M#5

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?**

M#6

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

4- **What is engineering?**
5- **What personal qualities help develop an engineering career?**
6- **What are the basic courses one need to master to become an engineer?**

M#7

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?**

M#8

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?**

M#9

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?**
14- **Attach a plot of the data and model. Show the parameters for your model using Solver and the parameters obtained from:**

http://www.itl.nist.gov/div898/handbook/pmd/section6/pmd632.htm

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