



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2014 SESSION**

SUBJECT CODE : FVD 23202
SUBJECT TITLE : CHASSIS BRAKING SYSTEM 2
LEVEL : DIPLOMA
TIME / DURATION : 2 hours 15 min. 3.30 pm - 5.45 pm
DATE : 02 JUN 2014

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.**
 - 3. Please write your answers on the answer booklet provided.**
 - 4. Answer should be written in blue or black ink.**
 - 5. This question paper consists of TWO (2) sections. Section A and B.**
 - 6. Answer all questions in Section A and 2 questions in Section B.**
 - 7. Answer all questions in English.**
 - 8. Please return back all questions paper to the invigilator.**
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THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Question 1

a. Name all components in the figure 1.

(8marks)

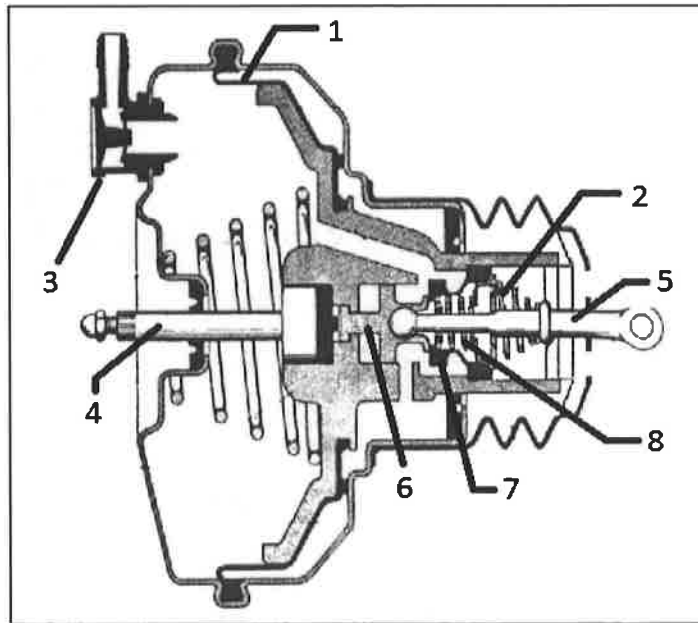


Figure 1: Cutaway view Brake servo

b. Define Anti-lock Braking System.

(2marks)

c. List three possible reasons why control logic is important in the Anti-lock Braking System.

(6marks)

d. Explain select low control incorporates with 4-channel or 3-channel in ABS system.

(4marks)

Question 2

- a. Explain why collapsible steering column is called passive safety. (6marks)
- b. Explain why diesel brake servo does not use vacuum from the inlet manifold. (4marks)
- c. Write down a CEMB machine procedure before starting the test cycle. (6marks)
- d. Explain the function of Microcontroller inside ABS control unit? (4marks)

Question 3

- a. List the criteria that should be observed during conducting a suspension testing using a brake performance CEMB machine. (6marks)
- b. Define Maximum Brake force. (5marks)
- c. Explain why flow control valve is important to power steering system. (5marks)
- d. Explain what is meant by unique feature of an active suspension (4marks)

SECTION B (Total: 40 marks)**Answer two questions only****Question 1**

- a) Base on the brake performance test result in table 1 below,

Table 1: Perodua Myvi 1.3 brake performance test result

Brake	Front		Rear		Stationary Brake	
	Left	Right	Left	Right	Left	Right
Rolling resistance N	203	150	66	102		
Ovalization %	9	9	13	11		
Max brake effect, N	3116	3123	1054	961	1597	1433
Force at max diff, N	2424	2230	1028	900	1559	1292
Weight	387	398	215	221		

- i. State the causes if the ovalization is more than 10%. (4marks)
- ii. Calculate the percentage of front Wander effect and rear Adherence adopted referring to table 1? (10marks)
- b) i. You are given a wheel with a side-slip of 6 m/km and a rim diameter 12". Calculate how much toe-in will it be? (3marks)
- ii. Explain the meaning of "Rolling" resistance in CEMB machine. (3marks)

Question 2

a. Fill in the blank with **ON** or **OFF** of the operation of the ABS according to their mode that is shown below:-

Operation Mode	Solenoid Valve "IN"	Solenoid Valve "OUT"	Motor
Normal			
Hold	ON		
Reduce			ON
Increase			

(10marks)

b.

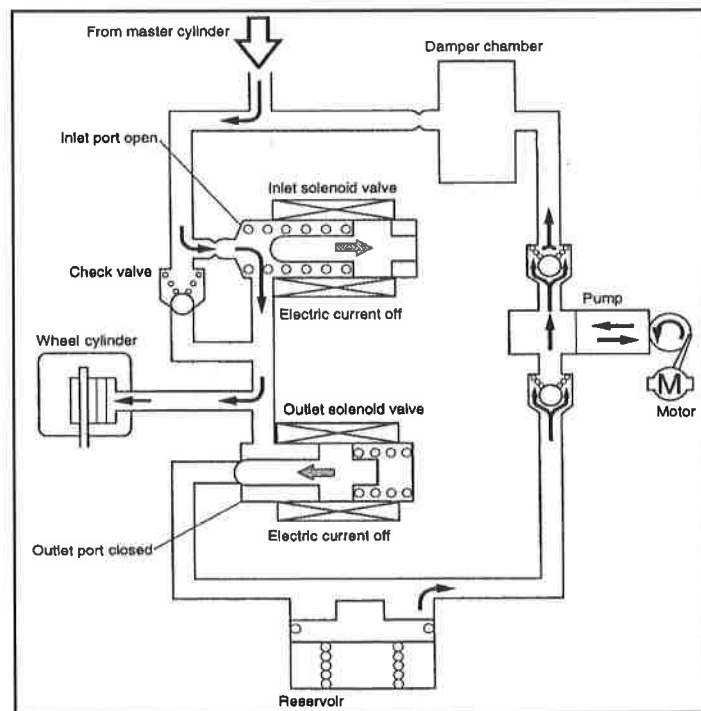


Figure 1: Show an ABS HCU system

- i) Name the operation shown in figure1. (3marks)
- ii) Explain how it works based on your answer in question b (i). (7marks)

Question 3

- a. Describe the advantages of Four Wheel steering system fitted in the modern vehicle.

(8marks)

b.

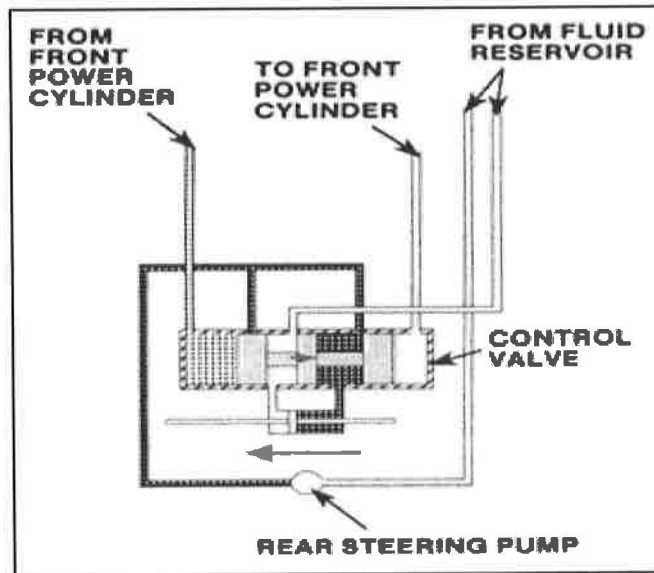


Figure 2: Four-wheel-steering Control Valve

- i) Referring to the Figure 2, state the status of the rear steering power cylinder. (2marks)
- ii) Explain how the spool valve operates inside the control valve in figure 2. (10marks)

END OF QUESTION