

Final Project

Excel Generated Tables

All tables should be generated in one notebook (one Excel File) with each sheet named as indicated. Use formulas to bring values from one sheet to the next (this will be discussed in class)

Table 1:

Generate the following table as shown (note column and row headings are shown):

	A	B	C	D	E	F	G
1		Color Code Resistor Value (Ω)	Tolerance	Min Resistance (Ω)	Max Resistance (Ω)	Measured Resistance (Ω)	Error (%)
2	R1	10000	5%			10025	
3	R2	10000	5%			9953	
4							
5							

Note: Column C should be entered as 5% (cell format should automatically change to “Percentage”)

Call the sheet “Table 1”

Now perform the following calculations:

$$\text{Column D (Min Resistance)} = \text{Color Code Resistor Value} - (\text{Color Code Resistor Value} \times \text{Tolerance})$$

$$\text{Column E (Max Resistance)} = \text{Color Code Resistor Value} + (\text{Color Code Resistor Value} \times \text{Tolerance})$$

$$\text{Column G (Error)} = ((\text{Color Code Resistor Value} - \text{Measured Resistance}) / \text{Color Code Resistor Value}) \times 100$$

Final Spreadsheet should look like:

	A	B	C	D	E	F	G
1		Color Code Resistor Value (Ω)	Tolerance	Min Resistance (Ω)	Max Resistance (Ω)	Measured Resistance (Ω)	Error (%)
2	R1	10000	5%	9500	10500	10025	-0.25
3	R2	10000	5%	9500	10500	9953	0.47
4							

Table 2:

Generate the following table as shown (note column and row headings are shown):

	A	B	C	D
1		Total Resistance (Ω)	Theoretical Total Resistance (Ω)	Total Resistance Using Measured (Ω)
2	Rseries	19972		
3				
4				

Call the sheet "Table 2"

Now perform the following calculations:

Column C (Theoretical Total Resistance) = R1 Color Code (CELL Table 1) + R2 Color Code (CELL Table 1)

Column D (Total Resistance Using Measured Resistance) = R1 Measured Resistance (CELL Table 1) + R2 Measured (CELL Table 1)

Final Spreadsheet should look like:

	A	B	C	D
1		Total Resistance (Ω)	Theoretical Total Resistance (Ω)	Total Resistance Using Measured (Ω)
2	Rseries	19972	20000	19978
3				
4				

Table 3:

Generate the following table as shown (note column and row headings are shown):

	A	B	C	D
1		Total Resistance (Ω)	Theoretical Total Resistance (Ω)	Total Resistance Using Measured (Ω)
2	Rparallel	4995		
3				
4				

Call the sheet "Table 3"

Now perform the following calculations:

Column C (Theoretical Total Resistance) = $1/((1/R1 \text{ Color Code (CELL Table 1)}) + (1/R2 \text{ Color Code (CELL Table 1)}))$

Column D (Total Resistance Using Measured Resistance) = $1/((1/R1 \text{ Measured Resistance (CELL Table 1)}) + (1/R2 \text{ Measured (CELL Table 1)}))$

Final Spreadsheet should look like:

	A	B	C	D
1		Total Resistance (Ω)	Theoretical Total Resistance (Ω)	Total Resistance Using Measured (Ω)
2	Rparallel	4995	5000	4994
3				
4				

Table 4:

Generate the following table as shown (note column and row headings are shown):

	A	B	C	D	E	F	G
1							
2		R1 =					
3		R2 =					
4							
5	Calculated				Measured		
6	Voltage	I1	I2		Voltage	I1	I2
7	5				5.04	0.000467	0.000545
8	6				6.02	0.000524	0.000702
9	7				7.06	0.000649	0.000753
10	8				8.09	0.000857	0.000821
11	9				8.99	0.000947	0.000831
12	10				10.02	0.000919	0.001033
13	11				11.05	0.001126	0.001037
14	12				12.08	0.001257	0.001251
15	13				12.98	0.001356	0.001293
16	14				14.02	0.001444	0.001412
17	15				14.99	0.001435	0.001436
18							
19							

Call the sheet "Table 4"

Now perform the following calculations:

Cell C2 (R1) = Measured Resistance R1 (CELL Table 1)

Cell C3 (R2) = Measured Resistance R2 (CELL Table 1)

Column B (I1) = Voltage / R1

Column C (I2) = Voltage / R2

Now produce two XY (Scatter) Graphs (to the side of the data):

1. Voltage Vs Current R1
 - a. Will have two data series (Only include appropriate values in range)
 - i. Columns A and B
 - ii. Columns E and F
 - b. Include a Linear trend for the measured values
 - c. Label Appropriately

2. Voltage Vs Current R2

- a. Will have two data series (Only include appropriate values in range)
 - i. Columns A and C
 - ii. Columns E and G
- b. Include a Linear trend for the measured values
- c. Label Appropriately

Final Spreadsheet should look like:

