



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FVB 30302
SUBJECT TITLE : DIESEL TECHNOLOGY 2
LEVEL : BACHELOR
TIME / DURATION : 3.00 pm – 5.00 pm
(2 HOURS)
DATE : 06 MAY 2011

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of **TWO (2)** sections. Section A and B. Answer all questions in Section A. For Section B, answer three (3) questions only.
6. Answer all questions in English.

THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.
 Please use the answer booklet provided.

Question 1

a) What is the difference between a conventional diesel engine and common rail diesel engine?

(8 marks)

b) Explain what is meant by the input and output circuit in engine management electronics.

(4 marks)

c) Figure 1 shows the operation of a variable capacitance pressure sensor responds to low and high pressure by outputting different return signal. Explain how the signal voltage is changed.

(8 marks)

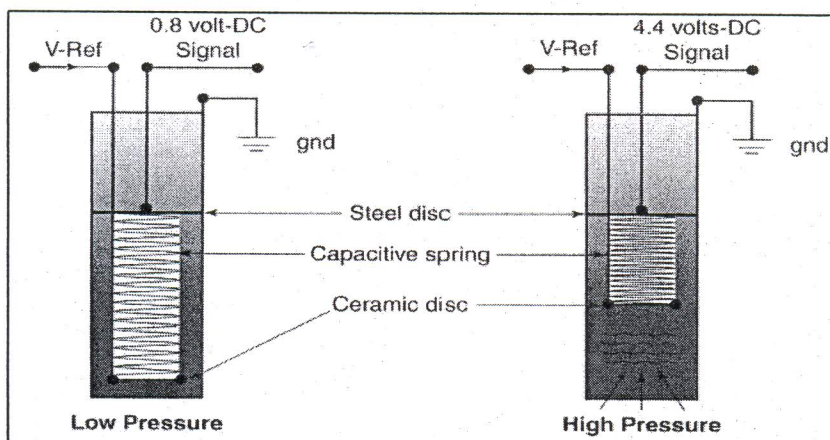


Figure 1: Variable Capacitance Pressure Sensor

Question 2

- a) What is smog and explain **TWO (2)** types of smog. (6 marks)

- b) Discuss the effects of harmful emission during imperfect combustion. (6 marks)

- c) What are the factors influencing emissions? (8 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer only THREE questions.

Please use the answer booklet provided.

Question 3

- a) What are the advantages of electrically controlled distributor diesel fuel injection pump?

(6 marks)

- b) By referring to figure 2, explain how does the electronic diesel control (EDC) controlled the system.

(6 marks)

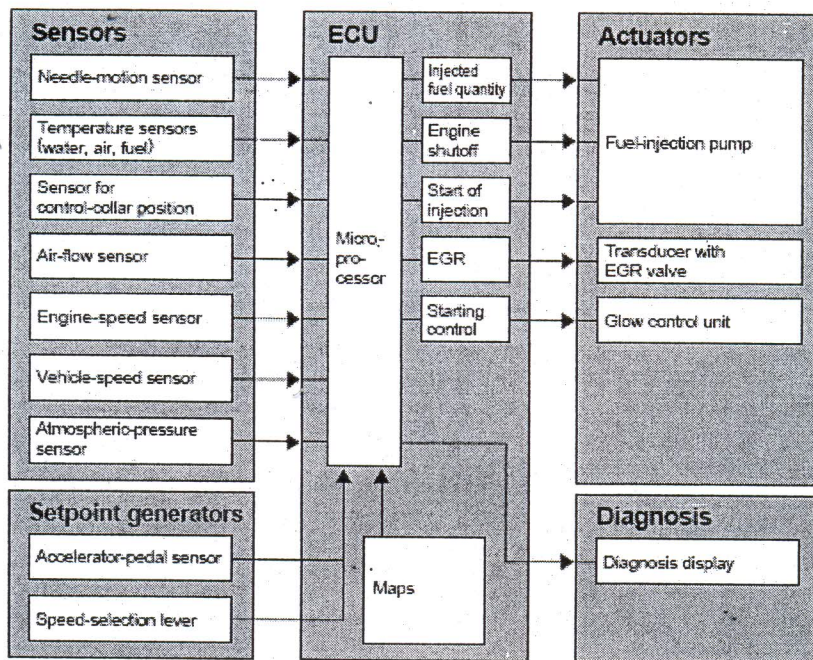


Figure 2: Electronic Diesel Control (EDC)

- c) Explain the operation of engine shutoff.

(8 marks)

Question 4

- a) What are the advantages of using Common Rail Fuel System?
(5 marks)
- b) What will happen if the Bosch Rail Pressure Control Valve is energized?
(10 marks)
- c) Explain the operation of Electro-hydraulic Injectors when nozzle is closing.
(5 marks)

Question 5

- a) What will happen if the Bosch Rail Pressure Control Valve is not energized?
(6 marks)
- b) Explain the operation of Electro-hydraulic Injectors when the injector is closed.
(8 marks)
- c) Explain **THREE (3)** general types of Diesel particulate Filters.
(6 marks)

Question 6

- a) Why does a naturally aspirated engine not achieve 100% volumetric efficiency?
(6 marks)
- b) What are the disadvantages of using a turbocharger?
(6 marks)
- c) What are the common reasons for turbocharger failure?
(8 marks)

END OF QUESTION