

Automotive Electrical and Engine Performance 9th Edition

Chapter 9 – On-Board Diagnosis

Quiz B

1. What are the four primary requirements of OBD-II regulations?
 - a. Engine performance, driver safety, fault monitoring, and calibration
 - b. Emission control, fault detection, MIL activation, and system testing
 - c. Sensor optimization, DTC recording, exhaust monitoring, and energy efficiency
 - d. Exhaust reduction, ignition timing, diagnostic resets, and battery checks

2. What is the role of the comprehensive component monitor (CCM) in OBD-II systems?
 - a. Continuously checks the operation of emission-related components and circuits
 - b. Manages the timing and priority of diagnostic tests and monitors
 - c. Identifies rationality errors in onboard control systems
 - d. Validates catalyst efficiency using exponential moving averages

3. Which conditions globally disable certain OBD-II monitors during operation?
 - a. High fuel consumption rates and advanced timing
 - b. Low battery voltage, high altitude, or low ambient temperature
 - c. Closed-loop operation and continuous sensor switching
 - d. Rapid ignition timing and fuel ratio imbalance

4. What is the function of freeze-frame data in OBD-II diagnostics?
 - a. Prevents the MIL from flashing when a fault is detected
 - b. Automatically clears pending DTCs when operating conditions are stable
 - c. Captures and stores critical engine data at the time of a fault detection
 - d. Measures oxygen sensor efficiency across trip conditions

5. What criteria must be met for the catalyst monitor to run in an OBD-II system?
- a. Closed-loop fuel control, proper temperature, and engine under load
 - b. Open-loop fuel system, vehicle idling, and short-term fuel trim adjustment
 - c. Exhaust temperature exceeding threshold limits with system reset
 - d. High-speed operation and continuous ignition adjustment
6. Which DTC category indicates a fault in communication between system modules?
- a. Bxxx
 - b. Cxxx
 - c. Uxxx
 - d. Pxxx
7. What operational phase is required for the oxygen sensor monitor to initiate testing?
- a. Vehicle cruising at a constant high speed
 - b. Engine operating in closed-loop mode and achieving sufficient temperature
 - c. Diagnostic executive prioritizing secondary monitors
 - d. Sequential ignition and misfire detection
8. Which component or condition is NOT included in the fuel trim monitor?
- a. Short-term fuel correction percentages
 - b. Mass airflow sensor calibration
 - c. Adaptive long-term memory values
 - d. Throttle position during rapid acceleration
9. What distinguishes a Type A diagnostic trouble code (DTC)?
- a. Immediate MIL activation upon detection
 - b. MIL activation after two consecutive faults
 - c. No effect on the MIL or emissions test readiness
 - d. Specific to engine misfire diagnostics

10. What is the purpose of the exponentially weighted moving average (EWMA) in OBD-II monitors?
- a. Detecting rapid misfire conditions during test cycles
 - b. Smoothing test results over multiple drive cycles for reliability
 - c. Calibrating throttle response for EGR system adjustments
 - d. Analyzing fuel pressure variances in real-time conditions

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Correct Answers:

1. b

2. a

3. d

4. c

5. a

6. c

7. b

8. d

9. a

10. b