Automotive Engine Performance, 5th Edition
Chapter 33

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) List the eight-step funnel diagnostic procedure.

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2) List the three methods that can be used to reprogram a PCM.

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3) Discuss what the PCM does during a drive cycle to test emissions-related components.

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4) Explain why a bulletin search should be performed after stored DTCs are retrieved.

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5) List three things that should be checked as part of a thorough visual inspection.

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6) Explain the difference between a type A and type B OBD-II diagnostic trouble code.

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7) Explain the procedure to follow when diagnosing a vehicle with stored DTCs using a scan tool.

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1) Step 1 – Verify the problem.
Step 2 – Perform a visual inspection.
Step 3 – Retrieve diagnostic trouble codes (DTCs).
Step 4 – Check for technical service bulletins (TSBs).
Step 5 – Look at scan tool data.
Step 6 – Narrow the problem to a system or cylinder.
Step 7 – Determine the root cause and repair the problem. Step 8 – Verify the repair.
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2) The three methods include:
a. Direct
b. Indirect
c. Pass through
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3) The vehicle must be driven under a variety of operating conditions for all active tests to be performed. A trip is defined as an engine-operating drive cycle that contains the necessary conditions for a particular test to be performed. For example, for the EGR test to be performed, the engine has to be at normal operating temperature and decelerating for a minimum amount of time. Some tests are performed when the engine is cold, whereas others require that the vehicle be cruising at a steady highway speed.
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4) Many TSBs refer to problems that could have certain diagnostic trouble codes (DTCs).
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5) • Check for obvious problems
• Check everything that does and does not work.
• Look for evidence of previous repairs.
• Check oil level and condition.
• Check coolant level and condition.
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6) • TYPE A CODES. A type A diagnostic trouble code is emissions related and causes the MIL to be turned on at the first trip if the computer has detected a problem. Engine misfire or a very rich or lean air–fuel ratio, for example, causes a type A DTC. These codes alert the driver to an emissions problem that may cause damage to the catalytic converter.
• TYPE B CODES. A type B code is stored and the MIL is turned on during the second consecutive trip, alerting the driver to the fact that a diagnostic test was performed and failed.
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7) Using a scan tool, check the ECT equals IAT to KOED and look carefully at all major sensors and compare the readings to the normal reading that would be accepted.
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