

Skilled Trades

ASE-L1

Automotive Service Excellence: Advanced Engine Performance

Questions And Answers PDF Format:

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Question: 1

While using a gas analyzer on a vehicle equipped with an electric secondary air injection pump, it is noted that O₂ levels are high upon start-up and under wide open throttle (open loop). Technician A says there must be a vacuum leak somewhere. Technician B says this could be normal vehicle operation. Who is correct?

- A. Both A and B
- B. Neither A nor B
- C. Technician A
- D. Technician B

Answer: D

Explanation:

Only technician B is correct. High oxygen (O₂) readings upon start-up and at wide open throttle (open loop) are normal for a vehicle equipped with an electric secondary air injection pump since the pump is operated during these times.

Question: 2

The composite vehicle cranks but doesn't start. Which of the following could be the cause?

- A. A short to ground at ECM terminal 204
- B. An open at ECM terminal 201
- C. A blown fuse #31
- D. An open at ECM terminal 252

Answer: D

Explanation:

An open at ECM terminal 252 would prevent the crank sensor from working, resulting in a crank, no-start condition. A short to ground at terminal 204 would keep the cam position actuator on continuously, but would not cause a no-start condition. An open at ECM terminal 201 or a blown fuse #31 would result in a no-crank, no-start condition.

Question: 3

An injector balance test is being performed. The pressure drop for all the injectors is between 15 and 18 psi, except for one cylinder, #3, which measures 5 psi. What does this indicate about the #3 injector?

- A. It has an electrical short.
- B. It's leaking.
- C. It's clogged.
- D. It has an electrical open.

Answer: C

Explanation:

An injector balance test is used to find mechanical problems with fuel injectors. A lower than normal pressure drop reading indicates a clogged injector, while a higher than normal pressure drop reading indicates a leaking injector.

Question: 4

All the following modules on the composite vehicle support bidirectional functional testing except:

- A. ECM
- B. TCM
- C. BCM
- D. Instrument cluster

Answer: C

Explanation:

On the composite vehicle, the Engine Control Module (ECM), Transmission Control Module (TCM), and instrument cluster have software that supports functional testing. This can be done using a scan tool connected to the OBD port.

Question: 5

A technician is checking for a restricted exhaust using a vacuum gauge. A reading is recorded once at 1,000 rpm and once again at 2,500 rpm. If the exhaust is restricted, at 2,500 rpm the reading will do which of the following?

- A. Fluctuate rapidly
- B. Increase gradually
- C. Stay the same
- D. Decrease gradually

Answer: D

Explanation:

If the reading gradually drops by more than 3 in. Hg during the test, the exhaust system is restricted. The most likely cause of a restricted exhaust is a clogged catalytic converter, but a collapsed exhaust is also possible.

Question: 6

Which of the following makes up 78% of the air we breathe?

- A. Carbon monoxide
- B. Carbon dioxide
- C. Oxygen
- D. Nitrogen

Answer: D

Explanation:

The air we breathe is made up of 78% nitrogen, 21% oxygen, and 1% other gases.

Question: 7

Technician A says the factory service information for a vehicle typically includes the spark plug heat range. Technician B says the factory service information for a vehicle typically includes the spark plug wire resistance. Who is correct?

- A. Both A and B
- B. Neither A nor B
- C. Technician A
- D. Technician B

Answer: A

Explanation:

Both technicians are correct. The factory service information for a vehicle typically includes the spark plug gap, heat range, resistor requirements, part number, and torque. It also includes the spark plug wire resistance specifications.

Question: 8

A technician finds their scan tool will not communicate with a vehicle when trying to retrieve stored trouble codes. Technician A says this could be caused by an improper ground circuit of the data link connector. Technician B says this could be caused by a problem in the data bus network. Who is correct?

- A. Both A and B
- B. Neither A nor B
- C. Technician A
- D. Technician B

Answer: A

Explanation:

Both technicians are correct. A communication error between a scan tool and a vehicle can have many causes, such as a blown fuse, damaged data link connector terminals, an improper ground circuit of the data link connector, or a problem in the data bus network.

Question: 9

A relative compression test is best used to do which of the following:

- A. Isolate individual cylinder contribution problems
- B. Check for cracked piston ring land
- C. Check for bent connecting rod
- D. Check for leaking valves

Answer: A

Explanation:

A relative compression test uses a current probe and an oscilloscope to measure starter motor current. This information is used to determine the relative compression values of all cylinders. Then, the cylinder(s) with low compression can receive further diagnosis (e.g., a cylinder leakdown and/or compression test) to pinpoint the exact cause of low compression.

Question: 10

CAN High has a dormant voltage of which of the following?

- A. 0.25 volts
- B. 0.65 volts
- C. 11 volts
- D. 4.65 volts

Answer: A

Explanation:

CAN High has a dormant voltage of 0.25 volts that increases to 0.65 volts when communicating. CAN Low has a dormant voltage of 11 volts that decreases to 4.65 volts when communicating.

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