Automotive Electrical and Engine Performance 9th Edition
Chapter 30 – Ignition System Diagnosis and Service
Multiple Choice Questions Quiz B

1. What is the purpose of the Automatic Shutdown (ASD) relay in ignition systems?

a. It disables fuel injection when the crankshaft sensor is inactive

b. It prevents voltage spikes during startup

c. It provides continuous power to the spark plugs during cranking

d. It supplies voltage to the ignition coil only when the engine is cranking

2. Why should a spark tester be used to check for spark instead of a standard spark plug?

a. It requires at least 25,000 volts to fire, ensuring the system's capacity

b. It measures the precise gap of the spark plug

c. It confirms proper routing of spark plug wires

d. It ensures accurate timing of the ignition pulse

3. What does a Hall-effect sensor detect in an ignition system?

a. Variations in resistance from engine vibrations

b. Fluctuations in air-fuel ratio in the combustion chamber

c. Changes in a magnetic field to generate a digital signal

d. Electromagnetic waves to measure spark energy

4. Which component is tested first during a no-spark diagnosis?

a. Battery voltage at the ignition coil positive terminal

b. Resistance of the spark plug wires

c. Continuity of the secondary ignition circuit

d. Voltage drop across the crankshaft position sensor

5. What does a higher-than-normal firing line on an oscilloscope pattern indicate?

a. A defective ignition control module

b. Lean air–fuel mixture or excessive spark plug gap

c. Weak voltage from the ignition coil primary circuit

d. Faulty wiring in the secondary ignition circuit

6. How is a magnetic sensor's functionality tested?

a. By measuring the resistance with an ohmmeter

b. By observing its reaction to a strong magnetic field

c. By checking voltage pulses with a digital voltmeter

d. By applying external power and monitoring waveform output

7. What does a downward-sloping spark line typically indicate?

a. A shorted ignition coil

b. High resistance in the spark plug wires

c. Lean air–fuel mixture or incomplete combustion

d. Spark plug deposits or other ignition problems

8. What does a scope pattern's intermediate oscillations represent?

a. Voltage drops caused by high resistance in the secondary circuit

b. Energy dissipation in the coil after the spark is complete

c. Timing advance based on engine speed

d. Variations in the spark plug gap

9. What is the most likely cause of low spark duration on an oscilloscope?

a. Fouled spark plug

b. Excessive air gap in the spark plug

c. A shorted ignition coil

d. Faulty crankshaft position sensor

10. How is a no-spark condition diagnosed in a waste-spark ignition system?

a. By testing the crankshaft position sensor signal

b. By grounding out spark plug wires one at a time

c. By monitoring coil output with a scope

d. By verifying coil resistance against manufacturer specifications

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Answer Key Quiz B

Correct Answers:

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