



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2011 SESSION**

SUBJECT CODE	:	FVB 21303
SUBJECT TITLE	:	DIESEL ENGINE TECHNOLOGY
LEVEL	:	BACHELOR
TIME / DURATION	:	3.30pm – 6.00pm (2.5 HOURS)
DATE	:	05 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) question only.
 6. Answer all questions in English.
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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 (20 marks)**

- a) What are the advantages of diesel engine?
(6 marks)
- b) Why does the diesel engine require glow plugs to facilitate starting?
(6 marks)
- c) Explain the four strokes of diesel cycle in order of occurrence.
(8 marks)

Question 2 (20 marks)

- a) List **THREE (3)** properties of diesel fuel and explain?
(6 marks)
- b) Why does two types of filter is used in the diesel engine fuel system?
(4 marks)
- c) Explain does how the metering is taking place in the in-line injection pump?
(10 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer **THREE** questions only.

Please use the answer booklet provided.

Question 3

a) Explain what is meant by the sensor and actuator in engine management electronics.
(4 marks)

b) Explain **TWO (2)** types of sensors using V-Ref.
(6 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 does the signal voltage is changed.
(10 marks)

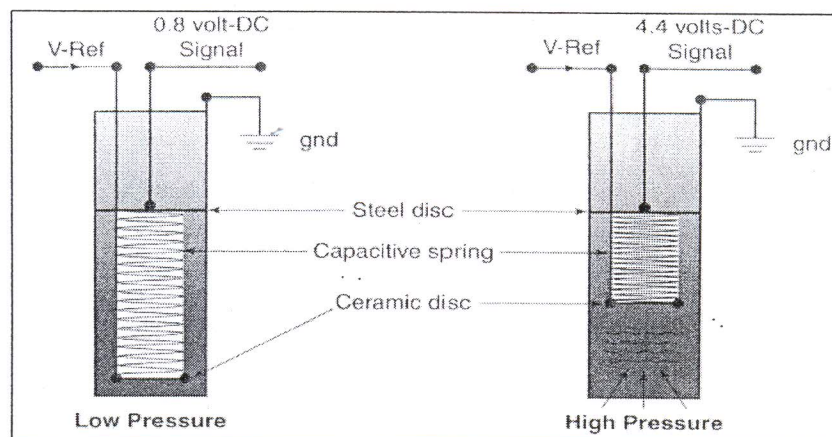


Figure 1: Operating of a variable capacitance pressure sensor.

Question 4

- a) Explain **TWO (2)** types of smog. (4 marks)
- b) Explain **THREE (3)** general types of Diesel particulate Filters. (6 marks)
- c) Discuss some of the external emission control components used on diesel engines that help to reduce harmful emissions. (10 marks)

Question 5

- a) What are the advantages of using Common Rail Fuel System? (4 marks)
- b) What is the difference between a conventional diesel engine and common rail diesel engine? How does the common rail diesel engine work? (10 marks)
- c) Figure 2 shows the combustion pressures with pilot injection. Explain the purpose of pilot injection in injection stages. (6 marks)

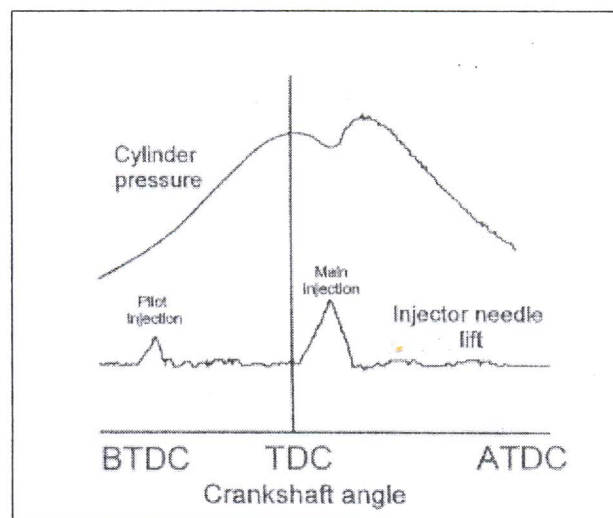


Figure 2: Combustion pressures with pilot injection.

Question 6

- a) What are the probable causes for combustion noise with excessive black smoke?
(4 marks)
- b) Explain how does blow-off valve control different parameter.
(8 marks)
- c) What are the common reasons for turbocharger failure?
(8 marks)

END OF QUESTION