



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
SEPTEMBER 2013 SESSION

SUBJECT CODE : FVD23003
SUBJECT TITLE : TRANSMISSION 1
LEVEL : DIPLOMA
TIME / DURATION : 3 HOURS
DATE :

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
 2. This question paper is printed on one 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 two (2) questions only.
 7. Answer all questions in English
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THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

- a) List down **TWO** drive train system arrangements that are used in passenger's car nowadays.
(2 marks)
- b) Write down the functions of clutch system.
(3 marks)
- c) Describe the purpose of pressure plate assembly and list down types of pressure plate assembly that are used in automotive industries.
(5 marks)
- d) Define what the clutch linkages are and write down type of clutch linkage that is used in automotive industries.
(5 marks)
- e) When sets of gear operate in tandem, define the output that would be obtained.
(5 marks)

Question 2

- a) Describe the helical gear type that is widely used in automotive gear box.
(5 marks)
- b) List down the types of gear box that are used in automotive industries.
(5 marks)

- c) Name the **TWO** types of inner C.V. joint for front wheel drive vehicle and explain the basic construction of both types.

(5 marks)

- d) Explain the main functions of the rear drive axle.

(5 marks)

Question 3

- a) Clearly explain the general procedures for checking clutch drag.

(5 marks)

- b) Common problem of C.V. Joint is the units produce clicking or popping noise when entering curve. Determine the main cause of the problem and the method to solve the problem.

(5 marks)

- c) The typical gear mesh has 35 teeth of driving member and rotating at 350 rpm, while the driven member has 65 teeth

- i. Calculate the respective gear ratio

(2 marks)

- ii. Define the condition of the above gear operation

(2 marks)

- iii. Calculate the output speed and output torque if the input torque is 235 Nm

(6 marks)

SECTION B (Total: 40 marks)**INSTRUCTION: Answer TWO (2) questions only.****Please use the answer booklet provided.****Question 1**

- a) A customer complained that his/her vehicle has a problem of hard transmission shifting and also produce a sound of gear clash especially when shifting into reverse. Determine

i) Problem of the vehicle.

(2 marks)

ii) The probable causes of the above symptoms.

(3 marks)

iii) Write down the general procedures for checking the above problem and the necessary actions that should be taken in order to solve the problem.

(5 marks)

- b) After performing the servicing activities on manual transmission / transaxle, it is required to refill the transmission/transaxle with the new lubricant.

i) What are the types (grade) of lubricants that are suitable for manual gear box?

(2 marks)

ii) Write the correct procedures of changing the manual gear box lubricant.

(8 marks)

Question 2

- a) A customer complained that his car produced rumbling, squealing, whirring, or grinding noises when clutch is disengaged and the sound disappeared when clutch is fully engaged. Determine,
- i) the possible causes of this problem. (2 marks)
 - ii) the necessary actions that should be taken in order to solve the problem. (3 marks)
- b) A vehicle running with engine speed of 3000 RPM in 5th gear, if the 5th gear ratio is 0.57:1, final drive ratio is 3.67:1 and the vehicle uses tire size 175/70R13 where the tire outside diameter is 56cm, calculate
- i) Output (wheel) speed of the vehicle. (3 marks)
 - ii) Maximum speed (k/mh). (7 marks)
- c) A customer complained that his vehicle (front wheel drive vehicle) has a noticeable clunk sound when accelerating and decelerating or putting into forward.
- i) What are the possible causes of this problem? (2 marks)
 - ii) What are the necessary actions that should be taken in order to solve the problem? (3 marks)

Question 3

- a) A typical automotive gear box consist of various number of gear teeth as stated in table 1 below,

Clutch gear	= 23 teeth
Counter clutch gear	= 33 teeth
1 st counter gear	= 14 teeth
2 nd counter gear	= 22 teeth
3rd counter gear	= 35 teeth
4 th counter gear	= 38 teeth
Reverse counter gear	= 14 teeth
Idler gear	= 15 teeth
Speed gear 1 st	= 37 teeth
Speed gear 2 nd	= 35 teeth
Speed gear 3 rd	= 21 teeth
Speed gear 4 th	= 18 teeth
Speed gear reverse	= 34 teeth
Pinion gear	= 13 teeth
Ring gear	= 65 teeth

Table 1. Number of gear teeth for typical automotive gear train

- i) By referring to table 1, draw the respective gear train arrangement for the above automotive gear train.
(5 marks)
- ii) Calculate the respective gear ratio of the above gear train.
(5 marks)
- b) Driver complained that his vehicle clutch feels soft or spongy when clutch is pressed.
- i) Determine the possible cause of the problem and the way to solve it.
(3 marks)
- ii) Write down the complete procedures to solve the problem.
(7 marks)

END OF QUESTION