From your own findings by doing project 0 and hearing other teams’ presentations, answer the following questions:

1. What is engineering?
2. What personal qualities help develop an engineering career?
3. What are the basic courses one need to master to become an engineer?

From your own findings by doing project 0 and hearing other teams’ presentations, answer the following questions:

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Logbook questions:

7. What are the coefficients a,b,c,d in relation to the model we make for a set of data?
8. What is the s parameter, why is it important? How to obtain a model using “Solver”?
9. What is data modeling? What can I do with the model?

Logbook questions:

10. How did you modify your spreadsheet to produce a quadratic model, what was the s parameter and coefficients a,b,c for this model?
11. How did you modify the spreadsheet to produce a linear model, what was the s parameter and coefficients b,c for this model?

Logbook questions:

12. What are the data X and Y
13. How many parameters did you use to implement the exponential model? What are their values? What is the s parameter?
M#13 Logbook questions:

15-What is the difference between a Numeric Control and a Numeric Indicator?
16-Can I wire into a Numeric Control? Can I wire from a Numeric Control?
17-To implement V/R: should I wire V to the upper left terminal of the Divide operation or to its lower left terminal? Why?

M#14 Logbook questions:

16-Assume a V=9V, R1=R2=1 Ω; what was I for the series and for the parallel combination?
17-By playing with these Virtual Instruments, and knowing that the electrical power consumed in a resistor is $P=IV=I^2R$, what combination will give us the brightest lights, assuming each resistor is a light bulb?
18-What is the current through each resistor in the series and in the parallel combination (for the same V,R1,R2 as in 1)

M#15 Logbook questions:

19-Assume a V=9V, R1 to R6=1 Ω; what are the values for I, V2, V4, V6 from the equations? What are the values you got from the Virtual Instrument?
20-How many times you found a product and a sum between same the inputs, and then they are divided by each other?
21-Is there any common pattern in obtaining the voltages V2, V4, V6? What is that?

M#16 Logbook questions:

22- What is the difference between a VI that produces Rp as in the figures above, and a Sub-VI that produces the same quantity?
23- Explain the steps to make a VI becomes a sub-VI.
24- Explain the steps to edit the presentation of the icon corresponding to your sub-VI

M#17 Logbook questions:
25- Explain the steps to call in a sub-VI. Show a diagram with the right input in each terminal for your parallel and Vnext icons.
26- What happens if you forgot to assign an connector in the process of creating a sub-VI?
27- What are the “currents” inputs for V2, V4, and V6?

M#22
Logbook questions:

28- What is a Case Structure? How many cases are there? The result of what operator in our example controls the two cases in the Case Structure?
29- How do you transfer information about the values of the variables in a formula written within a Formula Node, into and out of it?
30- What is the power symbol (e.g. how do you write v^2 in a Formula Node?) Any special character to end a formula?

M#23
Logbook questions:

31- Describe a For Loop: what is N, what is i, what values it will take?
32- Describe an “Eval Single-Variable Array”: what are the inputs and outputs? What do we use it for?
33- Describe a “Bundle”: what do we use it for? How to add an input terminal?

M#24
Logbook questions:

34- What are the inputs required by an XY graph?
35- What is an Array? How do I enter a numeric Array?
36- What should I avoid when entering data into a Numeric Array, for not having strange plot on the XY graph?

M#25
Logbook questions:

37-what is the period of a sinusoid or a periodic signal? How to get the period from the frequency?
38-Why did we use two Eval.-Single-Var. Array and not three (there are three graphs)? How did you get the third signal?
39. By just looking at the combined signal, can you determine how many sinusoids it is composed of? Explain how.

M#26
Logbook questions:

40. Why a binary representation is more suitable for the computer? What is the relationship between assembly code, programming language, and compiler?

41. What is the minimum number of bits needed to write 127 in binary representation?

42. Can fractional numbers be represented exactly in a binary system? Why computers use more bits (they went from 16, to 32, to now 64 bits)?

Project 0 (Team and Individual Report)
Project 1 (Team report)
Project 2 (Team report)
Project 3 (Team report)
Each project with a Team Webpage

HW1
HW2
HW3
Hw4
HW6

CW1
Cw2
Cw3
CW4
CW5
CW7
CW8
CW10a and b
CW13