



**UNIVERSITI KUALA LUMPUR**  
**Malaysia France Institute**

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**FINAL EXAMINATION**  
**JANUARY 2011 SESSION**

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**SUBJECT CODE** : FGB 30103  
**SUBJECT TITLE** : MACHINE TOOL VERIFICATION AND MAINTENANCE  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 3.30pm – 6.00pm  
( 2.5 HOURS )  
**DATE** : 07 MAY 2011

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**INSTRUCTIONS TO CANDIDATES**

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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.

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**INSTRUCTION: Answer any FOUR questions.**

**Please use the answer booklet provided.**

**Question 1**

- (a) What do you understand by maintenance strategies and objectives?  
(9 marks)
- (b) What is corrective maintenance? Explain different corrective maintenance tasks.  
(8 marks)
- (c) Plant shutdown for equipment overhauls need to be adequately planned. Why?  
(8 marks)

**Question 2**

- (a) What is condition based maintenance? What are the benefits obtained by implementing a condition based maintenance system in any machine tool maintenance?  
(9 marks)
- (b) "Availability is more practical and appropriate measure of equipment performance". Discuss.  
(8 marks)
- (c) What is **BATH-TUB** curve? How can it be used in practice?  
(8 marks)

**Question 3**

- (a) Why machine tool alignment tests are very important ? Explain. (5 marks)
- (b) Name the various instruments required for performing the alignment tests on machine tools. (5 marks)
- (c) Describe how would you perform the following alignment tests. Also state the permissible error in each case: (15 marks)
- i) True running of taper socket in lathe machine main spindle
  - ii) Parallelism of universal milling machine table face between the axis of the main spindle
  - iii) True running of spindle taper for radial drilling machine

**Question 4**

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

- i) Checking ball screw binding
- ii) Checking ball screw bearing
- iii) Ball screw maintenance
- iv) Checking for lost motion
- v) Checking the repeatability

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) Why 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) What are the parameter need to be checked when conducting coolant tank maintenance? Also state the cleaning procedure when servicing this tank.

(8 marks)

- (c) Describe the different types of preventive maintenance programs for CNC machine tools.

(9 marks)

**END OF QUESTION**