Learning Outcome

Upon successful completion of this segment, the participants will be able to identify and explain OBD II computerize controls systems, inputs, outputs, and modes of operation and scan tool-testing functions. In addition, the participants will gain a working knowledge of all the related procedures utilizing the various tools available to them.

Objectives

Upon successful completion of this segment, the participant will be able to:
- describe the development stages of the OBD II system
- identify the OBD II standards
- describe the OBD II five digit codes
- describe the four monitors used by the OBD II system
- describe the OBD II drive cycle

Please take a moment to view these pages of this Learning Guide, which will provide an overview of the program goals. We encourage you to follow along in your student work guide throughout the entire program, taking notes, performing calculations and other exercises as required.
LEARNING ACTIVITIES

Federal law now requires that all automotive manufactures meet:_________ standards which have gone into effect in: ________________________________

OBD II requires that the on-board computer:______________________________

The federal test procedures set the maximum allowable:______________
The malfunction indicator lamp must illuminate if:

______________________________

What are the three sections of a microprocessor and there purposes:

_____________________-______________________________

_____________________-______________________________

_____________________-______________________________

What is the ODB II standard location for the diagnostic link connector:__________

Typical OBD II diagnostic connector link (DCL)

The term diagnostic refers to:____________________________

What is an example of the diagnostics that diagnostic manager may run:______________

Define the term “enable criteria”:__________________________________________

What could be some of the enable criteria or conditions required for the diagnostic management system to perform a diagnostic test: ________________________________
________________________________________________________________________

Define the term "trip":_____________________________________________________

When will some of the "trip" diagnostics run:_________________________________
_________________________________________________________________________

Define the term passive test:________________________________________________

Define the term active test and give an example of this:___________________________
_________________________________________________________________________
_________________________________________________________________________

The OBD II drive cycle purpose is to:_________________________________________

Using a dynamometer to run OBD II drive cycle
What are two reasons to perform an OBD II drive cycle:

____________________________________________________________________

____________________________________________________________________

The MIL lamp is under the command of the:

____________________________________________________________________

Under what conditions will the MIL lamp be commanded off with no repair actions:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

If the vehicle is experiencing a misfire malfunction which may cause damage to the (TWC) three way catalytic converter the MIL lamp will: ______________________

____________________________________________________________________
If the MIL is commanded off with no repair actions how long will the DTC be stored in memory: ____________________________________________

Identify the first digit of the new alpha-numeric code:
P indicates a _______________________________________________________
C indicates a _______________________________________________________
B indicates a _______________________________________________________
U indicates a _______________________________________________________

The second digit indicates: _________________________ or _________________________

The third digit indicates: ________________________________________________

List the seven areas that the third digit can represent in a DTC
1 - _____________________________________________________________________
2 - _____________________________________________________________________
3 - _____________________________________________________________________
4 - _____________________________________________________________________
5 - _____________________________________________________________________
6 - _____________________________________________________________________
7 - _____________________________________________________________________

The last two numbers in the DTC code represent: ____________________________

When a DTC is set it is always important to check: ____________________________
____________________________________________________________________
What are the seven modes of a drive cycle and define the mode operation:

1. 

2. 

3. 

4. 

5. 

6. 

7. 

*Heated O2 Sensor Waveforms*

<table>
<thead>
<tr>
<th>Good Converter</th>
<th>Degraded Converter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-cat HO2S</td>
<td></td>
</tr>
<tr>
<td>Post-cat HO2S</td>
<td></td>
</tr>
</tbody>
</table>
Give 3 examples of what can cause catalytic converter failure:

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________

Typical Pre and Post Oxygen Sensor Locations