



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
SEPTEMBER 2014 SESSION

SUBJECT CODE	:	FVD24402
SUBJECT TITLE	:	COMFORT SAFETY AND INFORMATION SYSTEM
LEVEL	:	DIPLOMA
TIME / DURATION	:	8.00 PM – 10.00 PM (2 HOURS)
DATE	:	9 JANUARY 2015

INSTRUCTIONS TO CANDIDATES

- 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 question paper consists of TWO (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer TWO (2) questions only.**
 - 6. Answer all questions in English.**
-

THERE ARE 9 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions.****Question 1**

- a) Explain **TWO (2)** basic methods of Multiplexing in terms of channel bandwidth and time, signal and particular phase and frequency or time. (4 marks)
- b) Multiplexing is widely applied in nowadays vehicular electrical system, list **THREE (3)** reasons of applying such system. (6 marks)
- c) Sketch a VAN protocol and CAN protocol included with their signal shape, highest and lowest voltage. (8 marks)
- d) Explain why Multiplexing data wires are twisted together. (2 marks)

Question 2

- a) State the function of an airbag. (2 marks)
- b) List **FIVE (5)** Do's and Don'ts while working with airbag system. (5 marks)
- c) From the **Figure 1** below, the driver airbag with 60 liter volume takes 30ms to reach 80% of inflation, the airbag must be inflated 80% when the driver reaches 125mm forward displacement. 125 mm forward displacement is reached after 50ms. Calculate the Optimum Firing Time for this system. (6 marks)

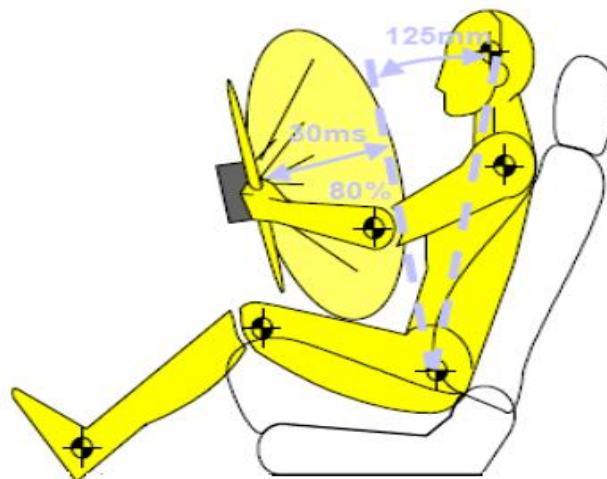


Figure 1: Airbag deployment figure

Question 3

Sketch the component diagram of components below:-

- a) Normally open relay (3 marks)
- b) Normally close relay (3 marks)
- c) Combination relay (3 marks)

Question 4

Construct a polarity circuit by using two way switch, two combination relay, battery and one motor. (10 marks)

Question 5

Explain how to check a polarity switch using a multimeter. (8 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO (2) questions only.

Question 1

This case study is typical of **sunroof system** circuit problem that technicians often need to diagnose. (Refer to the circuit diagram of sun roof C5 in figure 2).

Knowledge of sun roof circuit component and wiring diagrams will help you perform the diagnosis quickly and efficiently.

Customer Complaint

The sun roof **cannot operate on automatic mode** only.

Known Information

- ☐ vehicle operating voltage = 14 volts
- ☐ the BM 34 unit and BSI unit are OK
- ☐ the sun roof motor is OK
- ☐ the sun roof switch is OK
- ☐ all fuses are OK
- ☐ signal from high frequency remote control to BSI is OK

Answer the following questions.

- a) With the above known information, identify the most likely cause the inoperative sunroof system above. (4 marks)
- b) Explain what would happen to the system if **9022C** wire at BSI is disconnected and give your reason. (2 marks)
- c) Explain what would happen to the system if **MF4** at BM 34 is disconnected and give your reason. (4 marks)
- d) State the diagnostic steps to find the suspected problem in this sun roof circuit with sketching a chart diagram. (10 marks)

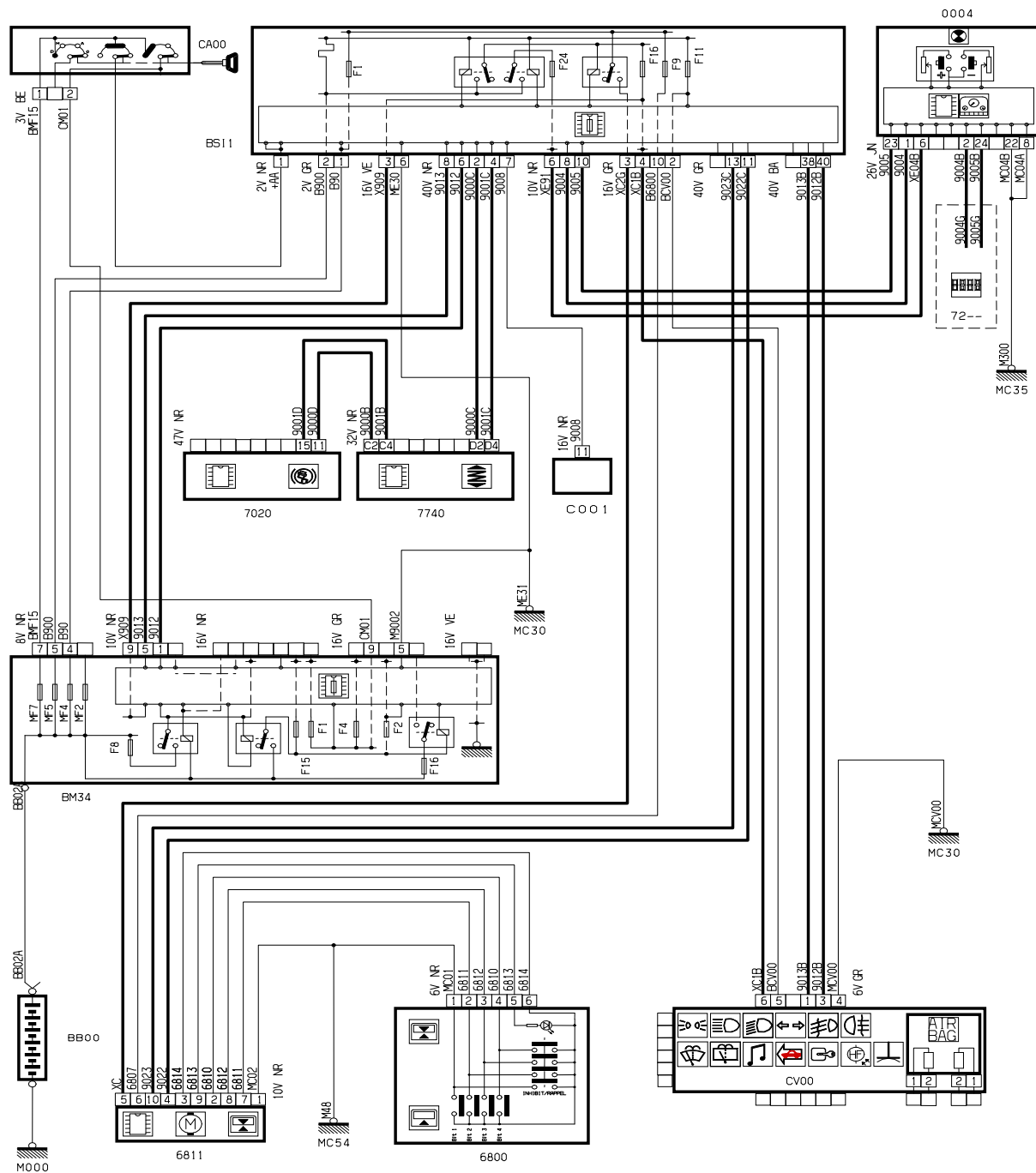


Figure 2

*Please refer next page for circuit diagram legend.

LIST OF C5 Sunroof Electrical Component

BB00	-	Battery
BM34	-	34 fuse engine relay unit
BSI1	-	Built-in systems interface
C001	-	Diagnostic connector
CA00	-	Ignition switch
CV00	-	COM2000
M000	-	Earth
MC30	-	Earth
MC35	-	Earth
MC54	-	Earth
0004	-	Control panel
6800	-	Sunroof switch
6811	-	One-touch sunroof motor
7020	-	ABS ECU
7740	-	Suspension built-in hydroelectronic interface
72 - -	-	Trip computer - clock function

Question 2

Below are typical problems with the power window system that a technician often needs to diagnose. Knowledge of the basic power window circuit and simple test procedures will help you to perform the diagnosis quickly and efficiently. Please refer to **Figure 3** for the power window wiring diagram.

Customer Complaint

A customer complained that the power window on the front-left hand side was not working but the others were working.

Known Information

- Vehicle operating voltage = 14 volts
- Power window relay is OK.
- Other devices except front-left hand side power window operate properly.
- All switches at power window main switch are OK.

Circuit Analysis

Answer the following questions by referring to **Figure 3**.

- a) Explain the most likely causes for the above problem. (4 marks)
- b) Explain the procedure for troubleshoot this problem by sketching a chart diagram. (10 marks)
- c) Explain what will happen to the power window system if the “one touchdown circuit” at the power window main switch is totally damaged. (4 marks)
- d) Explain what happen if window lock switch button is depressed. (2 marks)

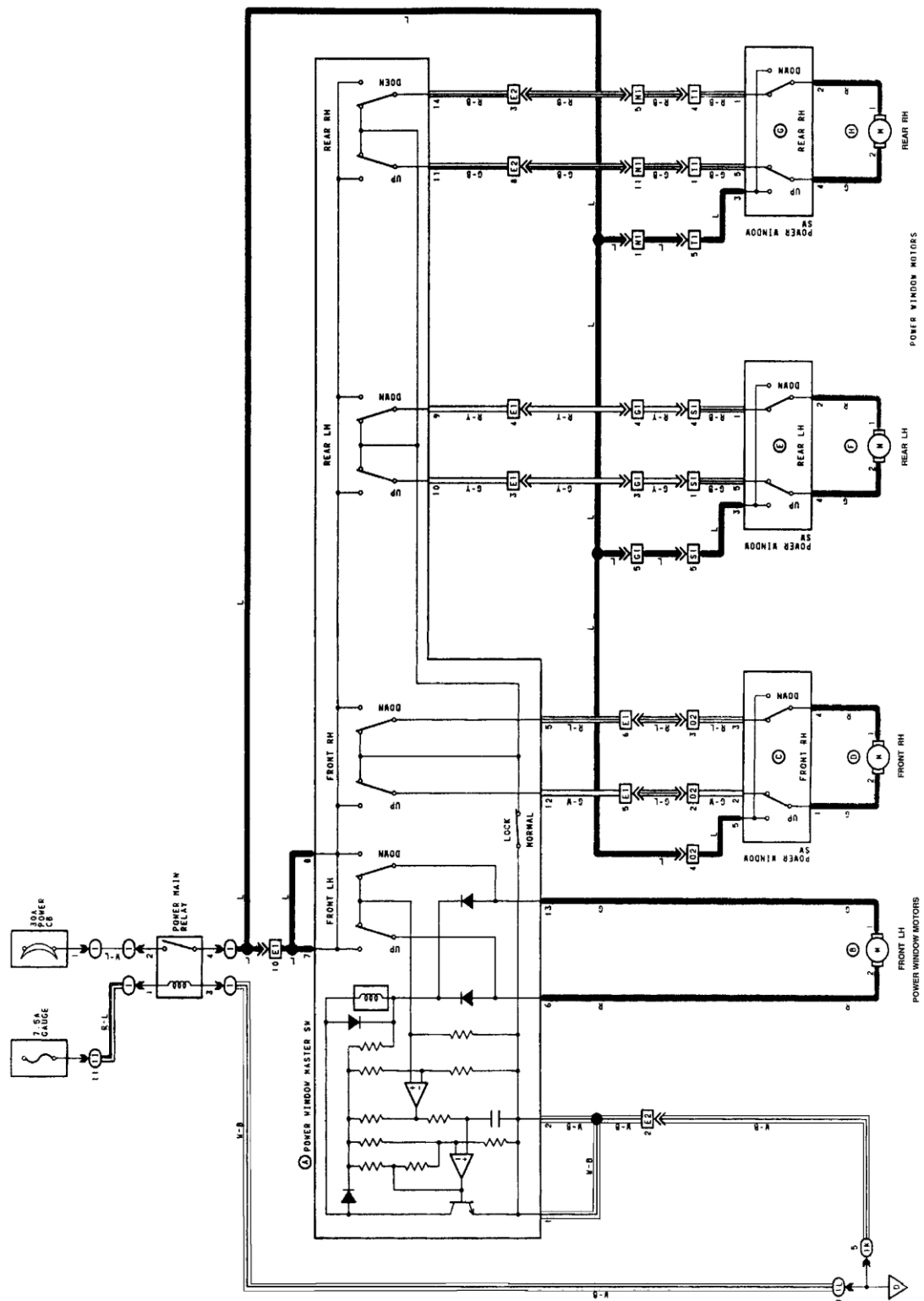


Figure 3

Question 3

These are typical cases of problems with the seat adjustment system that a technician often needs to diagnose. Knowledge of the basic seat adjustment circuit and simple test procedures will help you perform the diagnosis quickly and efficiently.

Please refer to **figure 4** for the seat adjustment wiring diagram.

Customer Complaint

The rear height (UP and DOWN position) of the seat adjustment is not functioning.

Known Information

- vehicle operating voltage = 14 volts

Answer the following questions on an answer paper given.

- a) Explain what will happen to the seat if we press and hold the forward position seat switch for a certain time and then release it. (4 marks)
- b) Explain what will happen to the system if the connector at ground wire MC54 in Figure 4 is disconnected. Give your reason. (4 marks)
- c) Explain the diagnostic steps that would you use to find the suspected problem - (the rear height (UP and DOWN position) of the seat adjustment that is not functioning. Sketch the flow chart to show the steps taken. (12 marks)

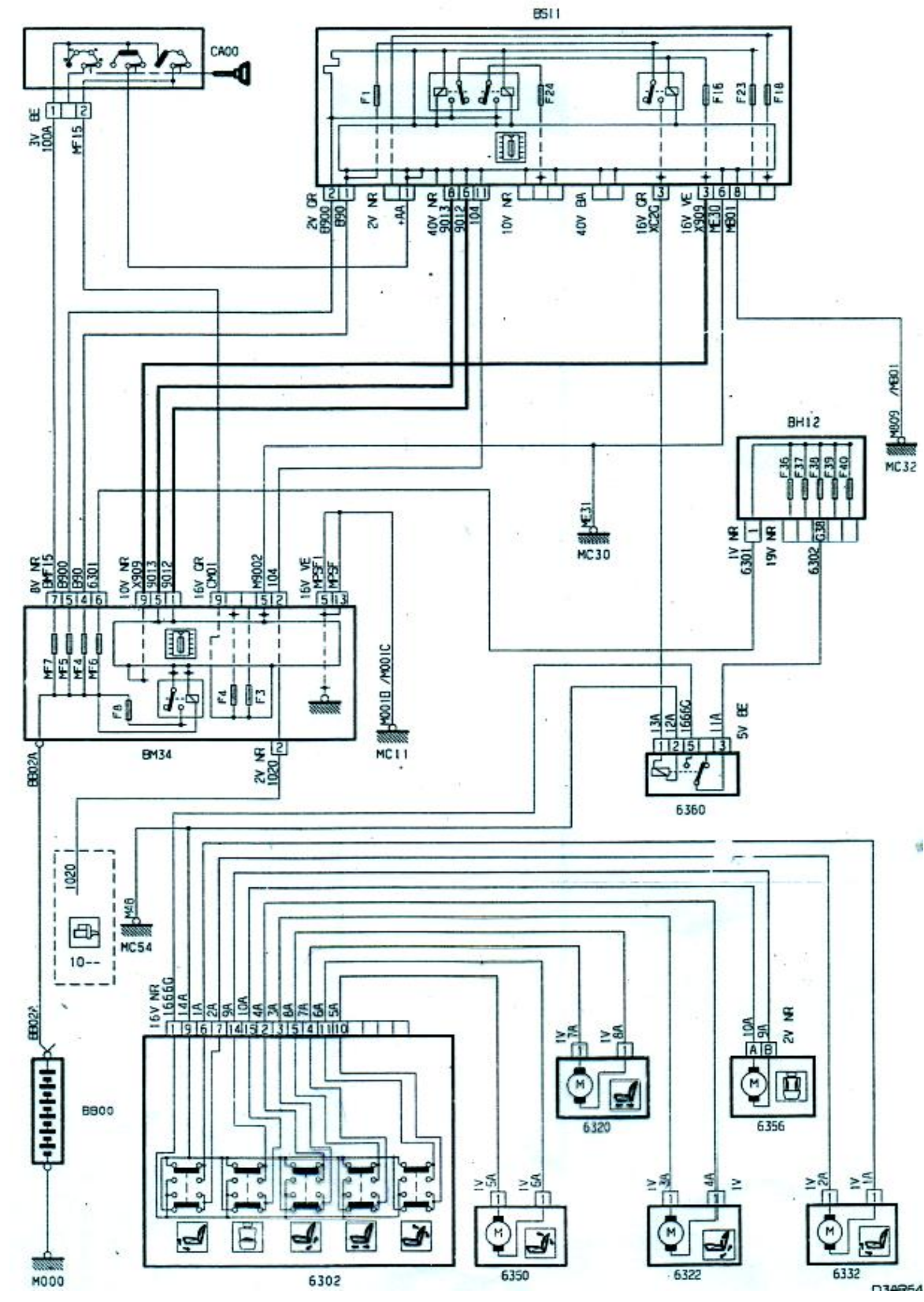


Figure 4: Seat Adjustment Circuit Diagram

END OF QUESTION