Automotive Electrical and Engine Performance 9th Edition
Chapter 35 – Fuel-Injection Parts and Operation
Multiple Choice Questions Quiz B

1. What is the function of a fuel-pressure regulator in a fuel injection system?

a. To increase fuel atomization at the injector tip

b. To reduce vacuum pressure at high RPMs

c. To stabilize injector spray patterns during low load

d. To maintain a constant pressure drop across the injectors

2. Which sensor is primarily used in a speed-density fuel-injection system to determine the base pulse width?

a. Oxygen sensor (O2S)

b. Throttle position sensor (TPS)

c. Manifold absolute pressure sensor (MAP)

d. Intake air temperature sensor (IAT)

3. What is the main advantage of port fuel injection over throttle body injection?

a. Better fuel atomization and vaporization near the intake valve

b. Simpler design and easier maintenance

c. Reduced complexity of electronic control modules

d. Increased durability of injectors

4. Why is a vacuum line attached to the fuel-pressure regulator in a port fuel-injection system?

a. To vent excess fuel into the intake manifold

b. To reduce backpressure in the fuel rail

c. To ensure equal pressure drop across the injectors

d. To adjust the injector spray pattern for high-load conditions

5. What determines the injector pulse width in a mass airflow fuel-injection system?

a. The amount of air entering the engine

b. Engine coolant temperature only

c. Throttle position alone

d. Intake air temperature and barometric pressure

6. Which component can regulate pump speed in an electronic returnless fuel system (ERFS)?

a. Pressure control valve (PCV)

b. Pump power driver with pulse width modulation (PWM)

c. Mechanical bypass valve

d. Demand delivery regulator

7. What is the role of the oxygen sensor (O2S) in modifying the injector pulse width?

a. To adjust for high engine loads

b. To regulate idle speed

c. To ensure proper air-fuel ratio during closed-loop operation

d. To detect pressure changes in the fuel rail

8. What is the primary purpose of the demand delivery system (DDS)?

a. To eliminate the need for a vacuum-controlled regulator

b. To provide a fixed pressure across all injectors

c. To compensate for fuel pulsations with a rectangular fuel rail

d. To admit precise fuel amounts and reduce pulsation at the rail

9. What does the term "clear flood mode" describe in fuel-injection systems?

a. Running the engine at a fixed air-fuel ratio during deceleration

b. Reducing or shutting off fuel injectors when the throttle is fully open and engine speed is low

c. Injecting fuel with additional pulses for rapid engine warm-up

d. Limiting engine performance in high-altitude conditions

10. What type of actuator is commonly used to control idle air bypass in modern engines?

a. Electronic throttle control (ETC) actuator

b. Vacuum solenoid

c. Idle air control (IAC) stepper motor

d. Fuel-temperature sensor

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Answer Key Quiz B

Correct Answers:

1. d

2. c

3. a

4. c

5. a

6. b

7. c

8. d

9. b

10. c