



**UNIVERSITI KUALA LUMPUR  
Malaysia France Institute**

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**FINAL EXAMINATION  
SEPTEMBER 2014 SESSION**

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**SUBJECT CODE** : FVB21303  
**SUBJECT TITLE** : DIESEL ENGINE TECHNOLOGY  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 9.00 AM – 11.30 AM  
(2.5 HOURS)  
**DATE** : 9 JANUARY 2015

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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 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. 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 SIX (6) questions. Answer FIVE (5) 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) Identify the purposes of the compression stroke of diesel engine. (7 marks)
- b) Explain briefly, how it produces the mechanical energy. (8 marks)
- c) Define the term of compression ratio of 16:1. (5 marks)

### **Question 2**

- a) Draw the pressure-crank angle diagram to show the phenomenon of diesel knock. (5 marks)
- b) Explain briefly the phenomenon of "Diesel knock". (15 marks)

### **Question 3**

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

(20 marks)

### **Question 4**

Explain the reason the inlet valve need to 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 in high speed.

(20 marks)

**Question 5**

a) Describe the factor that indicates the diesel engine faulty running.

(10 marks)

b) Describe the factor that indicates the excessive fuel consumption.

(10 marks)

**Question 6**

a) Explain the main features of common rail system for diesel engine.

(10 marks)

b) Compare the injection characteristics of conventional injection and common rail injection.

(10 marks)

**END OF QUESTION**