

**Automotive Electrical and Engine Performance 8th Edition**  
**Chapter 5 – Digital Storage Oscilloscope, Operation and Use**  
**Quiz B**

1. What is the primary function of a digital storage oscilloscope (DSO)?
  - a. To measure electrical resistance in a circuit
  - b. To capture, store, and analyze voltage signals over time
  - c. To measure direct and alternating current simultaneously
  - d. To calculate engine load based on voltage signals
  
2. In a pulse train, what does "duty cycle" measure?
  - a. Frequency of the waveform in cycles per second
  - b. The rise time of the signal waveform
  - c. The percentage of time the signal is active in a complete cycle
  - d. The amplitude variation of the waveform
  
3. Which waveform characteristic is most affected by adjusting the time base of a scope?
  - a. Voltage amplitude
  - b. Horizontal time scale of the signal
  - c. Vertical display resolution
  - d. Sampling frequency
  
4. What is the effect of selecting AC coupling on an oscilloscope?
  - a. Blocks DC voltage to display only AC signals
  - b. Allows both AC and DC signals to pass
  - c. Filters high-frequency noise from DC signals
  - d. Displays voltage signals as pulse-width modulation

5. Why is the volts per division setting critical on a scope?
- a. It determines the waveform's resolution in the time domain
  - b. It ensures the waveform fits within the display limits
  - c. It adjusts the sampling rate of the oscilloscope
  - d. It filters unwanted frequencies in the signal
6. What can cause glitches or "spikes" in a recorded oscilloscope waveform?
- a. Sampling rates too low for the signal frequency
  - b. Poor connection to the ground lead
  - c. Incorrect vertical scaling
  - d. Ambient electromagnetic interference
7. What is the main advantage of a current clamp used with a scope?
- a. Measures current flow without circuit disconnection
  - b. Automatically calculates waveform duty cycle
  - c. Reduces sampling errors at low current levels
  - d. Provides real-time voltage calibration
8. What is the purpose of a trigger slope setting on an oscilloscope?
- a. Determines the waveform's frequency range
  - b. Activates the scope to display the waveform at a specific voltage direction
  - c. Adjusts the vertical scaling for precise voltage measurements
  - d. Synchronizes multiple waveforms on the screen
9. When analyzing a hybrid vehicle's MAP sensor with a DSO, a momentary rise to 5 volts indicates:
- a. A sudden decrease in manifold vacuum
  - b. A momentary open circuit in the system
  - c. Normal signal variation under load
  - d. A sudden increase in engine speed

10. Which of the following describes a pressure transducer's role in diagnostics?

- a. Converts temperature changes into electrical signals
- b. Measures and displays pressure as electrical waveforms
- c. Tracks AC signal amplitude fluctuations
- d. Synchronizes pressure readings with pulse train signals

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**Correct Answers:**

1. b
2. c
3. b
4. a
5. b
6. a
7. a
8. b
9. a
10. c