



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2010 SESSION**

SUBJECT CODE : FGD 30103
SUBJECT TITLE : INSTRUMENT CALIBRATION
LEVEL : DIPLOMA
TIME / DURATION : 8.00 pm – 10.00 pm
(2 HOURS)
DATE : 26 APRIL 2010

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 two (2) questions only.
6. Answer all questions in English.

THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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

- (a) Explain the calculation of instrument error. (7 marks)
- (b) Describe parallax error in measurement. (6 marks)
- (c) Determine the effect of measurement due to temperature changes. (7 marks)

Question 2

- a) Explain briefly the sensitivity and accuracy of measuring instrument. (8 marks)
- b) Describe the absolute (direct) measurement and comparison measurement. (7marks)
- c) Explain precision in a measurement. (5 marks)

Question 3

(a) Describe 'Servo Mismatch' in a Ballbar system.

(7 marks)

(b) Explain the working principles of a Ballbar.

(7 marks)

(c) Explain the condition of a machine with no errors.

(6 marks)

SECTION B (Total: 60 marks)**INSTRUCTION: Answer TWO (2) questions only.****Please use the answer booklet provided.****Question 1**

- (a) Explain in detail the range of error in the calibration of a micrometer screw with reference to zero setting.

(4 marks)

- (b) Write-down the Standard Operation Procedures (S.O.P) for calibrating internal micrometer.

(16 marks)

Question 2

- a) Describe the methods of testing a dial gauge with ± 0.001 mm uncertainty as required by B.S 907:1965

(10 marks)

- b) Write-down the calibration procedures of a dial gauge.

(10 marks)

Question 3

- b) Write down the procedures for calibration of precision Vernier caliper in accordance with the B.S 887:1982

(12 marks)

- b) In accordance to B.S 887: 1982 Clouse 4. Construction: Explain in detail the material for slider and beam of a vernier caliper.

(8 marks)

END OF QUESTION