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CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION

SEPTEMBER 2013 SESSION

SUBJECT CODE	**:**	**FMD 11102**
SUBJECT TITLE	**:**	**MACHINE ELEMENTS**
LEVEL	**:**	**DIPLOMA**
TIME / DURATION	**:**	**2.5 HOURS**
DATE	**:**	

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 ONLY.**

THERE ARE 2 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTIONS: Answer ALL three (3) questions.
Please use the answer booklet provided.

Question 1

(a) Explain the following chain drive terminology: - *chain pitch, chain length, chain rating*.

(10 marks)

(b) There are many industrial applications for chains. Explain **THREE (3)** important features and characteristics of ***'Engineering Class'*** chains.

(10 marks)

Question 2

Sketch a basic diagram and describe the important features of the following gears: -

(a) Helical gears

(10 marks)

(b) Bevel gears

(10 marks)

Question 3

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

(a) Circular pitch

(6 marks)

(b) Pitch diameter

(7 marks)

(c) Addendum and Dedendum

(7 marks)

SECTION B (40 marks)

INSTRUCTIONS: Answer only TWO (2) questions.
Please use the answer booklet provided.

Question 4

(a) Sketch a simple diagram and explain the following belt drives: - Open belt drive and Cross belt drive.

(10 marks)

(b) A lathe machine is driven by 100 mm diameter pulley of a foot-mounted belt motor drive that runs at 1500 rpm. Calculate the required pulley diameter for the grinding wheel to run at 2500 rpm.

(10 marks)

Question 5

(a) Calculate the revolution speed of the first gear wheel if the total transmission ratio is 2 : 5 and the last wheel has a speed of 450 rpm.

(10 marks)

(b) A column drilling machine operates via two separate component transmissions with ratios of 3 : 1 and 5 : 3. Calculate the operating speed (in RPM) if the motor has a speed of 250 rpm.

(10 marks)

Question 6

(a) Sketch a simple diagram and calculate the value of the module if two engaged gear wheels have 30 teeth and 90 teeth and the distance between the axes is 110 mm.

(10 marks)

(b) Explain any **THREE (3)** of the following gear drive definitions: - Mechanical power, Thermal power, Size, Overload capacity, Gear ratio, Single-reduction units.

(10 marks)

END OF QUESTION