



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2014 SESSION**

SUBJECT CODE : FMD 11102
SUBJECT TITLE : MACHINE ELEMENTS
LEVEL : DIPLOMA
TIME / DURATION : 2.5 HOURS 3.30 pm - 6.00 pm
DATE : 29 MAY 2014

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 question paper consists of **TWO (2) sections**. Answer **ALL** the questions for Section A. Answer any **TWO (2)** questions for Section B.
 6. Answer all questions in **ENGLISH**.
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THERE ARE 2 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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

- (a) Explain FIVE (5) important differences when comparing chain drives to belt drives.
(10 marks)
- (b) Describe the THREE (3) common types of sprocket hub classes and label on a diagram.
(10 marks)

Question 2

- (a) Sketch and label the main parts of a worm gear and describe its basic function.
(10 marks)
- (b) Sketch and label the main parts of helical gear and describe its basic function.
(10 marks)

Question 3Explain the following **GEAR** drive definitions: -

- (a) Pitch Circle
(6 marks)
- (b) Addendum
(7 marks)
- (c) Tooth face
(7 marks)

SECTION B (40 marks)**INSTRUCTIONS: Answer only TWO (2) questions.****Please use the answer booklet provided.****Question 4**

- (a) Compare the main differences between the cross belt drive and idler pulley drive.
(12 marks)
- (b) A milling machine uses a foot-mounted belt motor drive and is driven by a 50 cm diameter running at a speed of 2000 rpm. If the required output speed of the milling machine is 3500, calculate the needed output pulley diameter.
(8 marks)

Question 5

- (a) Given that the total transmission ratio of a gear drive is 6 : 7, calculate the revolution speed of the initial gear wheel drive when the final drive has a speed of 333 rpm.
(10 marks)
- (b) A cement breaking drill machine has a multiple gear drive mechanism with THREE (3) separate component transmission ratios of 1 : 3, 15 : 16 and 4 : 7. If the motor driving the drill has a speed of 600 rpm, calculate the operating speed of the device.
(10 marks)

Question 6

- (a) If the distance between the center of two gear drives with 25 and 45 teeth respectively is 150 mm, compare the different module values that can be obtained by increasing the center distance by 50%.
(10 marks)
- (b) Analyze the function of a toothed belt drive and how it prevents slip from occurring in its basic usage in many applications.
(10 marks)

END OF QUESTION