

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!

BASIC EMISSION CONTROLS

1. Which of the following components is NOT a part of the emission control system?
 - a. EGR valve
 - b. Voltage regulator
 - c. Oxygen sensor
 - d. Powertrain Control Module (PCM)

2. Technician A says Oxygen Sensors monitor the engine's air/fuel mixture. Technician B says three- and four-wire Oxygen Sensors have a heater element inside for faster warm-up. Who's right?
 - a. Technician A only
 - b. Technician B only
 - c. Both Technician A and B
 - d. Neither one

3. The signal from a traditional Zirconia Oxygen Sensor:
 - a. Changes voltage
 - b. Changes frequency
 - c. Changes amplitude
 - d. Changes resistance

4. A "sluggish" Oxygen Sensor:
 - a. Is slow to respond to sudden changes in the fuel mixture
 - b. Often has been in service for many miles (over 100,000+)
 - c. May be contaminated
 - d. All of the above

5. Crankcase blowby vapors and moisture are eliminated by which of the following emission control systems?
 - a. EGR
 - b. PCV
 - c. Catalytic converter
 - d. All of the above

6. Which emission control system prevents fuel vapors in the fuel tank from escaping into the atmosphere?
 - a. PCV system
 - b. EGR system
 - c. EVAP system
 - d. All of the above

7. How does the EGR system reduce emissions?
 - a. It recirculates crankcase vapors into the exhaust
 - b. It recirculates crankcase vapors into the intake manifold
 - c. It recirculates exhaust gases into the EVAP system
 - d. It recirculates exhaust gases into the intake manifold

8. Which pollutant does the EGR system reduce?
 - a. Oxides of Nitrogen (NO_x)
 - b. Unburned Hydrocarbons (HC)
 - c. Carbon Monoxide (CO)
 - d. Carbon Dioxide (CO₂)

9. Which pollutant does the Catalytic Converter reduce?
 - a. Oxides of Nitrogen (NO_x)
 - b. Unburned Hydrocarbons (HC)
 - c. Carbon Monoxide (CO)
 - d. All of the above

10. How does the Powertrain Control Module (PCM) monitor Catalyst Efficiency?
 - a. It monitors engine airflow
 - b. It compares upstream and downstream O₂ sensor readings.
 - c. It monitors the Air/Fuel ratio
 - d. It monitors fuel economy

11. What was the first emission control device that was installed on cars back in the 1960s to reduce air pollution and smog?
 - a. EGR valve
 - b. Heated Air Intake system
 - c. PCV valve
 - d. Air pump

12. In 1975, two major changes that were required on ALL new vehicles to reduce air pollution and emissions were:
 - a. Computer engine controls and catalytic converters
 - b. Onboard diagnostics and catalytic converters
 - c. Sealed fuel systems and electronic ignition
 - d. Unleaded gasoline and catalytic converters

13. in the mid-1980s, what major change in engine design was made primarily to reduce emissions?

- a. Carburetors were replaced with Electronic Fuel Injection (EFI)
- b. Many Pushrod engines were replaced with Overhead Cam (OHC) engines
- c. Turbochargers were added to many engines
- d. Distributors were replaced with Distributorless Ignition Systems (DIS)

14. What does the DPF in a late model Diesel exhaust system do to reduce air pollution and emissions?

- a. It traps Oxides of Nitrogen (NOx) in the exhaust
- b. It traps Particulates (soot) in the exhaust
- c. It traps Carbon Monoxide (CO) in the exhaust
- d. It replaced the need for a catalytic converter

15. Diesel Exhaust Fluid (DEF) is required in many late model diesel-powered trucks for what purpose?

- a. To improve fuel economy
- b. To reduce Oxides of Nitrogen (NOx) in the exhaust
- c. To reduce Particulates (soot) in the exhaust
- d. To reduce Carbon Dioxide (CO₂) in the exhaust

16. Technician A says removing the exhaust after treatment system on a street-driven diesel-truck is ILLEGAL in all 50 states.

Technician B says if the DEF reservoir runs dry, a warning light will come on and the diesel engine will run a greatly reduced power until the reservoir is refilled.

Who is right?

- a. Technician A only
- b. Technician B only
- c. BOTH Technician A and B
- d. Neither Technician A nor B

17. Many late model engines have small “pup” converters located close to the exhaust manifold in addition to regular converters. What do the pup converters do?

- a. Make the engine less “doggy” (better throttle response)
- b. Reduce Carbon Dioxide (CO₂) emissions
- c. Eliminate the need for mufflers
- d. Reduce cold start emissions

18. Some late model engines do not have EGR valves. What is used instead of EGR to reduce emissions?

- a. Pup converters
- b. Variable Cam Timing (VVT)
- c. Motor oil with a special additive package
- d. Turbocharging

19. Without emission controls, Diesel engines are notorious for producing high levels of:

- a. Oxides of Nitrogen (NOx) and Particulates
- b. Carbon Monoxide (CO) and Carbon Dioxide (CO₂)
- c. Unburned Hydrocarbons (HC)
- d. All of the above

20. A loose or missing gas cap will increase emissions of which pollutant?
- Particulates
 - Unburned Hydrocarbons (HC)
 - Oxides of Nitrogen (NOx)
 - Carbon Monoxide (CO)
21. Gasoline engine exhaust emissions are dirtiest when:
- Cruising on the highway
 - Idling in traffic
 - Immediately following a cold start
 - When decelerating from highway speeds
22. Which of the following exhaust pollutants can be deadly if inhaled in very small concentrations?
- Carbon Monoxide (CO)
 - Carbon Dioxide (CO₂)
 - Oxides of Nitrogen (NOx)
 - Unburned Hydrocarbons (HC)
23. Which of the following exhaust pollutants plays no role in forming urban smog?
- Particulates (soot)
 - Carbon Dioxide (CO₂)
 - Oxides of Nitrogen (NOx)
 - Unburned Hydrocarbons (HC)
24. To reduce the impact cars and light trucks have on Global Warming and Climate Change, many are now equipped with smaller turbocharged engines to reduce which of the following gases?
- Oxides of Nitrogen (NOx)
 - Unburned Hydrocarbons (HC)
 - Carbon Monoxide (CO)
 - Carbon Dioxide (CO₂)
25. Technician A says periodic Emissions Tests are required in many urban areas that do not meet Federal Air Quality Standards to make sure vehicles are not polluting.
Technician B says a plug-in OBD2 emissions check will verify a vehicle is in compliance with clean air rules.
Who is right?
- Technician A
 - Technician B
 - BOTH Technician A and B
 - Neither Technician A nor B

(Answer Key on Next Page)

ANSWER KEY

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



Emission Control Topics on AA1Car.com:

[Understanding OBD II Driveability & Emissions Problems](#)

[Fixing Emission Failures](#)

[All About Onboard Diagnostics II \(OBD II\)](#)

[Basic Emission Control Systems Overview](#)

[How Fuel Injection Affects Emissions](#)

[Exhaust Emissions Diagnosis](#)

[Troubleshooting a P0420 Catalyst Code](#)

[Catalytic Converters](#)

[Exhaust Gas Recirculation \(EGR\)](#)

[Positive Crankcase Ventilation \(PCV\)](#)

[EVAP Evaporative Emission Control System](#)

[Sensing Emission Problems \(O2 Sensors\)](#)

[Emissions testing update](#)

[OBD II Emissions Testing](#)

[OBD2 Basics Self-Test Quiz](#)