

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

1. What is the purpose of setting the time base on a digital storage oscilloscope (DSO)?
 - a. To control the power supplied to the scope
 - b. To adjust the brightness of the waveform display
 - c. To determine how much time is represented per division on the display
 - d. To calibrate the voltage scale automatically

2. What does the term "graticule" refer to on an oscilloscope?
 - a. The scale grid used for reference measurements
 - b. The maximum voltage setting on the scope
 - c. The trigger level control knob
 - d. The DC offset adjustment

3. What is a key advantage of DC coupling on a DSO?
 - a. It blocks AC signals and shows only DC voltages
 - b. It eliminates interference from high-frequency noise
 - c. It allows both DC and AC components of a signal to be observed
 - d. It isolates the scope input from external power sources

4. Why is a high sampling rate important in a digital storage oscilloscope?
 - a. To ensure the display remains stable during measurements
 - b. To capture rapid signal changes or glitches accurately
 - c. To extend the scope's battery life during operation
 - d. To reduce the total size of the captured waveform data

5. What is the main function of a trigger in oscilloscope operation?
- To establish a starting point for the waveform display
 - To synchronize multiple scopes for simultaneous measurements
 - To stabilize voltage fluctuations in the measured circuit
 - To adjust the time base dynamically
6. What does the duty cycle of a pulse-width modulation (PWM) signal represent?
- The percentage of time the signal is "on" during a complete cycle
 - The maximum amplitude of the pulse
 - The total duration of the signal's off-time
 - The number of pulses per second
7. Which signal would benefit most from using AC coupling on an oscilloscope?
- Battery voltage under varying load conditions
 - Ripple voltage from an alternator output
 - Pulse trains from an ignition coil
 - DC signals with low voltage variations
8. How does the vertical "volts per division" setting affect the waveform display on a DSO?
- It adjusts the horizontal time scale for better resolution
 - It determines the amplitude scale for voltage measurements
 - It sets the trigger point for waveform stabilization
 - It limits the bandwidth of the displayed signal
9. Why might a technician use a pressure transducer with an oscilloscope?
- To analyze electrical pulses in a fuel injector circuit
 - To measure changes in system pressure, such as cylinder compression or exhaust pressure
 - To observe the duty cycle of a PWM-controlled solenoid
 - To detect frequency variations in a magnetic speed sensor

10. What characteristic of a waveform does the slope setting control?

- a. The width of each pulse in milliseconds
- b. The direction (rising or falling) that triggers the waveform display
- c. The voltage scale of the waveform
- d. The total frequency of the waveform in hertz

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Correct Answers:

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