



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
SEPTEMBER 2013 SESSION**

SUBJECT CODE : FVD 23202
SUBJECT TITLE : CHASSIS BRAKING SYSTEM 2
LEVEL : DIPLOMA
TIME / DURATION : 2 hours
DATE :

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
 2. This question paper is printed only one side of the paper.
 1. Please write your answers on the answer booklet provided.
 2. Answer should be written in blue or black ink.
 3. This question paper consists of **TWO (2)** sections. Section A and B.
 4. Answer all questions in Section A and Section B.
 5. Answer all questions in English.
 6. All questions are closed type question. Please return it back to the invigilator
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THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer All question.****Question 1**

1. What are the 5 symptoms if the brake servo is failed to operate? (5 marks)
2. List 5 advantages of the 4 wheel steering. (5marks)
3. What does it means by Electro / Hydraulic 4 Wheel Steering. (3 marks)
4. Explain how “runout points” happen in the brake servo. (5 marks)
5. What are two functions of Microcontroller inside ABS control unit? (2 marks)

Question 2

1. What is the difference between Integral and Linkage type power-steering? (4 marks)
2. What does it means by Maximum Brake force in CEMB machine? (5marks)
3. Why does flow control valve important to power steering system? (5 marks)
4. Name three operations on power brake servo? (3 marks)
5. What does it means by unique feature of an active suspension (3 marks)

Question 3

1. Define the Anti-lock Braking System.
(2 marks)

2. Why does brake booster is widely used in today modern cars?
(4 marks)

3. Why does control logic is important in the Anti-lock Braking System?
(6 marks)

4. What is the basic checking if the power steering feels heavy during turning on both direction.
(4 marks)

5. What does it mean by irregular tyre wear?
(4 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer two question only

Question 1

Vehicle speed	Warning led status	Abs Operating Voltage	Vehicle Operating Voltage
110 km/h	Not Active	5V	12.5V

Front RH Wheel	Front LH Wheel	Rear RH Wheel	Rear LH Wheel
80 km/h	85 km/h	90 km/h	95 km/h

Figure 1: ABS diagnostic data

Referring to Figure 1, you are required to:

- a) Define the wheel slip ratio and the formula of wheel slip ratio percentage. (3marks)
- b) State 3 stages of percentage braking pressure during wheel slip in ABS system. (3 marks)
- c) Calculate every each wheel slip ratio percentage. (4 marks)
- d) Explain how the calculation in 1c able to retain stability and steerability on the vehicle. (10 marks)

Question 2

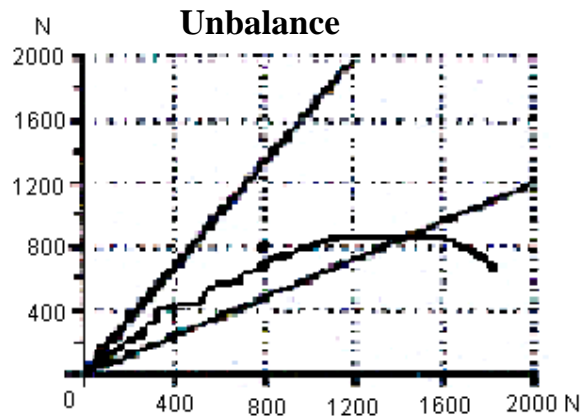
Results of brake test on Citroen Evasion.

Brake		Front		Rear		Stationary Brake	
		Left	Right	Left	Right	Left	Right
Rolling resis	N	203	150	66	102		
Ovalization	%	15	0	18	11		
Side Slip	m/km		-7		-7		
Weight		387	398	215	221		

Table 1: Evasion test result

- 1) Define **Rolling Resistance** and **Ovalization** in CEMB Brake tester machine. (6 marks)

- 2) From the table 1 Evasion test result; write an analysis report based on the result. (7 marks)



Graph 1: Evasion Rear brake performance

- 3) By referring to Graph 1, write short analysis on the performance of the rear brake System. (7 marks)

Question 3

Figure 3 is a cutaway view of brake servo:

- a) Name all components in the figure 3. (8 marks)
- b) What are the states of operation in the figure 3 below? (2 marks)
- c) Explain the operation by referring to your answer in 3b. (10 marks)

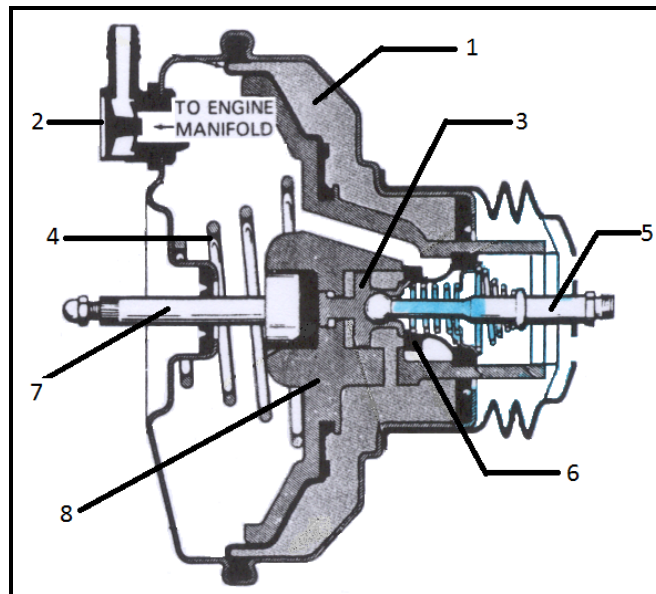


Figure 3: Cutaway view Brake Booster

END OF QUESTION