

Automotive Electrical and Engine Performance 8th Edition
Chapter 22 – Fuel-Injection Components and Operation
Quiz B

1. What is the function of the vacuum-controlled fuel pressure regulator in a port fuel-injection system?
 - a. To prevent fuel leakage under heavy load
 - b. To stabilize fuel temperature in the tank
 - c. To maintain a constant pressure drop across the injectors
 - d. To regulate vapor pressure during idle

2. What distinguishes mechanical returnless fuel systems from other fuel-injection systems?
 - a. They use a variable-speed electric fuel pump.
 - b. They have a bypass regulator near the fuel tank.
 - c. They include adaptive memory-based pressure adjustments.
 - d. They rely on mass airflow sensors exclusively.

3. Which sensor has the most significant effect on determining injector pulse width in a speed-density system?
 - a. Intake Air Temperature (IAT) sensor
 - b. Manifold Absolute Pressure (MAP) sensor
 - c. Oxygen sensor (O2S)
 - d. Throttle Position (TP) sensor

4. What is the primary role of the PCM in a fuel-injection system during clear flood mode?
 - a. To increase the air–fuel ratio for engine starting
 - b. To limit or stop injector pulse width under certain conditions
 - c. To prevent vapor lock in high-altitude operations
 - d. To stabilize fuel rail pressure dynamically

5. What unique feature do rectangular-shaped fuel rails provide?
- Increased air separation from fuel lines
 - Enhanced fuel pressure distribution
 - Built-in pulsation dampening to reduce noise
 - Temperature regulation of injectors
6. Why is a fuel-pressure sensor critical in an electronic returnless fuel system?
- It calculates injector pulse width based on temperature changes.
 - It sends feedback to maintain desired rail pressure via pump control.
 - It adjusts the vacuum line in the regulator for altitude compensation.
 - It ensures constant voltage supply to the fuel injectors.
7. What component is essential for idle speed control in modern electronic fuel-injection systems?
- Pressure vent valve
 - Intake manifold pressure sensor
 - Stepper motor for the idle air control system
 - Inline fuel-pressure regulator
8. What is the main purpose of the deceleration enrichment mode in a fuel-injection system?
- To reduce backfire and emissions during deceleration
 - To stabilize engine temperature during high-speed operations
 - To maximize fuel atomization in low-speed conditions
 - To eliminate excess air from the intake manifold
9. Where is the fuel-pressure regulator located in a port fuel-injection system?
- Inside the fuel tank
 - On the inlet side of the fuel rail
 - On the outlet side of the fuel rail
 - Near the fuel-pump assembly

10. What is the advantage of demand delivery systems over traditional fuel-injection systems?

- a. They reduce injector tip wear through optimized spray patterns.
- b. They provide precise fuel regulation at the rail, improving transient response.
- c. They lower the operating temperature of fuel lines.
- d. They eliminate the need for pressure transducers.

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Correct Answers:

1. c
2. d
3. b
4. a
5. c
6. b
7. d
8. a
9. c
10. b