**Meets ASE Task:** (A8-B-5) P-1 Inspect and test computerized engine control system sensors, powertrain/engine control module (PCM/ECM), actuators, and circuits using a graphing multimeter (GMM), digital storage oscilloscope (DSO), and/or scan tool; determine needed action.

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

Time on Task:\_\_\_\_\_\_\_\_\_\_\_\_\_

Make/Model/Year:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

VIN:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evaluation (Enter number from 4, 3, 2, 1) :\_\_\_\_\_\_\_\_\_

**Scan Tool Testing of the Ignition System**

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1. Check service information for the recommended procedures to follow when using a

scan tool to monitor what the vehicle computer is looking at and what commands are

being sent to the various engine actuators and components.

2. Connect the scan tool to the data link connector (DLC) of the vehicle and scroll

through the various parameters until engine RPM and ignition spark timing can

be viewed.

Idle RPM = \_\_\_\_\_ Spark advance at idle = \_\_\_\_\_

3. Slowly increase engine speed and observe the amount of spark advance.

 Spark advance at 1000 RPM = \_\_\_\_\_\_\_ degrees

Spark advance at 1500 RPM = \_\_\_\_\_\_\_ degrees

Spark advance at 2000 RPM = \_\_\_\_\_\_\_ degrees

Spark advance at 2500 RPM = \_\_\_\_\_\_\_ degrees

4. Scroll the display of the scan tool until knock sensor (KS) activity or timing retard is displayed (if the vehicle is so equipped).

KS signal at idle = \_\_\_\_\_\_\_ (should be zero) (The engine should not have detected an engine knock.)

5. Increase engine speed while observing KS or timing retard amount. Did the computer

retard timing?

**Yes**  **No**

6. Lightly tap on the engine block and observe KS or timing retard with the engine

warmed above idle speed. Was a knock detected?

**Yes**  **No**

7. Based on the test results, what is the needed action? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_