

Homework Assignment #8 (Excel C)

Reference:

Read Chapters 10-13 in Thinking Like An Engineer – An Active Learning Approach, 2nd Edition by Stephan.

Study the PowerPoint presentation – Excel C

Example: *Using Lookup Tables in Microsoft Excel*

Example: *Using Histograms in Microsoft Excel*

Assignment:

For each problem below:

- Include your name, course number, course title, assignment number, problem number and brief instructions.
- Include any given data in tables. The tables should include lines, complete table headings, and centered data with the provided number of digits. If any equations are used to calculate values in table, show sample Excel equations below the table.
- Graphs should include appropriate formatting.
- Follow any other instructions given with each problem.

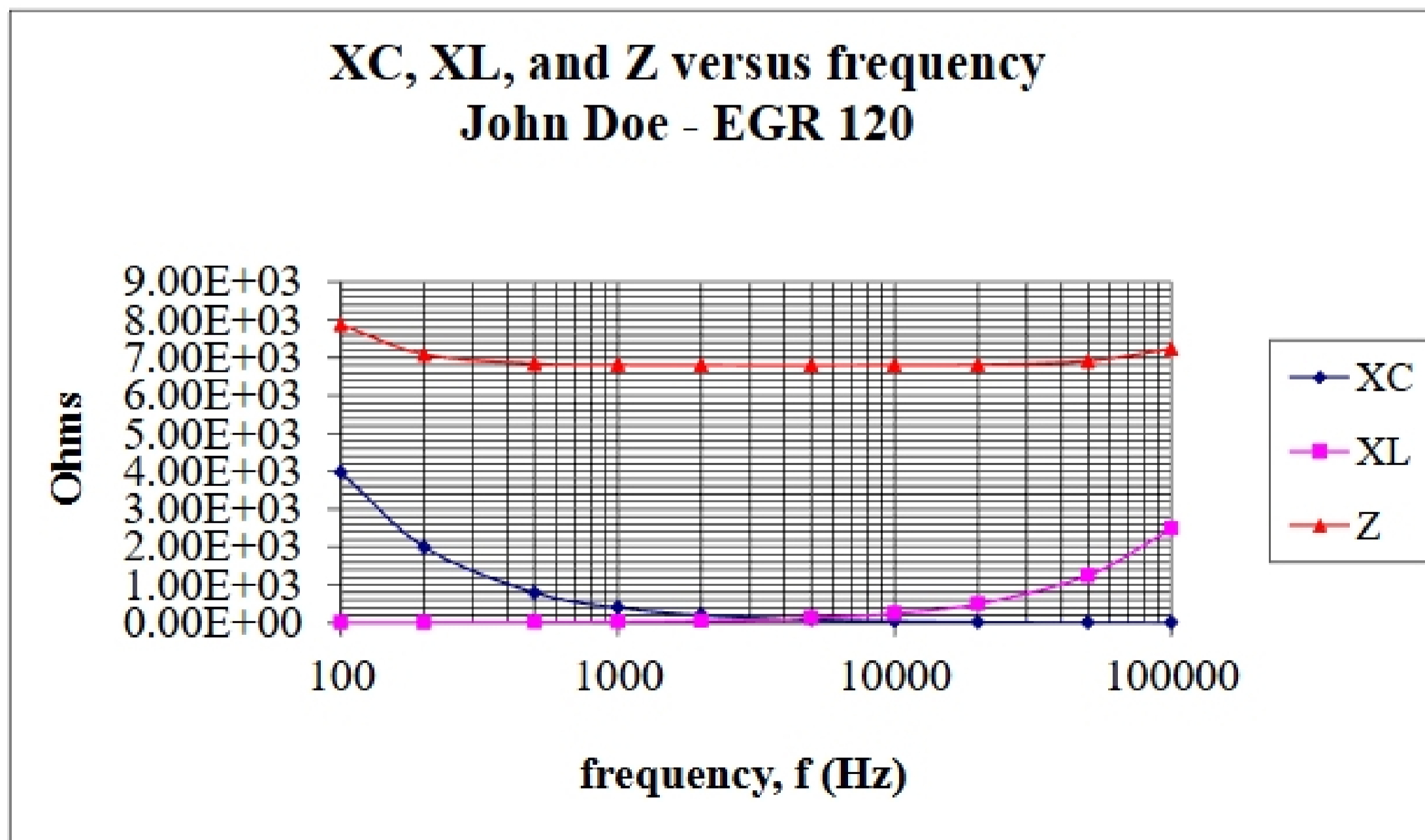
As with previous Excel assignments, use one Excel file to store all parts of the assignments by placing each part on a different sheet (Sheet1, Sheet2, Sheet3, etc – renamed as Problem 1, Problem 2, Problem 3, etc) within the file. Submit the single Excel file using Blackboard.

Warning: Your assignments must be your own work. You can ask other students questions, but sharing files is cheating. If any evidence of copied files is discovered, all parties involved will receive grades of 0 and may be subject to further disciplinary action.

1. Graphing curves with multiple sets of y values

Repeat (or copy) the table of Problem 6 in Homework #6 (the table of values for f , X_C , X_L , Z , and $p.f.$).

Form a single graph showing X_C vs f , X_L vs f , and Z vs f . Include a legend as shown below. Use a scatter plot with a smooth curve (no trendline is needed). The final graph should look like the graph shown below (with your name instead of John Doe). Use a log scale on the x-axis.

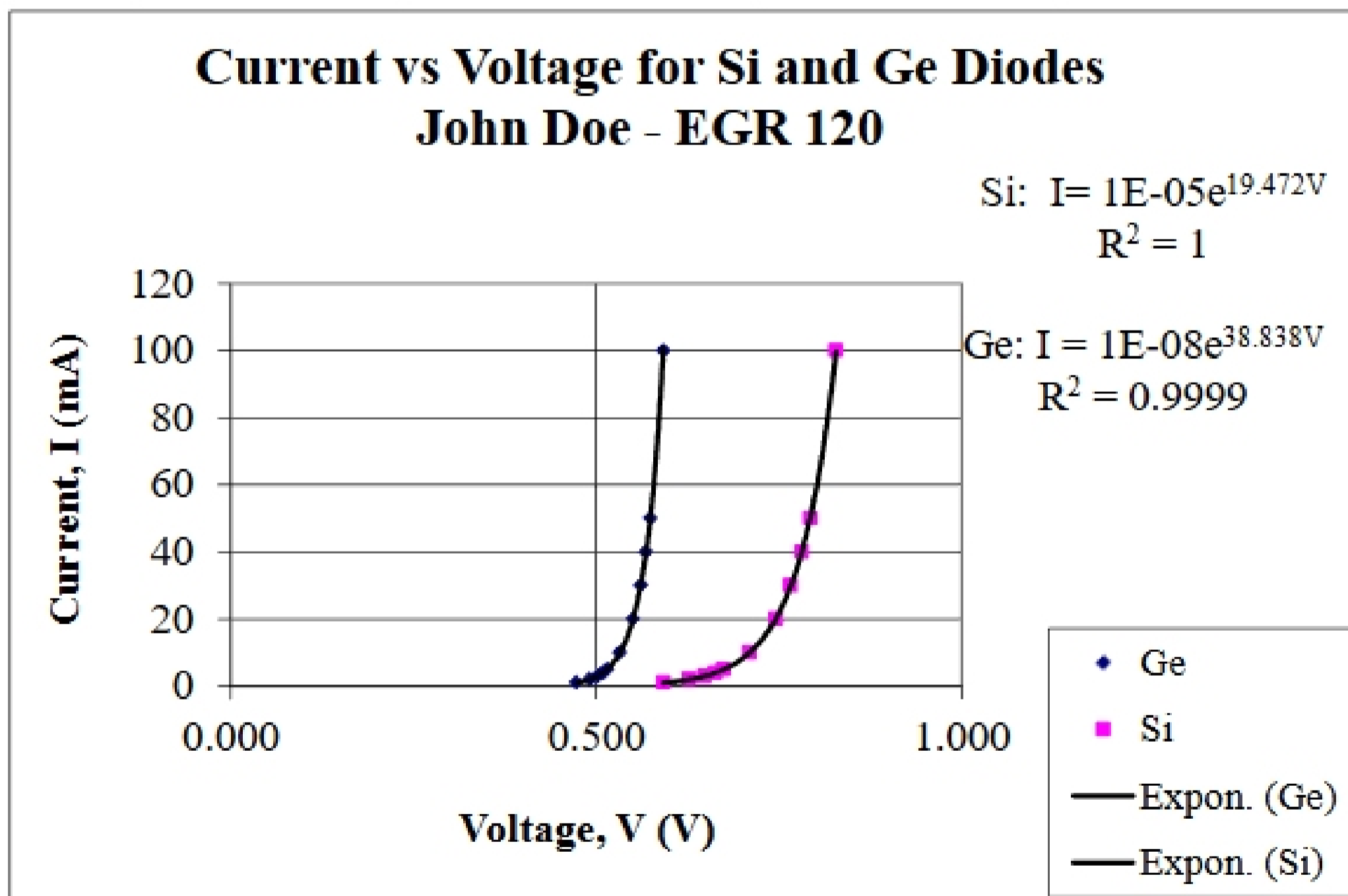


2. Graphing curves with multiple sets of x values

Shown below are voltage and current values for two types of electrical devices called diodes. One of the diodes is made of germanium and the other is made of silicon. It is common to graph these curves with common current values and with current on the y-axis.

- Form a spreadsheet with the table below and with a graph like the one shown below (use linear scales for both axes).
- Add exponential trendlines for each curve as shown.

	Germanium Diode	Silicon Diode
Current (mA)	Voltage (V)	Voltage (V)
1	0.473	0.592
2	0.491	0.627
3	0.502	0.648
4	0.509	0.663
5	0.515	0.674
10	0.532	0.710
20	0.550	0.746
30	0.561	0.766
40	0.568	0.781
50	0.574	0.793
100	0.592	0.828



3. **Wind Energy Table and Column Chart**

- Go to the Department of Energy web site at www.doe.gov
- Select **Trends and Prices** and then select **Annual Energy Review** (or else search for Annual Energy Review).
- Under Tables and Graphs, select **8. Electricity**
- Select **Table 8.2b – Electricity Net Generation** (pdf file under Tables)

A) Take data from the Annual Energy Review and use it to **create a table in Excel** like the one below. Fill out the two columns on the left with data from the table beginning in 1998 through the most recent year reported. Use a formula in Excel to calculate the % of wind power.

Year	Wind Energy for Electricity Generation (Billion kW·h)	Total Energy for Electricity Generation (Billion kW·h)	% of Electricity Energy Generated by Wind
1998	3.0	3457.4	0.087
1999	4.5	3530.0	0.127
2000	5.6	3637.5	0.154
most recent			

B) Form a **column chart** from the Excel table created (as described above) and create a graph of **% of Electricity Energy Generated by Wind**.

4. **Pie Chart**

Create a **pie chart** with the following data.

- Include a legend.
- Include percentages, discipline titles, and the number of degrees next to each pie slice. Each percentage should include 1 digit after the decimal point.
- Include the table headings indicated below

2004 Bachelor's Degrees Awarded by Discipline
(Total: 72,893)

Source: American Society of Engineering Education

Discipline	B.S. Degrees Awarded
Mechanical	14,182
Electrical	12,500
Computer Science	9,156
Civil	8,142
Computer	5,838
Chemical	4,801
Industrial/Manufacturing	3,790
Electrical/Computer	2,700
Other	2,488
Aerospace	2,232
Biomedical	2,019
General Engineering	1,138
Metallurgical & Materials	817
Agricultural	601
Architectural	590
Environmental	576
Eng. Science & Physics	501
Engineering Management	302
Petroleum	233
Nuclear	202