DIGITAL SYSTEMS

PRACTICUM 2

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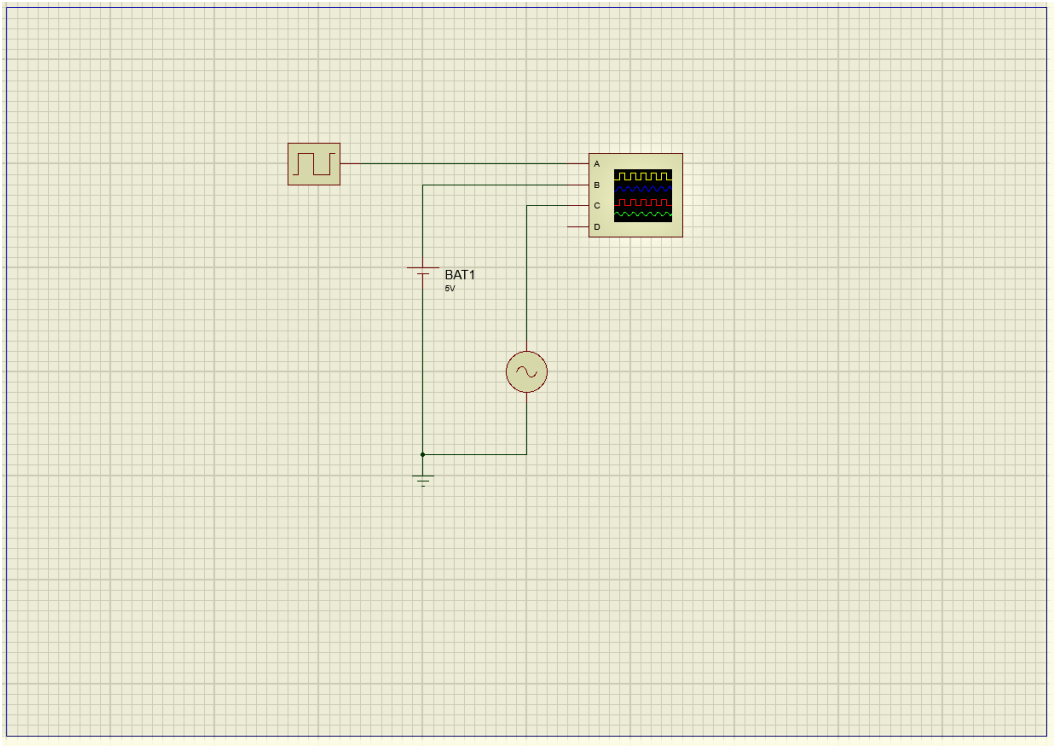
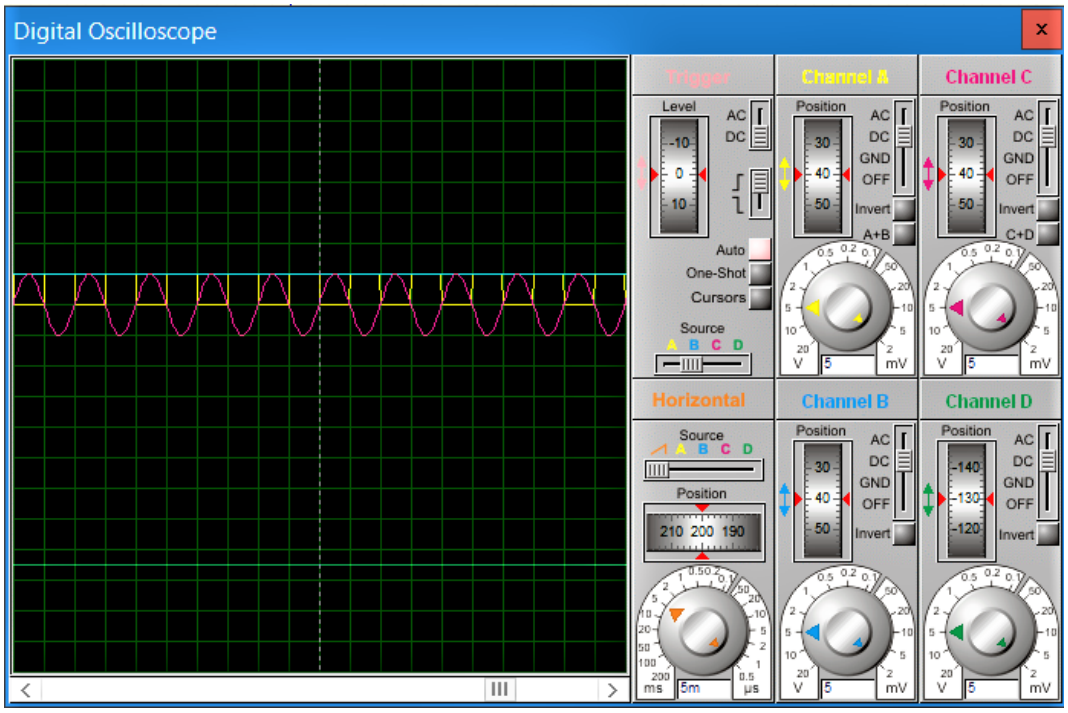
Experiment 1



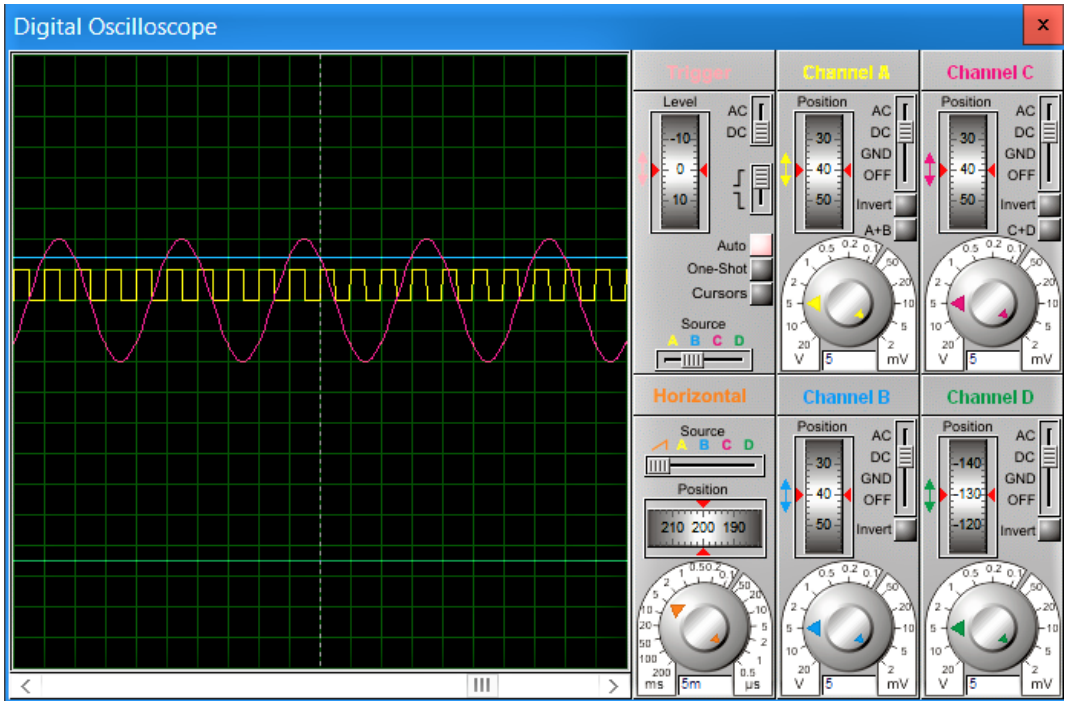
Picture 1.1. Screenshot of the series



Picture 1.2.1. Screenshot on oscilloscope display

Explanation:

1. The shape of the A signal is corrugated box
2. The shape of the B signal is flat horizontal
3. The shape on signal C is wavy up and down
4. The shape of the D signal is flat horizontal



Picture 1.2.2. Screenshot on oscilloscope display

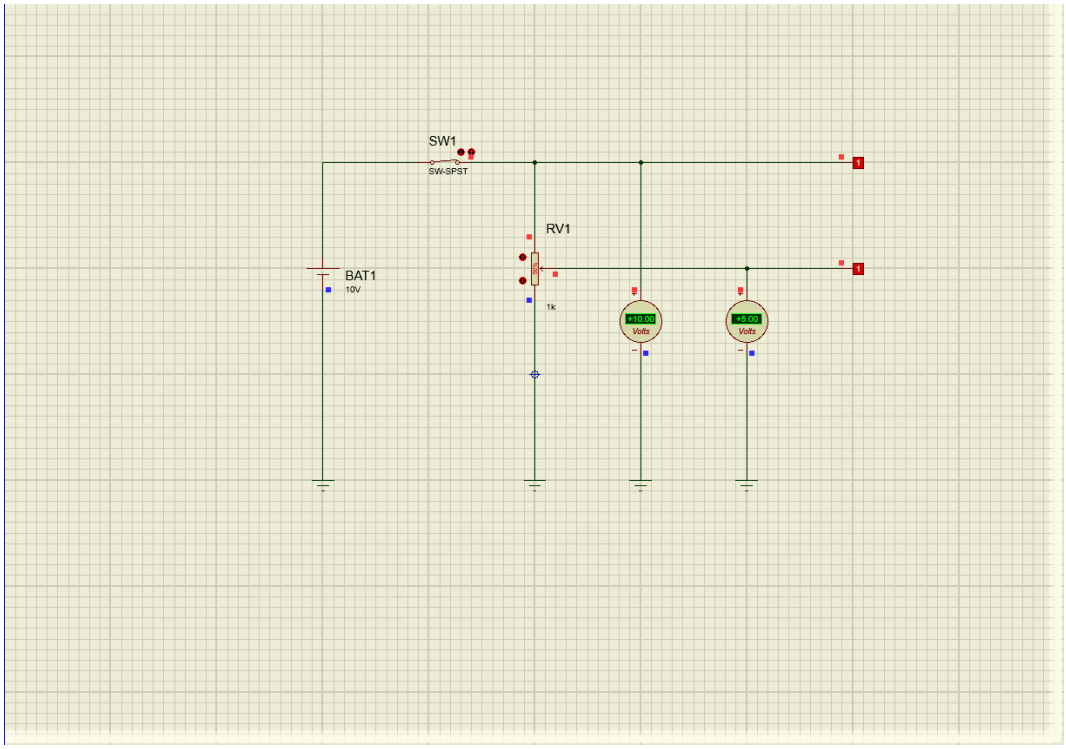
Explanation:

1. The shape of the A signal is corrugated box.
2. The shape of the B signal is flat horizontal.
3. The shape on signal C is wavy up and down.
4. The shape of the D signal is flat horizontal.

1. What is the difference between analog and digital signals?
   Answer:
   Digital signals have a fixed discrete value. Analog signals have a continuous range of values
2. What is the signal character of each component?
   Answer:
   a. Signal from Alternator: Digital. because the data signal have a fixed discrete value.
   b. Signal from Battery: Analog. because the data signal have a continuous range of values.
   c. Signal from Clock source: Analog. because the data signal have a continuous range of values.
3. Make a conclusions are based on observations on various types of signals
   Answer:

Digital signals have a fixed discrete value. Analog signals have a continuous range of values.

Experiment 2



Picture 2.1. Screenshot of the series

1. Based on simulation
    a. Voltmeter DC 1: +10.00 Volts.
    b. Voltmeter DC 2: +5.00 Volts.
    c. Logicprobe 1 shows logic conditions: 1.
    d. Logicprobe 2 shows logic conditions: 1.
2. Based on simulation
    a. Logicprobe 2 shows logic 1 (high), if DC Voltmeter is 2: +3.10 Volts to +10.00 Volts.
    b. Logicprobe 2 shows logic 0 (Low), if DC Voltmeter 2: +0.00 Volts to +1.60 Volts.
3. Conclusion based on analysis

    Logicprobe shows whether a voltage is included in the digital voltage range. Only two voltage conditions that are allowed on a digital voltage are 0 Volts and 5 Volts (with tolerance). Digital signals are not permitted through limit voltage (as in Logicprobe 1).