

PRACTICAL TEST

ENGINE MANAGEMENT SYSTEM

DURATION : 1 HOURS

INSTRUCTIONS :

1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS CONDUCTED VIA
 - ☐ Open book
 - ☒ Closed book
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

Q1 Answer the following questions according to a vehicle.

(a) Show and explain these components at vehicle: **C2**

- i. O₂ Sensor
- ii. Ignition Coil
- iii. Camshaft Position Sensor
- iv. Throttle Body
- v. Fuel Injector

(5 marks)

(b) Perform diagnostic of engine management system using handheld OBD scan tool. (Note: instructor have to disconnect any **TWO (2)** sensor's sockets before conduct this practical) **P4**

(10 marks)

(c) Fix the problem according to the diagnostic result. **P5**

(10 marks)

(d) Demonstrate a method to monitor actual data of engine management system as follows: **P4**

- i. Fuel injection timing.
- ii. Fuel injection quantity.
- iii. Calculated load value.
- iv. Engine speed.
- v. Throttle position.

(5 marks)

Q2 Answer all question according to Common Rail Direct Injection System Educational Training Equipment as shown in **Figure Q2.1**.

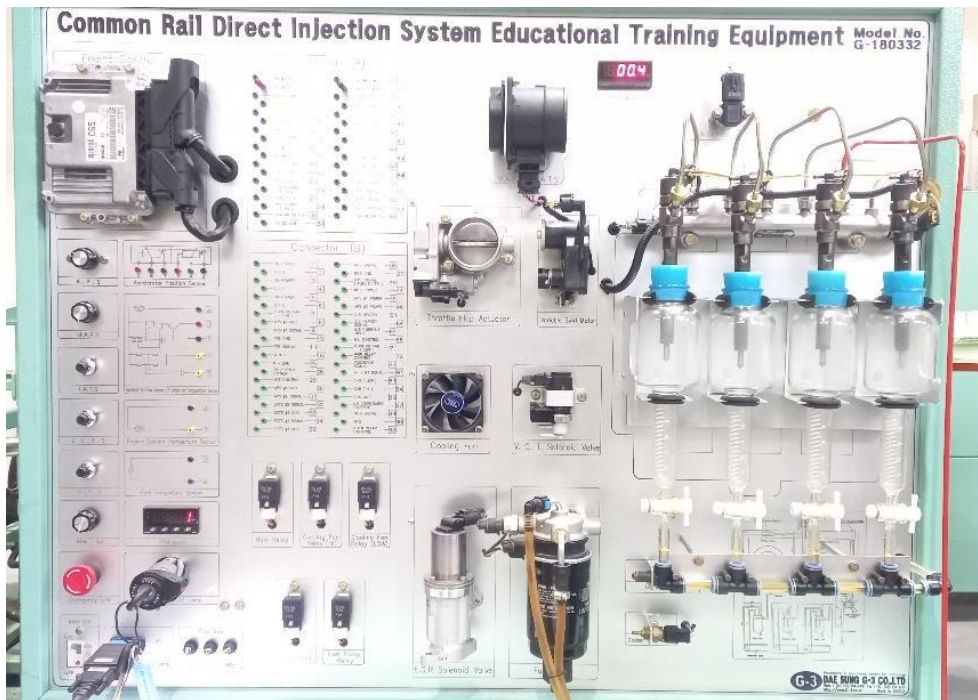


Figure Q2.1

- (a) Show and explain these components at the trainer: **C2**
- Mass Air Flow Sensor
 - Exhaust Gas Recirculation Valve
 - Throttle Body
 - Fuel Rail
 - Lambda Sensor
- (5 marks)
- (b) Perform diagnostic and fix the problem of engine management system using provided computer. (Note: instructor have to disconnect any sensor's socket before conduct this practical) **P4**
- (10 marks)
- (c) Measure output signal from any sensor which ask by instructor using a suitable equipment. Also state the type of signal. (Note: Instructor have to reset or randomly set the oscilloscope before conducting the practical) **P4**
- (10 marks)
- (d) Given a temperature sensor. Perform inspection of the temperature sensor using the right equipment. (Note: Instructor have to unplug multimeter probe before conducting the practical) **P5**
- (5 marks)

- END OF QUESTIONS -