



**UNIVERSITI KUALA LUMPUR**  
**Malaysia France Institute**

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**FINAL EXAMINATION**  
**JULY 2010 SESSION**

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**SUBJECT CODE** : FVB 10802  
**SUBJECT TITLE** : DIESEL TECHNOLOGY 1  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 9.00am – 11.00am  
( 2 Hours )  
**DATE** : 19 NOVEMBER 2010

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**INSTRUCTIONS TO CANDIDATES**

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1. Please read the instructions given in the question paper **CAREFULLY**.
  2. This question paper is printed on one side 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 questions paper consists of **FIVE (5)** questions. Answer **FOUR (4)** questions only.
  6. Answer all questions in English.
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**THERE ARE 2 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.**

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**INSTRUCTION: There are 5 (five) questions. Answer 4 (four) questions only.**

**(Total: 100 marks)**

**Please use the answer booklet provided.**

### Question 1

The combustion phase of diesel engine operation is the period in which the high pressure diesel is first injected into the compressed air mass within the cylinder.

- a) What are the purposes of the compression stroke of diesel engine?  
(10 marks)
- b) Explain briefly, how it produces the mechanical energy?  
(15 marks)

### Question 2

The combustion process of a Compression Ignition engine will be complicated due to the physical delay, the injection system and the presence of heterogeneous mixture inside the engine cylinder. Explain the following variable to be examined in order to reduce the knocking tendency:

- a) Compression ratio  
(5 marks)
- b) Density of air  
(5 marks)
- c) Load on the Engine  
(5 marks)
- d) Increased Turbulence and Increased Injection pressure  
(5 marks)
- e) Engine speed  
(5 marks)

**Question 3**

For economical and efficient operation of a diesel engine, the fuel injector must be a good condition and work properly.

- a) Mention the factors that indicate an injector is at fault.

(10 marks)

- b) How the fuel injector should be tested and inspected?

(15 marks)

**Question 4**

Turbo-charging has been very common on large CI engines for many years because this type of engine is particularly suit to pressure charging. Explain the advantages of using a turbocharger on a normally aspirated engine.

(25 marks)

**Question 5**

Why the inlet valve be kept open for a few degree of crank angles even when the piston is on the compression stroke? Assume that the engine under consideration is a high speed.

(25 marks)

**END OF QUESTION**