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CONFIDENTIAL

SET B

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JULY 2010 SESSION

SUBJECT CODE	:	FVB 10903
SUBJECT TITLE	:	ENGINE MANAGEMENT AND CONTROL SYSTEM 1
LEVEL	:	BACHELOR
TIME / DURATION	:	9.00am – 12.00pm (3 HOURS)
DATE	:	19 NOVEMBER 2010

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

INSTRUCTION: Answer ALL questions

Please use the answer booklet provided.

Question 1 (20 marks)

1. There are many advantages in using a computer to control engine functions. State **FOUR (4)** advantages using engine computer control.

(4 marks)

2. Explain **FIVE (5)** major types of sensors used to gather inputs on a computerized engine control system.

(10 marks)

3. Explain **TWO (2)** common types of actuator used in engine management and control system.

(6 marks)

Question 2 (20 marks)

1. Explain the stated correction coefficients obtained from extensive tests performed during engine development work.

a. After start Enrichment.

(2 marks)

b. Battery voltage Correction.

(2 marks)

2. List **FIVE (5)** factors that influence the speed of flame propagation.

(10 marks)

3. List **THREE (3)** types of Air Flow Sensor (AFS) and explain **ONE (1)** of it.

(6 marks)

Section B

INSTRUCTION: Answer only THREE Questions

Please use the answer booklet provided.

Question 3

1. Explain the operation of oxygen sensor.

(5 marks)

2. Explain how the type of Hall Effect sensor is operated.

(5 marks)

3. Based on the figure 1, explain how the cooling fan relay works.

(10 marks)

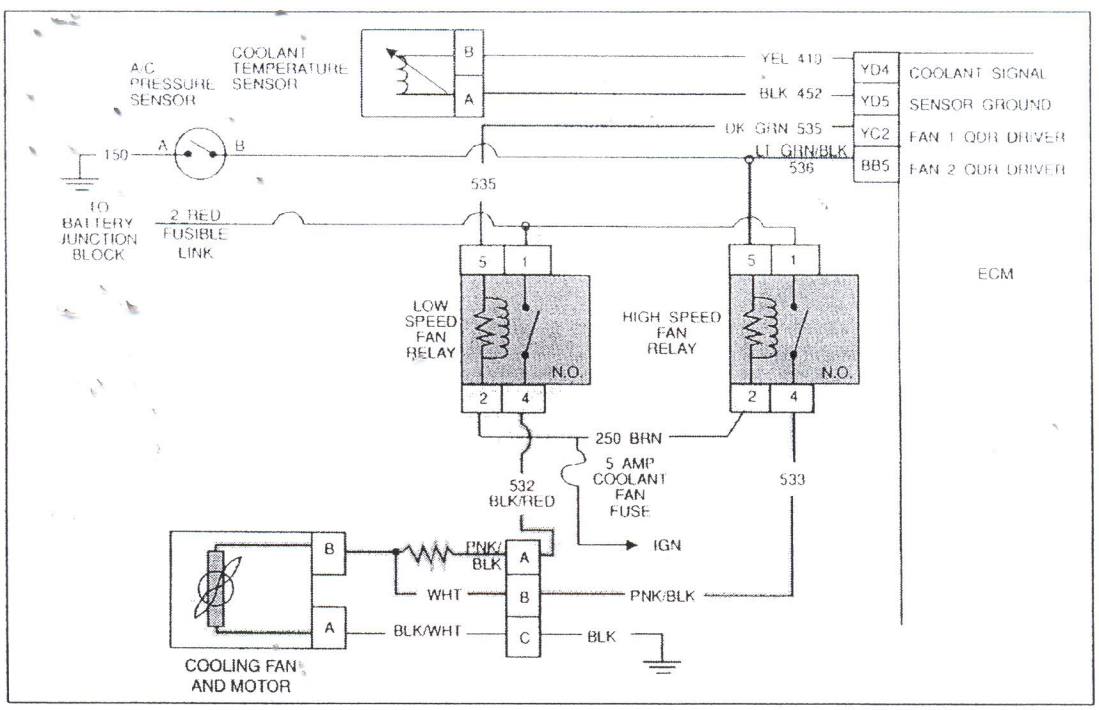

Figure 1: This two-speed fan circuit uses two relays to control fan motor speed.

Question 4

1. The ignition timing is calculated as **Ignition timing = Initial advance + Basic advance + Correction advance.** Explain what is correction Advance?

(10 marks)

2. Name the numbered components insulator and electrode of typical spark plug in figure 3.

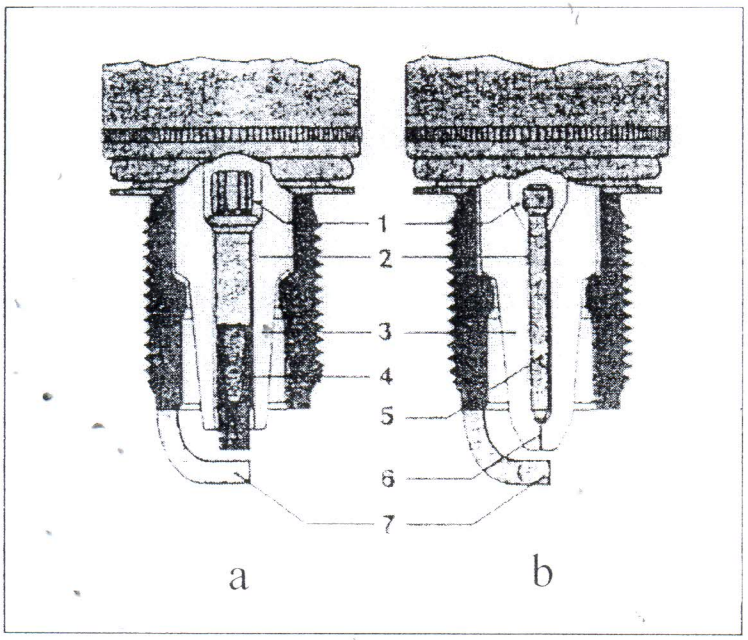

Figure 1: Insulator and electrode detail for (Bosch) (a) Standard center electrode. (b) Platinum center electrode

(7 marks)

3. Define what the cold spark plug and hot spark plug.

(3 marks)

Question 5

1. Somebody had complained about his car problem. His car feels jerk and poor acceleration problem. Determine the problems occur and how the way to solve these problems.

(10 marks)

2. What is the procedure to reset the check engine light without using diagnostic tools

(6 marks)

3. What is the problem if the engine is hard starting after the engine has been sitting for more than 15 minutes? Give the solution.

(4 marks)

Question 6

1. Determine how the coolant sensor affects engine operation?

(10 marks)

2. Explain how the thermal failure can affect the catalytic converter.

(5 marks)

3. Compare the lambda value with air-fuel ratio.

(5 marks)

END OF QUESTION