Tema 1 2016 – 2017 Micro

1] $V = 2000$ u.m

$P_A = 250$ u.m.

$P_B = 500$ u.m

$Cop_A = ? = \frac{P_A}{P_B} = \frac{250}{500} = \frac{1}{2} \Rightarrow 1A = \frac{1}{2}B$

$Cop_A = \frac{Q_B}{Q_A} = \frac{4}{8} = \frac{1}{2}$

$Q_A = 2000 : 250 = 8$

$Q_B = 2000 : 500 = 4$

2] $Q_i = 100$ $Cop_C = ?$ $Cop_C = \frac{Q_i}{Q_c} = \frac{100}{20} = 5 \Rightarrow$

$Q_c = 20$

$\Rightarrow 1C = 5i$

3]

Q	UT	Umg
1	35	–
2	63	28
3	89	26
4	113	24
5	135	22
6	135	0
7	120	-15

$Umg = ?$

$\boxed{Umg = \frac{\Delta UT}{\Delta Q}} = \frac{UT_1 - UT_0}{Q_1 - Q_0} = \frac{63 - 35}{2 - 1} =$

$\frac{89 - 63}{3 - 2} = 26$

4] $UT = (x+1)(y-5)$ $Q_x^*, Q_y^* = ?$ $P_x = 10$

$P_y = 20$

$V = 120$

$Umg_x = (UT)'_x = y - 5$

$Umg_y = (UT)'_y = x + 1$

$$\begin{cases} xP_x + yP_y = V \\ \frac{Umg_x}{P_x} = \frac{Umg_y}{P_y} \end{cases} \Leftrightarrow \begin{cases} 10x + 20y = 120 \\ \frac{y-5}{10} = \frac{x+1}{20} \end{cases} \Leftrightarrow$$

$$\Leftrightarrow \begin{cases} x + 2y = 12 \\ 20y - 100 = 10x + 10 \end{cases} \Leftrightarrow \begin{cases} x + 2y = 12 \\ 2y - 10 = x + 1 \end{cases} \Leftrightarrow$$

$$\Leftrightarrow \begin{cases} x + 2y = 12 \quad (1) \\ x - 2y = -11 \quad (2) \end{cases}$$

$$2x = 1 \Rightarrow x = \frac{1}{2} = 0,5 \quad \boxed{x = 0,5} \overset{(1)}{\Rightarrow}$$

$$0,5 + 2y = 12 \Rightarrow 2y = 12 - 0,5 \Rightarrow 2y = 11,5 \Rightarrow \boxed{y = 5,75}$$

5] $UT = 2\sqrt{xy}$ $\quad Q_x^*, Q_y^* = ?$

$P_x = 2$

$P_y = 4$

$V = 20$

$$Umg_x = (2\sqrt{xy})'_x = 2 \cdot (\sqrt{x})'_x \cdot (\sqrt{y})'_x$$

$$= 2\sqrt{y} \cdot (x^{\frac{1}{2}})'_x = 2\sqrt{y} \cdot \frac{1}{2} x^{\frac{1}{2}-1} = \frac{\sqrt{y}}{\sqrt{x}}$$

$$Umg_y = (2\sqrt{xy})'_y = 2\sqrt{x} \cdot (y^{\frac{1}{2}})'_y = 2\sqrt{x} \cdot \frac{1}{2} y^{-\frac{1}{2}} = \frac{\sqrt{x}}{\sqrt{y}}$$

$$\boxed{Umg_x = \frac{\sqrt{y}}{\sqrt{x}} \; ; \; Umg_y = \frac{\sqrt{x}}{\sqrt{y}}}$$

$$\begin{cases} 2x + 4y = 20 \\ \frac{\sqrt{y}}{\sqrt{x}} = \frac{\sqrt{x}}{\sqrt{y}} \\ \hline 2 \qquad 4 \end{cases} \Leftrightarrow \begin{cases} 2x + 4y = 20 \\ \frac{4\sqrt{y}}{\sqrt{x}} = \frac{2\sqrt{x}}{\sqrt{y}} \end{cases} \Leftrightarrow \begin{cases} x + 2y = 10 \\ 4\sqrt{y} \cdot \sqrt{y} = 2\sqrt{x}\sqrt{} \end{cases}$$

$$\Leftrightarrow \begin{cases} x + 2y = 10 \\ 4y = 2x \end{cases} \Leftrightarrow \begin{cases} x + 2y = 10 \\ 2y = x \end{cases} \Leftrightarrow \begin{cases} 4y = 10 \Rightarrow y = 2 \\ x = 2 \cdot 2,5 \Rightarrow x = 5 \end{cases}$$

6]

$Umg_x = 20 - 3Q_x$

$20 - 3 \cdot 1 = 20 - 3 = 17$
$20 - 3 \cdot 2 = 20 - 6 = 14$
$20 - 3 \cdot 3 = 20 - 9 = 11$
$20 - 3 \cdot 4 = 20 - 12 = 8$
$20 - 3 \cdot 5 = 20 - 15 = 5$

Q_x	1	2	3	4	5
Umg_x	17	14	11	8	5
UT	17	31	42	50	55

$\boxed{\Delta UT = Umg_x \cdot \Delta Q_x}$

7] $V = 20$
$P_x = 1$
$P_y = 2$
$Umg_x = 10 - Q_x$
$Umg_y = 28 - 2Q_y$

$\begin{cases} x + 2y = 20 \\ \frac{10 - x}{1} = \frac{28 - 2y}{2} \end{cases} \Leftrightarrow$

$\begin{cases} x + 2y = 20 \\ 20 - 2x = 28 - 2y \end{cases} \Leftrightarrow$

$\Leftrightarrow \begin{cases} x + 2y = 20 \\ 10 - x = 14 - y \end{cases} \Leftrightarrow \begin{cases} x + 2y = 20 \\ -x + y = 4 \end{cases}$

$/ \; 3y = 24 \Rightarrow \boxed{y = 8} \Rightarrow$

$x + 2y = 20 \Rightarrow x + 2 \cdot 8 = 20 \Rightarrow x = 20 - 16 \Rightarrow$

$\Rightarrow \boxed{x = 4}$

8] ~~boring~~

9] $P_0 = 300 \quad Q_{c_0} = 200$
$P_1 = 250 \quad Q_{c_1} = 400$

$Ke_{c/p} = -\frac{\Delta\% Q_c}{\Delta\% P} = -\frac{400 - 200}{200} \cdot \frac{300}{250 - 300} =$

$= +\frac{200}{200} \cdot \frac{300}{-50} = \frac{30}{5} = 6 > 1$ cerere elastică.

10]

$K_{e_{c/p}} = 1,25$

$P_1 = P_0 + 10\% P_0$

$\Delta\% Q_c = ?$

$K_{e_{c/p}} = -\frac{\Delta\% Q_c}{\Delta\% P} \Rightarrow$

$\Delta\% Q_c = -K_{e_{c/p}} \cdot \Delta\% P \Rightarrow$

$\Rightarrow \Delta\% Q_c = -1,25 \cdot 10\% \Rightarrow \Delta\% Q_c = -1,25 \cdot \frac{10}{100} \Rightarrow$

$\Rightarrow \Delta\% Q_c = -1,25 \cdot 0,1 \Rightarrow \Delta\% Q_c = -12,5\%$

pretul creste, cantitatea cerută scade => bun normal

11] $V_0 = 500$

$V_1 = 750$

$Q_{cx_0} = 1000$

$Q_{cx_1} = 1200$

$K_{e_{c/v}} = ?$

natura bunului

$$K_{e_{c/v}} = \frac{\Delta\% Q}{\Delta\% V} = \frac{Q_1 - Q_0}{Q_0} \cdot \frac{V_0}{V_1 - V_0}$$

$$\frac{1200-1000}{1000} \cdot \frac{500}{750-500} = \frac{200}{1000} \cdot \frac{500}{250} = \frac{2}{5} = 0,4$$

$K_{e_{c/v}} = 0,4 > 0$ bun normal