operates at the minimum of its average cost.

(c) In the short run, all production factors are variable.

(d) In the long run, profits are positive.

### Question 14

On a perfectly competitive market, the producers' surplus :

(a) is a good indicator of the total revenue of producers.

(b) is bigger than the consumers' surplus at market equilibrium.

(c) is represented by the surface between the supply and demand curves.

(d) decreases as the price of a complementary good increases.

### Question 15

Consider the total cost function $CT(Q) = 20+2Q^2+10Q$ where $Q$ is the quantity of shirts produced by a manufacturer. Knowing that the sale price is equal to 50 per unit in a perfectly competitive equilibrium, which of the following sentences is **wrong** ?

(a) The profit is equal to 230.

(b) The marginal cost is 50.

(c) The average cost is 32.

(d) The total cost is 320.

### Question 16

At the optimum, a monopolistic firm on the market for good $X$ chooses to :

(a) pick an output level such that marginal cost equals price.

(b) produce more of good $X$ than in the case of a perfectly competitive market for this good.

(c) maximize its marginal profit.

(d) pick an output level such that marginal revenue is equal to marginal cost.

### Question 17

Martin Ltd is the only firm in a small isolated town. Its production cost function is given by $CT(Q) = 1 + Q^2$ and the demand function is $Q^D(P) = 12 - P$, where $Q$ is the quantity (in thousands) and $P$ is the price. Find the quantity, the price and the profit of this monopoly at the market equilibrium :

(a) $Q = 2$, $P = 10$, $\pi = 15$.

(b) $Q = 3$, $P = 9$, $\pi = 17$.

(c) $Q = 4$, $P = 8$, $\pi = 15$.

(d) $Q = 6$, $P = 6$ and $\pi$ negative.

### Question 18

In a natural monopoly, which of the following propositions is **wrong** ?

(a) For a given production level, the monopolist's total production cost will be lower than the sum of total costs of two competiting firms.

(b) There are decreasing returns to scale : marginal cost decreases with the level of production.

(c) The average production cost varies with the scale of production.

(d) A natural monopoly is often due to the presence of high fixed costs.

### Question 19

Vaccination against seasonal flu gives rise to positive externalities. This means that :

(a) The number of vaccinations determined by the market is optimal in terms of social benefit.

(b) The state should intervene by selling vaccination itself at production cost.

(c) The marginal social cost of vaccination is higher than its private marginal cost.

(d) The marginal private benefit is lower than the marginal social benefit of vaccination.

### Question 20

Jim rents a studio at the *Cité Universitaire*. The building rules prohibits noise. Jim likes to play hard rock and would be willing to pay 50 CHF to be able to do so. His neighbor Tom likes quietness but would be willing to tolerate noise against a payment of 25 CHF. Assuming there are no transaction costs, and disregarding other residents' preferences, which of the following propositions corresponds to the efficient solution to this externality problem ?

(a) Jim stops playing music because making noise is prohibited.

(b) Tom gives Jim an amount between 20 and 25 CHF and Jim stops playing hard rock.

(c) Jim gives Tom an amount between 25 and 50 CHF and continues to play.

(d) No possible solution exists unless rules allow making noise in the building.

### Question 21

In the case of common resources :

(a) Non-rivalry of common resources leads to their overconsumption.

(b) The rational behavior of self-interested agents allows reaching a socially optimal level of consumption.

(c) A socially optimal level of consumption is only possible if the non-rivalry problem is solved.

(d) Thanks to its coercive power, state intervention makes it possible to reach a socially optimal level of consumption.

### Question 22

Governments sometimes commission a private firm to supply a pure public good. Under which circumstances is this solution feasible ?

(a) The market was initially characterized by perfect competition.

(b) The government guarantees a monopoly to the firm contracted.

(c) The firms is altruistic, for example because it is a non-profit organization.

(d) The government determines the quantity and the quality of the good and subsidizes to compensate financial losses.

### Question 23

On an oligopolistic market, which of the following propositions is correct ?

(a) Firms are involved in a strategic game in which cooperation is impossible.

(b) In their decision-making process, firms take into account the behavior of their competitors.

(c) Firms in a cartel earn the same profit as several competitive firms.

(d) A Nash equilibrium is usually optimal for firms operating on this market.

### Question 24

There are two firms producing and selling penicillin. Each firm has one plant with identical cost functions. The two firms decide to organize as a cartel and share the total profits of the industry in equal parts. Under this cartel agreement, at the optimum :

(a) Producers determine the level of production of the cartel, but each firm chooses a different price.

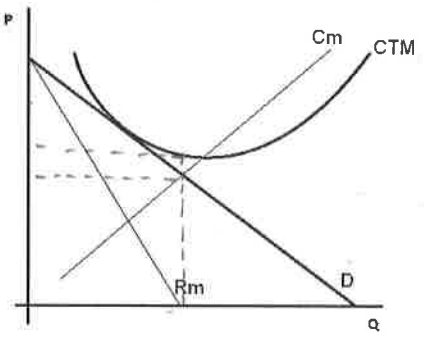
(b) Both plants will produce exactly the same quantity.

(c) One of the firms will close its plant and the other will operate as a monopoly.

(d) None of the statements above is correct.

### Question 25

In the following diagram, $P$ stands for price and $Q$ for quantity produced. $D$ represents the demand curve and $Rm$ marginal revenue. Marginal cost is given by $Cm$ and average cost by $CTM$. What does the diagram represent ?




(a) The equilibrium situation of a natural monopoly in the long run.

(b) A situation in which, at the optimum, the producer faces a price equal to the average cost.

(c) A short-run situation since producers operate with a positive profit at the optimum.

(d) The short-run situation of a competitive monopolistic firm.

### Question 26

Which of the following situations constitutes a moral hazard problem ?

(a) A car driver who purchases insurance because he travels a lot for work reasons.

(b) A commercial bank which takes important risks because another lender of last resort will eventually cover possible losses.

(c) A person who borrows high amounts of money from his bank because of preferential interest rates.

(d) An entrepreneur who takes bad decisions as a consequence of unexpected risks.

### Question 27

The preferences of a consumer are described by the following sentence :
"For every unit of consumption of $X_1$, the consumer must be compensated with two additional units of $X_2$". We can conclude that :

(a) $X_1$ et $X_2$ are perfect substitutes.

(b) $X_1$ et $X_2$ are perfect complements.

(c) $X_1$ et $X_2$ are neutral goods.

(d) $X_2$ is a good, while $X_1$ is a bad.

### Question 28

Consider the utility function $U = X_1X_2$. Then, the marginal rate of substitution of good $X_1$ in terms of good $X_2$, defined as $|\frac{\triangle X_2}{\triangle X_1}|$ :

(a) decreases as $X_1$ increases.

(b) decreases as $X_2$ increases.

(c) is constant along the entire indifference curve.

(d) rises when $X_1$ increases and $X_2$ decreases.

### Question 29

Consider a person with normal indifference curves (strictly convex to the origin), who spends all her budget on $X_1$ and $X_2$. If the marginal rate of substitution of good $X_1$ in terms of good $X_2$ is equal to 4 and the prices of goods $X_1$ and $X_2$ are 4 and 2 respectively, we can say that :

(a) to increase her utility, the consumer should reduce her consumption of $X_2$ and increase her consumption of $X_1$.

(b) to increase her utility, the consumer should reduce her consumption of $X_1$ and increase her consumption of $X_2$.

(c) to increase her utility, the consumer should increase her consumption of $X_2$ by exactly 4 units.

(d) to increase her utility, the consumer should reduce her consumption of $X_1$ by exactly 2 units.

### Question 30

Consider a consumer with a fully horizontal indifference curve (with $X_1$ plotted on the horizontal axis, while $X_2$ is plotted on the vertical axis), with utility increasing as one moves away from the origin. We can therefore claim that :

(a) for this consumer, $X_1$ is a good and $X_2$ is a bad.

(b) for this consumer, $X_1$ and $X_2$ are substitutes.

(c) this consumer is indifferent to the amount of $X_1$ consumed.

(d) this consumer is indifferent to the amount of $X_2$ consumed.