

Automotive Electrical and Engine Performance 8th Edition
Chapter 18 – Electronic Throttle Control System
Quiz A

1. What is the purpose of the electronic throttle control (ETC) system?
 - a. To regulate the fuel injection system using vacuum pressure
 - b. To eliminate the mechanical throttle cable and allow electronic control of the throttle plate
 - c. To enhance vehicle cooling performance during idle conditions
 - d. To monitor exhaust flow for emissions control

2. What does the default position of the throttle plate in an ETC system refer to?
 - a. The fully closed position to prevent engine idling
 - b. The fail-safe position to allow limited airflow for idle operation
 - c. The fully open position to maximize acceleration
 - d. The position where the throttle plate aligns with the intake manifold

3. How does a throttle actuator motor in the ETC system operate?
 - a. By using a stepper motor to rotate the throttle plate gradually
 - b. By utilizing a vacuum-driven mechanism for throttle plate movement
 - c. By engaging gears connected to the accelerator pedal for direct control
 - d. By using a DC motor controlled by an H-bridge circuit

4. What is the primary purpose of the accelerator pedal position (APP) sensor in the ETC system?
 - a. To provide input signals to the PCM indicating driver acceleration intent
 - b. To measure throttle plate movement for calibration purposes
 - c. To monitor engine RPM and synchronize air intake
 - d. To regulate engine coolant temperature during operation

5. How do dual throttle position (TP) sensors improve system reliability?
 - a. By increasing the speed of throttle plate response during acceleration
 - b. By providing redundant signals for fault detection and fail-safe operation
 - c. By adjusting throttle plate angles to minimize emissions
 - d. By ensuring consistent air-fuel mixture delivery

6. What happens during the spring test of an ETC system?
 - a. The PCM checks throttle plate movement to verify proper motor and spring operation
 - b. The throttle plate is locked in the default position for calibration
 - c. The throttle actuator resets its internal memory for improved response
 - d. The APP sensor recalibrates its voltage ranges

7. Which condition typically causes the ETC system to enter limp-in mode?
 - a. High intake air temperatures above 100°F
 - b. Failure of one TP sensor or loss of actuator motor function
 - c. Excessive oil pressure in the throttle body assembly
 - d. Vacuum leaks in the intake manifold

8. What is the recommended method to clean an electronic throttle body?
 - a. Spray throttle body cleaner directly onto the throttle plate while the engine runs
 - b. Remove the throttle body and submerge it in a cleaning solution
 - c. Use a shop cloth with throttle body cleaner and manually clean the throttle plate
 - d. Apply high-pressure air to remove carbon deposits from the throttle body

9. Why is pulse-width modulation (PWM) used in the throttle actuator control?
 - a. To adjust fuel injection timing
 - b. To reverse motor direction for opening and closing the throttle plate
 - c. To regulate air-fuel mixture during idle operation
 - d. To monitor throttle position sensor output

10. When is a throttle body relearn procedure necessary?
- a. After replacing the throttle body or cleaning carbon deposits
 - b. After calibrating the APP sensor for proper voltage ranges
 - c. After adjusting the idle air control valve
 - d. After replacing the engine control module

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Correct Answers:

1. c

2. a

3. d

4. a

5. c

6. d

7. b

8. a

9. c

10. a