

KNOWLEDGE PROBE 4: TROUBLESHOOTING

Digital Troubleshooting

Learning Objectives

- Describe troubleshooting by signal injection.
 - Describe troubleshooting by signal tracing.
 - Describe troubleshooting by substitution.
 - Identify techniques that should be used in troubleshooting digital circuits.
1. Noise on the DC power line of a digital circuit can cause spikes that create logic glitches that in turn produce random logic signal changes. The most likely problem is a
 - a. Bad power supply
 - b. Defective logic circuit
 - c. No clock signal
 - d. Open DC bypass capacitor
 2. A special instrument to test complex digital circuits by observing multiple signals simultaneously is the:
 - a. Logic analyzer
 - b. Logic probe
 - c. Oscilloscopes
 - d. Spectrum analyzer
 3. A common failure in digital circuits are the
 - a. Flip flops
 - b. Interface bus drivers
 - c. Logic gates
 - d. Microcontrollers
 4. In products with an embedded controller, the most likely failure is with the
 - a. Input or output devices
 - b. Microcontroller chip itself
 - c. Power supply
 - d. Software
 5. A good test to see if the microcontroller is working is to look at the
 - a. Clock signal
 - b. DC supply voltage
 - c. Inputs
 - d. Outputs



6. The most common method of repairing an embedded controller-based device is to
 - a. Replace the entire module containing the microcontroller
 - b. Replace the microcontroller IC with a new one
 - c. Reprogram the microcontroller
 - d. Use a special test instrument to look inside the microcontroller