Document No : UniKL MFI_SD_AC41
Revision No: 02
Effective Date: 01 December 2008

CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JULY 2010 SESSION

SUBJECT CODE	:	FVD 30202
SUBJECT TITLE	:	TRANSMISSION 2
LEVEL	:	DIPLOMA
TIME / DURATION	:	9.00am – 11.00am (2 HOURS)
DATE	:	11 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 questions 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.*
7. *All gear ratio formula is appended.*
8. *All questions paper should be returned back to the invigilator.*

THERE ARE 4 PAGES OF QUESTIONS AND 1 PAGE OF FORMULA, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

a) Why is the color of ATF (automatic transmission fluid) change from red color to the opalescent color?

(5 marks)

b) By referring to figure 1 below, explain the condition of vehicle no. 5.

(5 marks)

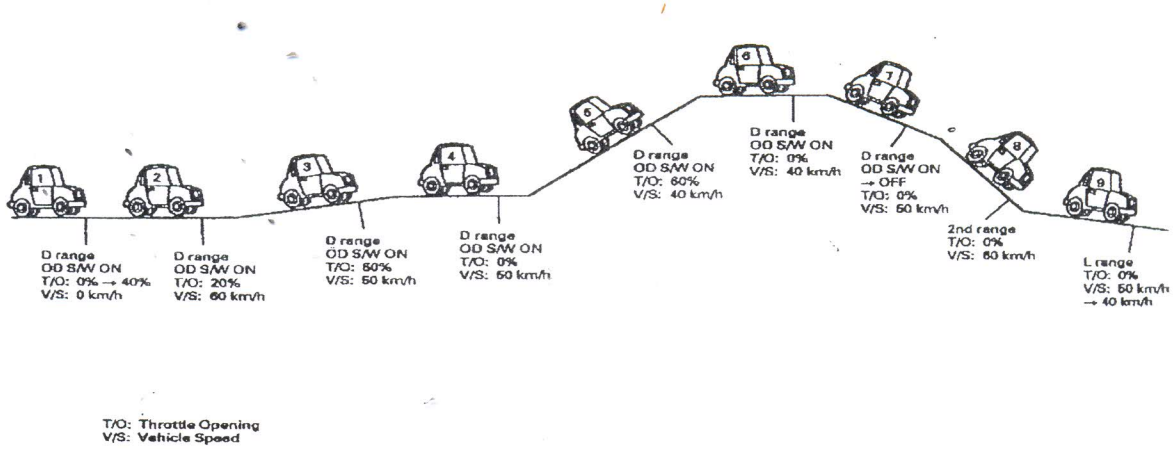

Figure 1 : Vehicle running condition

c) What are the possible causes that may lead to deteriorations of automatic transmission fluid?

(5 marks)

d) Clearly explain the two types of fluid flow inside the torque converter during transmitting power from engine to gear box.

(5 marks)

Question 2

a) List down **FIVE** conditions that simple planetary gear set is able to provide in the typical automatic transmission.

(5 marks)

b) What are the **TWO** types of pulse generators used in an automatic transmission and what are the functions for both of them.

(5 marks)

c) Write down **FIVE** main components of hydraulic operating units in four speed automatic transaxle (KF4A).

(5 marks)

d) Describe what the check valve is.

(5 marks)

Question 3

a) What are the two types of one way clutches used in automatic transmission and where the locations that the one way clutches are are fitted.

(5 marks)

b) Describe the construction of simple planetary gear set.

(5 marks)

c) Clearly explain the two types of brakes that used in automatic transmission.

(5 marks)

d) What are the FOUR solenoid valves that are used to operate the typical automatic transmission system (KF4A)?

(5 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO questions only.

Question 1

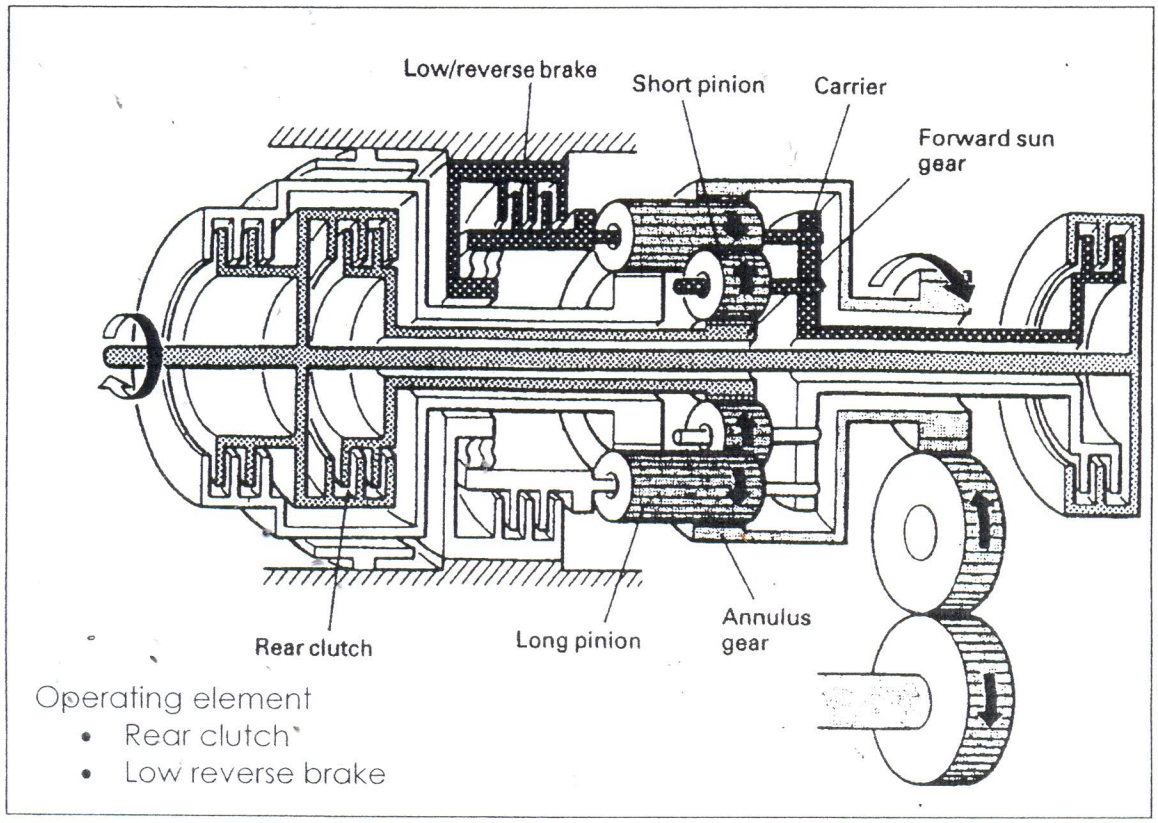

Figure 2. operating element in typical automatic transmission

a) By referring to figure 2, what is the gear position should be obtained and clearly explain how the gear position is achieved.

(10 marks)

b) If the number of annulus gear teeth is74, forward sun gear is 26, reverse sun gear is 34, short pinion is 22 and long pinion is 20, calculate the gear ratio that will be obtained from the gear position that is achieved in question 1 (a).

(10 marks)

Question 2

a) What are the purposes of "converter stall test" and write down the complete procedures of performing the test

(10 marks)

b) Clearly explain what are the possible causes of the automatic transmission if the result of stall test is as below,

i) Reading in "D" position above specification
ii) Reading in "R" position above specification
iii) Reading in both "D" and "R" position below specification

(10 marks)

Question 3

a) Torque converter has three stages during the operation. Clearly explain what the **THREE** stages are?

(10 marks)

b) Describe the main components of ravigneaux type planetary gear set and clearly explain the construction and arrangement of the entire parts as a single unit of planetary gear set.

(10 marks)

END OF QUESTION

Appendix

Gear ratio formula

$$\text{Speed Ratio} = \frac{\text{OUTPUT}}{\text{INPUT}}$$

$$1^{st}\ \text{Speed} = \frac{\text{ANNULUS}}{\text{FORWARD SUN GEAR}}$$

$$2^{nd}\ \text{Speed} = \left[\frac{\text{ANNULUS} \left(\frac{\text{Reverse Sun Gear}}{\text{FORWARD SUN GEAR}} \right) + \text{ANNULUS}}{\text{ANNULUS GEAR} + \text{REVERSE SUN GEAR}} \right]$$

3^{rd} Speed = 1 : 1 (Direct Flow)

$$4^{th}\ \text{Speed} = \frac{\text{ANNULUS}}{\text{ANNULUS} + \text{REVERSE SUN GEAR}}$$

$$\text{Reverse} = \frac{\text{ANNULUS}}{\text{REVERSE SUN GEAR}}$$