

TEST YOUR AUTOMOTIVE TECHNICAL KNOWLEDGE

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This self-test can help you determine how much you really know about this subject. Questions are written in the ASE style format and are multiple choice.

The answer key is on the last page.

There are also links to related articles on the <https://www.AA1Car.com> website. Good luck!

FUEL INJECTION SYSTEM SELF-TEST

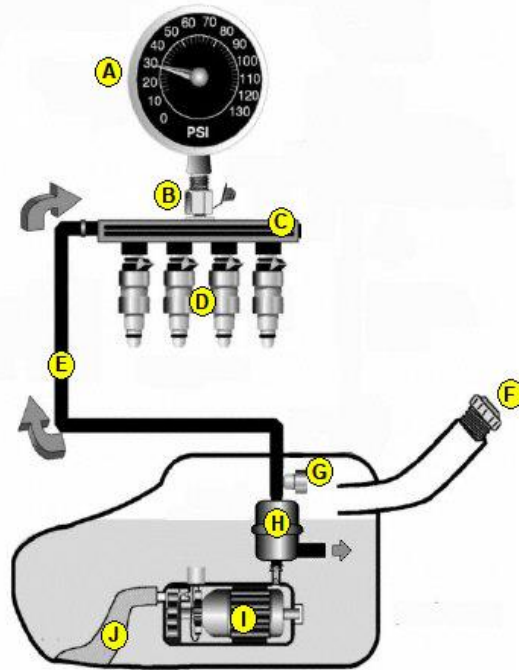
1. A "MULTIPOINT" (MPI) Fuel Injection system does what?
 - a. Sprays fuel directly into the cylinders
 - b. Sprays fuel into the throttle body
 - c. Sprays fuel into the intake manifold
 - d. Sprays fuel into the cylinder head ports

2. Technician A says Electronic Fuel Injection (EFI) can adjust the Air/Fuel mixture as engine speed, temperature and load change.
Technician B says most EFI systems use a MASS AIRFLOW SENSOR (MAF) to monitor the Air/Fuel mixture.
Who is right?
 - a. Technician A only
 - b. Technician B only
 - c. BOTH Technician A and B
 - d. Neither Technician A nor B

3. If the fuel pressure in an EFI system is LOW, how would it affect the Air/Fuel mixture?
 - a. It would make the A/F mixture RICH
 - b. It would make the A/F mixture LEAN
 - c. It would make the A/F mixture static
 - d. It would have NO effect on the A/F mixture

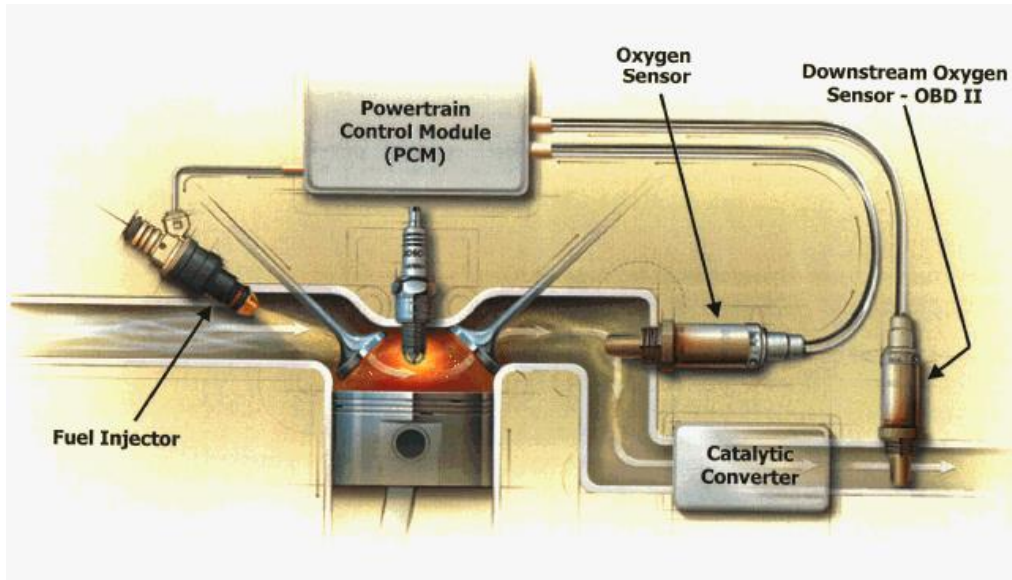
4. ANY of the following could cause LOW fuel pressure EXCEPT:
 - a. Clogged Fuel Injectors
 - b. Clogged fuel filter
 - c. Weak fuel pump
 - d. Leaky or defective fuel pressure regulator

5. In a RETURN style EFI system, the fuel pressure regulator is usually located where?
 - a. Inside the fuel tank
 - b. Between the fuel pump and fuel filter
 - c. On the fuel injector supply rail
 - d. Where the return line connects to the fuel tank



For the following questions, refer to the illustration above.

6. What type of EFI system is shown in this illustration?
 - a. RETURN EFI system
 - b. RETURNLESS EFI system
 - c. THROTTLE BODY EFI system
 - d. DIRECT INJECTION EFI system
7. Which component is also part of the EVAP control system?
Fill in letter: ____
8. Which component generates pressure for the fuel injectors?
Fill in letter: ____
9. Which component is the FUEL PRESSURE REGULATOR?
Fill in letter: ____
10. Which component protects the fuel pump from rust or dirt inside the fuel tank?
Fill in letter: ____
11. Which component would be the FUEL PRESSURE SENSOR?
Fill in letter: ____
12. Which component vents excess fuel pressure back into the tank?
Fill in letter: ____
13. Which component would be used to test fuel pressure?
Fill in letter: ____



14. In this illustration of an EFI system, what does the OXYGEN SENSOR do?
 - a. Monitors exhaust pressure
 - b. Provides a feedback signal for the Air/Fuel mixture control system
 - c. Provides a feedback signal for adjusting fuel pressure
 - d. Monitors exhaust temperature

15. The Powertrain Control Module (PCM) changes what to adjust the Air/Fuel mixture?
 - a. Injector dwell (on time)
 - b. Injector pressure (up or down)
 - c. Injector voltage (up or down)
 - d. Injector timing (sooner or later)

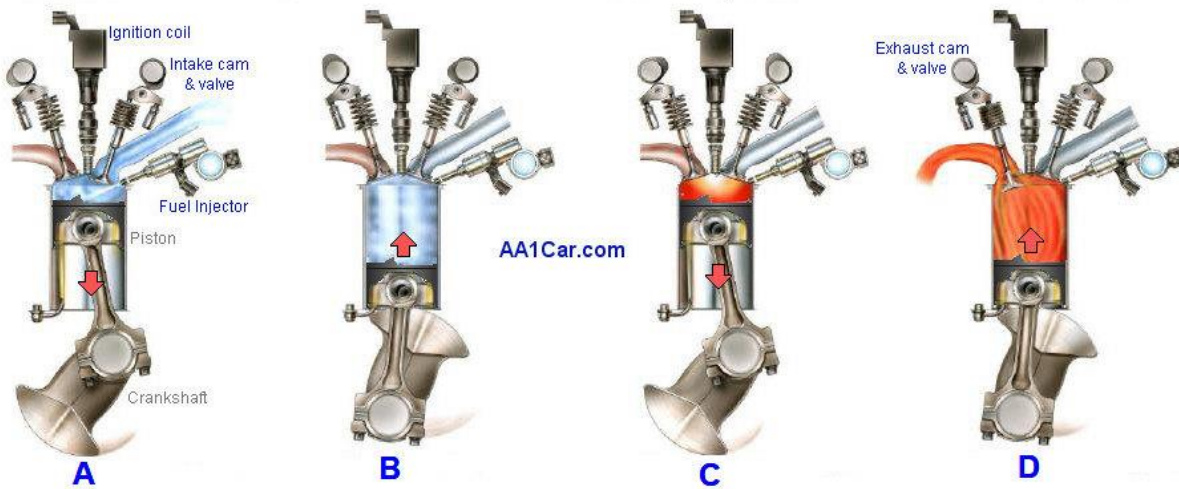
16. In this illustration, what is flowing through the port ahead of the fuel injector?
 - a. Air
 - b. Air/Fuel mixture
 - c. Intake vacuum
 - d. Exhaust

17. Fuel spray from the Fuel Injector does what?
 - a. Atomizes the fuel
 - b. Cools the intake valve
 - c. Helps clean the intake valve
 - d. All of the above

18. If the above EFI system above is in OPEN LOOP mode of operation:
 - a. The Air/Fuel mixture is static (not changing)
 - b. The Air/Fuel mixture is changing
 - c. The PCM is using inputs from the Oxygen Sensor
 - d. The PCM is using inputs from the Downstream Oxygen Sensor

19. Following a COLD START, the Air/Fuel mixture is initially what?
 - a. Extra Lean
 - b. Extra Rich
 - c. Stoichiometric (neither RICH nor LEAN)
 - d. Varying

4-Stroke Engine Cycle with Gasoline Direct Injection (GDI)



20. In the illustration above, which is the **COMPRESSION** stroke?
Fill in letter: _____
21. In the illustration above, which is the **POWER** stroke?
Fill in letter: _____
22. In the illustration above, fuel may be injected during which stroke(s)?
- A only
 - B only
 - C
 - A and B
23. **GASOLINE DIRECT INJECTION** does what?
- Operates at **LOWER** fuel pressure than **PORT EFI** systems
 - Operates at **HIGHER** fuel pressure than **PORT EFI** systems
 - Operates at **MUCH HIGHER** pressure than **PORT EFI** systems
 - Operates at **SAME** pressure as **PORT EFI** systems
24. **INTAKE VALVES** in engines with **GDI** are more prone to carbon deposit buildup than those in **PORT EFI** systems. **TRUE** or **FALSE**?
25. A **NO-START** due to **NO FUEL** could be caused by **ANY** of the following **EXCEPT**:
- Bad fuel pump
 - Bad fuel pump relay
 - Anti-Theft system fault
 - Bad oxygen sensor

(Answer Key on Next page)

ANSWER KEY

1D, 2A, 3B, 4A, 5C, 6B, 7F, 8I, 9H, 10J, 11G, 12H, 13A, 14B, 15A, 16A, 17D, 18A, 19B, 20B, 21C, 22D, 23C, 24True, 25D



Fuel Injection Topics on AA1Car.com:

[Electric Fuel Pumps](#)

[Fuel Pump Diagnosis](#)

[How To Replace an In-Tank Electric Fuel Pump](#)

[Gas Cap Loose?](#)

[How Electronic Fuel Injection Works](#)

[Air/Fuel Ratios](#)

[What Is Gasoline Direct Injection \(GDI\)?](#)

[Toyota Fuel Injection](#)

[Troubleshoot Fuel Injectors](#)

[Troubleshoot Electronic Fuel Injection & Fuel Pump Diagnosis](#)

[How Fuel Injection Affects Emissions](#)

[What Is Fuel Trim?](#)

[Troubleshoot Hesitation Problems](#)

[Troubleshoot Idle Speed Control System](#)

[Idle Surge \(cause & cure\)](#)

[Throttle-By-Wire systems \(Electronic Throttle Control\)](#)

[Diagnosing Returnless Electronic Fuel Injection Systems](#)

[Intake Valve Deposits in Gasoline Direct Injection Engines](#)

[Gasoline Fuel Treatments](#)

[Troubleshooting & Cleaning Fuel Injectors](#)

[Bad Gasoline Can Cause Performance Problems](#)

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[Fuel Contamination: What To Do If You Put The WRONG Fuel In Your Car](#)

[Fuel Octane Ratings & Recommendations](#)

[Fuel Filters](#)
