Student 1 – name and surname	Student 2 – name and surname	Group	Date	Table no.

Worksheet 6

rev 5e

1. *Measuring resistances with the LCR-meter*

R_1= ΔR_1= $\varepsilon_{R1}[\%]$=

R_2= ΔR_2= $\varepsilon_{R2}[\%]$=

R_3= ΔR_3= $\varepsilon_{R3}[\%]$=

2. *Measuring the resistance of a wire*

a) R_{cuadri}=

b)$R_{bipolar}$= $\varepsilon_R[\%]=(R_{bipolar} - R_{quadri})/R_{quadri} \cdot 100$=

Explanations:

c) $R_{connection\ wires}$=

d) $R_{wire'} = R_{bipolar} - R_{conn.wires}$= $\varepsilon_R'\ [\%]=(R_{wire'} - R_{quadri})/R_{quadri} \cdot 100$=

*Explanation regarding the error from **d** compared to **b**:*

*Explanation regarding the measurement from **a**:*

3. *Measuring capacitors and inductors*

a)

Capacitor 1 type: C_{s1}= D_1 = $Q_1 = 1/D_1$ = C_{p1}=

Capacitor 2 type: C_{s2}= D_2 = $Q_2 = 1/D_2$ = C_{p2} =

Explanations:

Type with Q max:

R_{s1}= R_{p1}= R_{s2}= R_{p2}=

Explanations:

b) L_s= Q= L_p= Q_{calc}= R_s=

Explanation for R_S :

Remarks regarding the Q factor of L and C:

4. *Measuring a RC group*

a) RC **series** independent components R= C_S= D=

F	C_S	C_P	*D*	*Q=1/D*	Q_{calc}	R_S	R_P	$X_C = 1/\omega C_S$
1KHz								
100KHz								

b) RC **parallel** independent components R= C_P= D=

F	C_S	C_P	*D*	*Q=1/D*	Q_{calc}	R_S	R_P	$X_C = 1/\omega C_P$
1KHz								
100KHz								

c)

- Explanation Q:

- Explanaton C in group vs. independent C:

- Explanation for different frequencies:

5. *Measuring resistances using the DC bridge*

Draw the bridge, ***write down the values of the resistances,*** *to identify them****, and mark the diagonals 1-2 and 3-4****:*

$E_{measured}$ =

a) R_1 = R_2 = R_3 =

$R_{40\ measured}$= $R_{40\ calculated}$= $\varepsilon_{R40}[\%]=(R_{40\ meas} - R_{40\ calc}) / R_{40\ calc} \cdot 100$=

Explanations:

b) U_{d1}=20mV (The voltmeter in diag. 1-2)

U_{d2}= (The voltmeter in diag. 3-4)

Experimental maximum sensitivity diagonal: .....

Justification:

A_{1-2} = S_{1-2}= A_{3-4} = S_{3-4}=
Theoretical A for maximum S =
Theoretical maximum sensitivity diagonal: .....