

People's Democratic Republic of Algeria

The Ministry of Higher Education and Scientific Research

Oum El Bouaghi University

Institute of Applied sciences and Techniques

Department: Management of companies and administrations

Module: Microeconomics

Level: First year (2nd semester) 2025-2026

Examination Model Answer

Activity one: Complete the following table with the appropriate answers:

Term	Translation in arabic	Example
Economy	اقتصاد	Algerian economy.
Economics	علم الاقتصاد	Economic study
Economical	اقتصادي	Economical budget –
Scarcity	الندرة	Scarcity of resources
Economist	اقتصادي-خبير اقتصادي	Adam Smith is a well-known economist.

Activity two:

We suppose that a consumer spends their cash income of $R= 21$ dinars on purchasing goods (x) and (y). If the following table shows the quantities consumed of the two goods, then the price of good (x) is $P_x= 2$ dinars and the price of good (y) is $P_y=3$ dinars.

Equilibrium can be achieved by applying the conditions of equilibrium.

$$Um_x/P_x=Um_y/P_y=\lambda$$

X, Y (Q)	0	1	2	3	4	5	6	7
Um_x	-	64	52	44	40	32	28	16
Um_y	-	72	60	42	30	24	18	12
Um_x/P_x	-	32	26	22	20	16	14	8
Um_y/P_y	-	24	20	14	10	8	6	4

The table shows that there are three consumer equilibrium positions:

$\lambda = 20$ when 4 units of good (x) and 2 units of good (y) are consumed

$\lambda = 14$ when 4 units of good (x) and 2 units of good (y) are consumed

$\lambda = 08$ when 4 units of good (x) and 2 units of good (y) are consumed

Determining the equilibrium position requires fulfilling the second condition, i.e., the following equation is met:

$$21 = 2x + 3y \quad R = x.Px + y.Py$$

$$\lambda = 20 \quad (x=4, y=2) \dots\dots R = (4)(2) + (2)(3) = 14 < 21$$

$$\lambda = 14 \quad (x=6, y=3) \dots\dots R = (6)(2) + (3)(3) = 21 = 21$$

$$\lambda = 8 \quad (x=7, y=5) \dots\dots R = (7)(2) + (5)(3) = 29 > 21$$

Therefore, the consumer achieves maximum possible satisfaction (with an income of 21 dinars) by consuming 6 units of good (x) and 3 units of good (y).

Thus, (x=6, y=3) represents the optimal (equilibrium) combination for this consumer.

Activity three:

- **Give a definition of Microeconomic**

MicroEconomics is a branch of economics that studies the behavior of individual consumers, firms and markets and how people make decision about the allocation of scarce resources and choices to satisfy their wants

- **Explain in few lines the difference between the microeconomics and macroeconomics**

Microeconomics focuses on individual economic units, such as the behavior of the individual consumer, the individual firm, prices and the individual factor of production.

Macroeconomic analysis: This focuses on aggregate economics, specifically studying national income, national production, aggregate investment, aggregate savings, unemployment levels, and inflation

- **Factors of production** = Labor, Capital, Land, Technomogy, Organization
- Scarcity occurs when there are limited quantities of resources to meet unlimited needs or desires of human, so people must make choices about how use resources.

Activity four:

Suppose we have a consumer utility function given by

$$U = x * y$$

Let:

Price of good x: $P_x = 6$

Price of good y: $P_y = 2$

Income allocated for spending: $R = 60$

Required: Determine the optimal combination of good (x) and good (y) that achieves consumer equilibrium.

We have a budget equation

$$R = xP_x + yP_y \dots\dots\dots 60 = 6x + 2y$$

By extracting y from the budget equation, we obtain

$$y = 30 - 3x$$

Substituting the y equation into the utility function, we obtain

$$U = x \cdot y$$

$$U = x(30 - 3x)$$

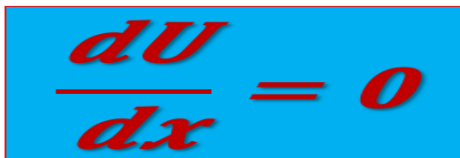
$$U = 30x - 3x^2$$

Therefore, the utility function becomes a function of one independent variable (x), i.e., of the form $U=f(x)$.

Since the utility function is of the form $U=f(x)$, the availability of the two equilibrium conditions can be verified to determine the optimal combination.

$$U = 30x - 3x^2$$

- **The necessary condition:** The first derivative of the total utility function equals zero, which is the mathematical proof that the total utility curve has reached its peak.



The necessary condition: The first derivative of the total utility function equals zero.

$$dU/dx=0$$

$$U_{mx}=0 \quad \rightarrow 30-6x=0$$

$$x = 5$$

-For the sufficient condition: the second derivative of the total utility function is less than zero.

- **The sufficient condition:** The second derivative of the total utility function is less than zero, which is the mathematical proof that this peak represents a maximum point on the total utility curve



$$\frac{d^2U}{dx^2} < 0 \rightarrow U''x < 0$$

$$\frac{d^2U}{dx^2} - 6 < 0 =$$

While both conditions are met, this means that the total utility curve reaches its maximum point when $x=5$.

...By substituting the value of x into equation (2), we obtain the value of y :

Therefore, we find: $y = 15$

Therefore, the product combination ($x=5, y=15$) represents the optimal combination that achieves the greatest possible satisfaction (benefit) for the consumer.

$$U=x.y = (5)(15) = 75$$

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