

ME 360: FUNDAMENTALS OF SIGNAL PROCESSING, INSTRUMENTATION, AND CONTROL

Experiment No. 1 – Introduction to Laboratory Instruments Pre-lab Questions

These short answer questions must be completed and turned in at the beginning of the laboratory period.

1. In this experiment, which of the following measurements are made using the digital multimeter?

| | | | | |
|------------|------------|-------------|------------|------------|
| AC Voltage | AC Current | Capacitance | DC Voltage | DC Current |
| Frequency | Inductance | Phase-shift | Period | Resistance |

2. In this experiment, which of the following measurements are made using the oscilloscope?

| | | | | |
|------------|------------|-------------|------------|------------|
| AC Voltage | AC Current | Capacitance | DC Voltage | DC Current |
| Frequency | Inductance | Phase-shift | Period | Resistance |

3. When is a four-wire resistance measurement necessary?

4. A resistor has the following four bands. What is the range of possible resistance values?

| | | | |
|--------|--------|--------|--------|
| Band 1 | Band 2 | Band 3 | Band 4 |
| Red | Orange | Green | Brown |

5. Sketch the circuit used for current measurement.

6. Sketch the circuit used for the RC low-pass filter.

7. Draw a sketch to explain voltage level triggering on an oscilloscope.

8. In this experiment, what three numerical parameters are programmed into function generator to produce the desired waveform?

9. What four "standard" waveforms can the function generator produce?