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

Worksheet M5

rev. 1

1. *Resistance measurement using the LCR - meter*

R_1=............. ΔR_1=................ $\varepsilon_{R1}[\%]$=................
R_2 =............. ΔR_2=............... $\varepsilon_{R2}[\%]$=................
R_3 =............. ΔR_3=............... $\varepsilon_{R3}[\%]$=................

2. *Using the sort method for determining the tolerance of a resistance*

Delta $R_1[\%]$=.............. Delta R_2 $[\%]$=.............. Delta R_3 $[\%]$=..............

3. *Measurement of small resistances*

R_{quadri}=............. b)$R_{bipolar}$=................
c) $R_{contact\ wire}$ =............. ΔR =................
d) $R_{corrected}$=.......... ε_R $[\%]=|R_{quadri}- R_{corrected}|/R_{quadri}$=............
Explanation:

e) $R_{wire\ quadri}$=............. b)$R_{wire\ bipolar}$=................

4. *Measurement of capacitors and inductors*

a) C_{s1}=............. D_1=................$Q_1=1/D$=.......... C_{p1}=................

C_{s2}=............. D_2=................$Q_2=1/D$=.......... C_{p2}=................

Explanation:

How is the quality factor of capacitors ?
How are the values of C_s and C_p? Why?

b) L_s=............. Q=............. L_p=............. R_s= .... Q_{Calc}= ....

Observations:

f(kHz)	10	33	66	100
L (measured)				

Explanation: What happens to the inductance value? Why?

5. *Measuring the RC circuit*

f=1kHz:

C_s=............. C_p=................
D=.............. Q=1/D................. Q_{calc} =.................

R_s=............. R_p=.............
$R_{s\ theoretical}$ =.............

f=100kHz:

C_s=............. D=................ L=................

Explanation:

6. *Measuring the frequency-dependent behavior of a LC circuit*

L = ... C = ...

f(kHz)	1	5	10	12	15	18	20	50	100
L_e (measured)									
L_e (calculated)									
C_e (measured)									
C_e (calculated)									

Table 1

$f_{resonance}$ = ...
Explanation:

7. *The study of an ohmmeter with Operational Amplifier*

b) $R_{x1measured}$= .... R_{x1real}= .... $R_{x2measured}$= .... R_{x2real}= ....

ε_{Rx1} [%]= .... ε_{Rx2} [%]= ....

c) $R_{x3measured}$= .... R_{x3real}= .... ε_{Rx3} [%]= ....

$R_{potentiometer\ measured} + R_{2\ measured}$ =............... $V_{cc\ measured}$ =.......... $R_{x\ CS}$=...............

d) Error sources and explanations: