

Automotive Electrical and Engine Performance 9th Edition
Chapter 4 – Circuit Testers and Digital Meters
Quiz A

1. What is the primary function of a fused jumper wire in circuit diagnostics?
 - a. To bypass the entire electrical system for troubleshooting
 - b. To provide a safe method of supplying power or ground to a component
 - c. To serve as a permanent electrical connection in a circuit
 - d. To check for voltage variations in high-current circuits

2. What should be used to measure voltage without significantly affecting the circuit?
 - a. Inductive ammeter
 - b. Logic probe
 - c. High-impedance digital multimeter (DMM)
 - d. Non-powered test light

3. What does the "OL" reading on a digital multimeter indicate when set to measure resistance?
 - a. Zero resistance (continuity present)
 - b. High current flow through the circuit
 - c. An open circuit or resistance higher than the selected range
 - d. Reverse polarity detected

4. What is the advantage of using a high-impedance test light on computer circuits?
 - a. It prevents excessive current draw and damage to sensitive components
 - b. It illuminates faster than standard test lights
 - c. It can measure both AC and DC currents simultaneously
 - d. It bypasses resistance in the circuit to allow current flow

5. Which of the following is a common function of a logic probe?
- Detecting high and low voltage levels in a circuit
 - Measuring resistance in the kilohm range
 - Providing power to components during diagnostics
 - Checking the frequency of electrical signals
6. What type of meter is used to measure current without breaking the circuit?
- Non-powered test light
 - High-impedance test meter
 - Inductive clamp-on ammeter
 - RMS multimeter
7. What is the correct setup for measuring current with a digital multimeter?
- Set the meter to AC volts and connect leads in parallel
 - Insert the leads into the appropriate ammeter terminals and connect in series
 - Use a high-impedance setting and attach leads to the battery terminals
 - Connect the meter to the fuse box for accurate readings
8. What does "duty cycle" measure in an automotive context?
- The maximum voltage drop across a circuit
 - The percentage of time a signal is on compared to off
 - The total resistance in a computer-controlled system
 - The frequency of pulsing signals in a sensor
9. What is a typical application of frequency measurement using a digital multimeter?
- Measuring battery voltage under load
 - Diagnosing alternator output waveforms
 - Checking the air–fuel ratio
 - Verifying mass airflow (MAF) sensor operation

10. Which unit prefix indicates one-thousandth of the base measurement?

a. Mega (M)

b. Kilo (k)

c. Milli (m)

d. Micro (μ)

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Correct Answers:

1. d

2. a

3. c

4. a

5. c

6. c

7. b

8. d

9. a

10. c