Automotive Electrical and Engine Performance 9th Edition
Chapter 37 – Electronic Throttle Control Systems
Multiple Choice Questions Quiz B

1. What is the main advantage of using an electronic throttle control (ETC) system over a mechanical throttle cable?

a. Eliminates the mechanical cable, reducing moving parts

b. Improves idle air control through manual adjustments

c. Reduces engine noise by minimizing vibration

d. Simplifies the operation of cruise control systems

2. What component in the ETC system provides redundant signals for safety?

a. Throttle position (TP) sensor

b. Electronic control unit

c. Accelerator pedal position (APP) sensor

d. Servomotor

3. Why is an H-bridge circuit used in ETC actuator motor control?

a. To amplify voltage for TP sensors

b. To ensure constant throttle plate position

c. To drive two motors simultaneously

d. To reverse motor direction by changing polarity

4. What is the default or limp-in position of the throttle plate in most ETC systems?

a. Slightly open to allow idle airflow (16%-20%)

b. Fully closed to minimize air intake

c. Wide open to prevent power loss

d. Half-open to balance engine output

5. What is the purpose of the spring-loaded mechanism in the throttle body assembly?

a. To regulate the speed of the servomotor

b. To adjust TP sensor output dynamically

c. To ensure smooth acceleration

d. To return the throttle plate to the default position in case of power loss

6. What type of fault will trigger a "reduced power" warning light in an ETC system?

a. Low battery voltage affecting the PCM

b. Intermittent fuel pressure drops

c. Throttle position sensor mismatch signals

d. A short circuit in the starter relay

7. During the self-test of an ETC system, what indicates a problem with the throttle body?

a. The throttle plate fails to move when commanded

b. The throttle plate returns to default too quickly

c. A clicking sound is emitted during the test

d. The motor exhibits excess resistance

8. How does an ETC system help reduce pumping losses during idle conditions?

a. By adjusting the throttle plate to create higher manifold pressure

b. By retarding ignition timing and optimizing EGR flow

c. By closing the throttle plate to eliminate airflow fluctuations

d. By increasing APP sensitivity for quicker response

9. What is a common symptom of a dirty throttle body in an ETC system?

a. Rapid engine deceleration during idle

b. Erratic engine RPM when accelerating

c. Coast-down stalls or lower-than-normal idle speed

d. Increased response delay when shifting gears

10. Why are Hall-effect sensors used in some throttle body assemblies?

a. They require minimal calibration during installation

b. They offer longer durability due to non-contact operation

c. They produce consistent analog signals for PCM processing

d. They provide redundancy through multiple signal outputs

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Answer Key Quiz B

Correct Answers:

1. a

2. c

3. d

4. a

5. d

6. c

7. a

8. b

9. c

10. b