



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
SEPTEMBER 2013 SESSION**

SUBJECT CODE : FGB 30103
SUBJECT TITLE : MACHINE TOOL VERIFICATION AND MAINTENANCE
LEVEL : BACHELOR
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 paper consists of **FIVE (5)** questions. Answer any **FOUR (4)** questions only.
 6. Answer all questions in English.
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THERE ARE 3 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

INSTRUCTION: Answer any FOUR (4) questions.
Please use the answer booklet provided.

Question 1

- (a) Define maintenance and its function . Explain the main components of maintenance system.
(9 marks)
- (b) Describe preventive maintenance ? Explain different preventive maintenance tasks.
(8 marks)
- (c) Define machine tool verification? Explain its relationship with machine tool maintenance. Gives appropriate examples.
(8 marks)

Question 2

- (a) Explain condition based maintenance? What are the benefits obtained by implementing a condition based maintenance system in any machine tool maintenance?
(9 marks)
- (b) Briefly describe the concept of reliability, maintainability and availability.
(8 marks)
- (c) Define **geometrical tests and accuracy requirements**? How can it be done in practice for machine tools?
(8 marks)

Question 3

- (a) Explain why machine tool geometrical tests are very important?
(5 marks)
- (b) Differentiate between geometrical test and general services on machine tools.
(5 marks)
- (c) Describe how would you perform the following geometrical tests. Also state the permissible error (tolerance) in each case (approximately).
- i) Checking of parallelism axis of tailstock sleeve to the carriage movement.
 - ii) Parallelism of the median T slot to the longitudinal movement of the table.
 - iii) Measurement of run-out of centre (lathe machine).
- (15 marks)

Question 4

Below are the items that needed to be check when servicing the X-Y axis for CNC milling :

- Checking ball screw binding
- Checking ball screw bearing
- Ball screw maintenance
- Checking for lost motion

Describe in details the components that need to be checked for each items and also the corrective action needed to overcome the situations.

(25 marks)

Question 5

- (a) Cleaning is considered as a prime important activity in machine tool maintenance, although many operators and supervisor give least importance to such activities?
(8 marks)
- (b) State the component need to be checked when conducting pneumatic maintenance? Also explain how to service the components.
(9 marks)
- (c) Describe briefly the advantages and disadvantages of 'lead screw' and 'ball screw' for maintenance machine tools.
(8 marks)

END OF QUESTION