



**UNIVERSITI KUALA LUMPUR**  
Malaysia France Institute

---

**FINAL EXAMINATION**  
**JANUARY 2014 SESSION**

---

**SUBJECT CODE** : FGB 30103  
**SUBJECT TITLE** : MACHINE TOOLS VERIFICATION AND MAINTENANCE  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 2 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. Section A and B. Answer all questions in Section A. For Section B, answer **THREE (3)** questions only.
  6. Answer all questions in English.
-

**Section A: (40 marks)**

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

**Question 1**

Based on BS 4656 Part 3 (Milling Machine) as shown in figure 1 and 2, Describe how the following Machine Tools Verification should perform. List down the instruments used and tolerances given as refer to figure below.

**G1:**

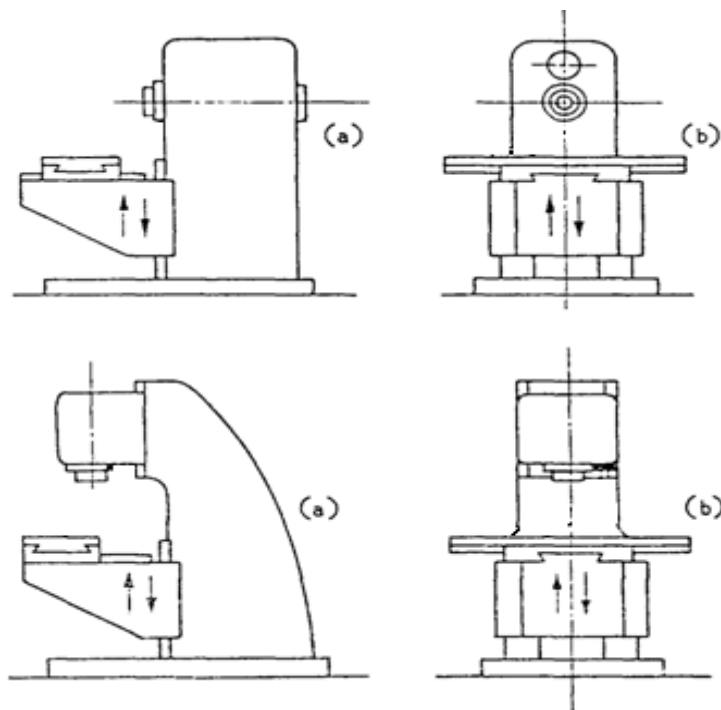


Figure 1

(10 marks)

**G4:**

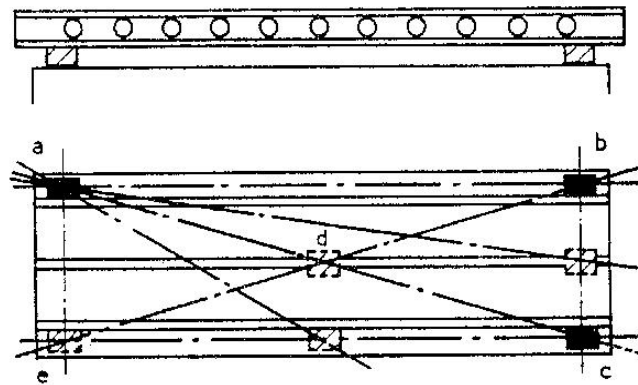


Figure 2

(10 marks)

**Question 2**

Based on BS ISO 230-1:1996, A-13. CNC Machine Tools Verification can be check by using Telescopic Ball Bar. Explain how this task can be done correctly by following the standard above and your answers should explain;

- a) Description of the Ball Bar (5marks)
- b) General accuracy parameters (10 marks)
- c) Precautions in use (5 marks)

**Section B: (60 marks)**

**INSTRUCTION: Answer THREE (3) questions ONLY.**

**Please use the answer booklet provided.**

**Question 3**

Describe briefly how the CNC machine calibration is done by using Laser interferometers.

(20 marks)

**Question 4**

State five (5) the important factors of performing Geometrical Test on Machine Tools in the mechanical workshop.

(20 marks)

**Question 5**

Compare and describe the differences between conventional lathe machines and CNC lathe machine?

(20 marks)

**Question 6**

Explain and give the example of using 5'S for maintenance concept in CNC machine tools.

(20 marks)

**END OF QUESTION**