Automotive Electrical and Engine Performance 9th 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?

a. To establish a starting point for the waveform display

b. To synchronize multiple scopes for simultaneous measurements

c. To stabilize voltage fluctuations in the measured circuit

d. To adjust the time base dynamically

6. What does the duty cycle of a pulse-width modulation (PWM) signal represent?

a. The percentage of time the signal is "on" during a complete cycle

b. The maximum amplitude of the pulse

c. The total duration of the signal's off-time

d. The number of pulses per second

7. Which signal would benefit most from using AC coupling on an oscilloscope?

a. Battery voltage under varying load conditions

b. Ripple voltage from an alternator output

c. Pulse trains from an ignition coil

d. DC signals with low voltage variations

8. How does the vertical "volts per division" setting affect the waveform display on a DSO?

a. It adjusts the horizontal time scale for better resolution

b. It determines the amplitude scale for voltage measurements

c. It sets the trigger point for waveform stabilization

d. It limits the bandwidth of the displayed signal

9. Why might a technician use a pressure transducer with an oscilloscope?

a. To analyze electrical pulses in a fuel injector circuit

b. To measure changes in system pressure, such as cylinder compression or exhaust pressure

c. To observe the duty cycle of a PWM-controlled solenoid

d. 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