Automotive Electrical and Engine Performance 9th 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