Skilled Trades

ASE-L2

Automotive Service Excellence: Electronic Diesel Engine Diagnosis

Latest Version: 6.0

Question: 1

Using the composite vehicle on the ASE website, answer the following question:
At sea level, what should the voltage reading be on a scan tool while monitoring the baro pressure sensor?

A. 2.5 volts
B. 3.0 volts
C. 3.9 volts
D. 4.25 volts

Answer: D

Explanation:
Voltage at sea level should be 4.25 volts. As altitude increases, voltage decreases.
The job of the barometric pressure sensor is to monitor ambient air pressure to adjust both fuel metering and injection timing based on elevation. This sensor is found in the engine compartment.

Question: 2

Using the composite vehicle on the ASE website, answer the following question:
How many modes of regeneration does the ECM have?

A. Five
B. Four
C. Six
D. Three

Answer: B

Explanation:
There are four modes of regeneration:
• Passive regeneration starts when the exhaust temperatures become high enough to oxidize soot.
• Active regeneration happens when exhaust temperatures aren't high enough to oxidize soot under normal driving conditions.
• Parked regeneration is activated by a driver switch.
• Forced regeneration can be enabled by a scan tool.

Question: 3

Using the composite vehicle on the ASE website, answer the following question:

Technician A states that the crankcase pressure sensor sends data to the BCM. Technician B states that the crankcase pressure sensor sends data to the ECM.
Who is correct?

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

Answer: D

Explanation:
The crankcase pressure sensor monitors the crankcase pressure and sends the data back to the engine control module (ECM). This data verifies the condition of the closed crankcase ventilation system and filter.
The body control module (BCM) on the composite vehicle is responsible for the cruise control on/off switch, ambient air temperature sensor, engine brake on/off switch, as well as other switches.

Question: 4

Using the composite vehicle on the ASE website, answer the following question:
Technician A states that the ECM is on the public network. Technician B states that the ECM is on the private network.
Who is correct?

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

Answer: A

Explanation:
The ECM is on both networks, public and private. It communicates with all modules on the networks.
All of the modules (public and private) transmit messages to the ECM with the key in the ON position.

Question: 5

Using the composite vehicle on the ASE website, answer the following question:
Technician A states that if the EGR valve loses communication with the ECM, the valve will default to the closed position. Technician B states that if the EGR valve loses communication with the ECM, the valve defaults to the open position.
Who is correct?

A. Both A and B
B. Neither A nor B

C. Technician A
D. Technician B

Answer: C

Explanation:
Power and ground is supplied to the EGR over the private CAN network. If communication with the ECM is lost, the valve will default to the closed position, making technician A correct.
If power becomes interrupted to the valve, the position remains where it currently is.

Question: 6

Using the composite vehicle on the ASE website, answer the following question:
How long after the key is shut off will the fuel pressure control solenoid hold 5,000 PSI?

A. 45 seconds
B. 15 seconds
C. 30 seconds
D. 1 minute

Answer: C

Explanation:
The solenoid defaults to the closed position when the key is turned off and will hold 5,000 PSI for 30 seconds. It regulates fuel pressure in combination with the fuel volume control solenoid.
There's also a spring-loaded relief fail-safe set at 35,000 PSI (241,317 kPa).

Question: 7

Using the composite vehicle on the ASE website, answer the following question:
Technician A states that the fuel pressure control solenoid defaults open with the key off. Technician B states that the fuel volume control solenoid defaults closed with the key off.
Who is correct?

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

Answer: B

Explanation:
The fuel pressure control solenoid defaults closed with the key off, making technician A incorrect. This solenoid is mounted to the fuel rail that returns the fuel to the tank.

The fuel volume control solenoid defaults open with the key off, making technician B incorrect. This solenoid is mounted to the pump.

Question: 8

Using the composite vehicle on the ASE website, answer the following question:
Technician A states that a DPF needs to be replaced when ash reaches full value. Technician B states a regeneration should be performed when DPF ash reaches its full value.
Who is correct?

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

Answer: B

Explanation:
Soot is oxidized through regeneration, thereby creating ash. Over time, ash can accumulate in the DPF. When a DPF reaches its full value of ash, the DPF needs to be disassembled and cleaned using a special cleaning process.

Question: 9

Technician A states that checking TSBs is only necessary when service manual diagnostics lead to an incorrect repair. Technician B states that checking the TSBs can save time when diagnosing a vehicle.
Who is correct?

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

Answer: D

Explanation:
Technical Service Bulletins (TSBs) should always be checked when diagnosing a vehicle. TSBs can often lead technicians directly to the problem with little or no diagnostics. The TSBs should be used in conjunction with the service manual.
Service history should also be checked when diagnosing a vehicle to reduce troubleshooting time. The service history allows the technician to see what other components have recently been replaced.

Question: 10

Using the composite vehicle on the ASE website, answer the following question:

Technician A states that the crankcase pressure sensor reads from 0 to 40 inH20. Technician B states that the crankcase pressure sensor reads from 0 to 5 volts.
Who is correct?

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

Answer: A

Explanation:
The crankcase pressure sensor reads from 0 to 40 inH20. The voltage range varies between 0 and 5 volts.
As the crankcase pressure increases, the voltage increases accordingly.

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