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Student 1 – Name and surname Student 2 – Name and surname Group Date/Time Table

Worksheet M6 rev 1

1. *The analysis of the voltage-to-frequency converter*

a) $U_{oH\text{-}1}$ =..... $U_{oL\text{-}1}$=.....

b) R_{SS1} =..... P_2= ..... R_{S1}= .....
R_{L1}= ..... R_{t1}= ..... C_{t1}= .....

c) $K_1 = \frac{1}{2{,}09} \cdot \frac{R_{S1}}{R_{L1}} \cdot \frac{1}{R_{t1} C_{t1}} =$ .....

Table 1

$V_{in\text{-}1}$ (V)	0,10	0,50	1,0	1,50	2,0	2,50	3,0
$f_{measured}$ (kHz)							
f_{calc} (kHz)							
$\varepsilon_{U\text{-}f}$							

2. *The analysis of the voltage-to-frequency converter*

a) R_{SS3} =..... P_3= ..... R_{S3}= .....

R_{L3}= ..... R_{t3}= ..... C_{t3}= .....

b) P_3= ..... R_{S3} =..... **c)** $K_3 = 2{,}09 \cdot \frac{R_{L3}}{R_{S3}} \cdot R_{t3} C_{t3}$ =.....

Table 2

$f_{in\text{-}3}$ (kHz)	0,10	0,50	1,0	1,50	2,0	2,50	3,0
$V_{measured}$ (V)							
V_{calc} (V)							
$\varepsilon f\text{-}U$							

3. Analysis of the U-F and the f-U conversion

Table 3

$V_{in\text{-}1}$ (V)	0,10	0,50	1,0	1,50	2,0	2,50	3,0
$V_{out\text{-}3}$ (V)							
ε_1 (%)							

Explanations:

4. The comparator with hysteresis

a) R_2 =..... R_3 =.....

R_4 =..... R_5 =.....

b)

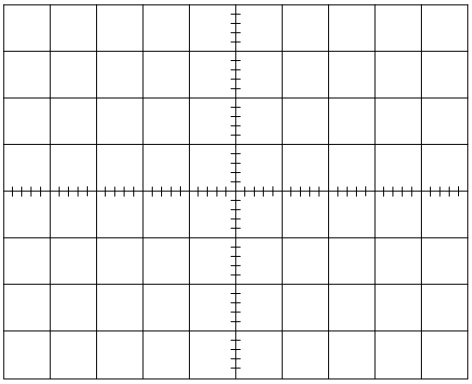
measured values:

$V_{out\text{-}2\,H}$ =..... $V_{out\text{-}2\,L}$ =.....

$V_{in\text{-}2\,p1}$ =..... $V_{in\text{-}2\,p2}$ =.....

Calculated values:

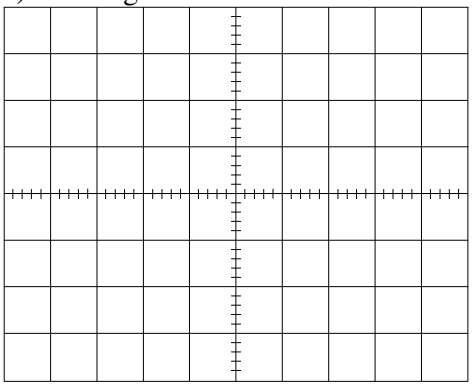
U_{p1} =..... U_{p2} =.....



waveforms $V_{in\text{-}2}$ and $V_{out\text{-}2}$

Explanations:

c) the image in XY mode



d) Δt_1 =..... Δt_2 =..... SR_+ =..... SR_- =.....

$t_{rise\_measured}$ = ... $t_{rise\_calculated}$ = ... $t_{fall\_measured}$ = ... $t_{fall\_calculated}$ = ...

Explanations:

e) U_{p10} =..... U_{p20} =.....

5. Simulation of transmitting the value of a voltage on long distances

a) Table 4

$V_{in\text{-}1}$ (V)	0,10	0,50	1,0	1,50	2,0	2,50	3,0
$V_{out\text{-}3}$ (V)							
ε_2 (%)							
ε_3 (%)							

b) *Explanations:*

c)

Table 5

$V_{in\text{-}1}$ (V)	0,10	0,50	1,0	1,50	2,0	2,50	3,0
V_{R7} (V)							

Explanations: