



UNIVERSITI KUALA LUMPUR

Malaysia France Institute

FINAL EXAMINATION JANUARY 2014 SESSION

SUBJECT CODE	: NMB 13102
SUBJECT TITLE	: METROLOGY AND ENGINEERING WORKSHOP
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.
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THERE ARE 3 PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

(a) List down the symbols that represent the Geometrical Tolerance below:

- i. Parallelism (2 marks)
- ii. Angularity (2 marks)
- iii. Concentricity (2 marks)
- iv. Position (2 marks)
- v. Straightness (2 marks)

Question 2

A 6 in. long, 0.5 in. diameter 304 stainless steel rod is being reduced in diameter to 0.48 in. by turning on a lathe. The spindle rotates at $N=400\text{rpm}$ and the tool is traveling at an axial speed of 8 in/min. Calculate the cutting speed, cutting time, material removal rate?

(10 marks)

Question 3

Explain and give an example on how to measure **Circularity (Roundness)** in the laboratory. Your answer should include the equipment set up and procedure including the precaution you should beware during measurement.

(20 marks)

SECTION B (Total: 60 marks)**INSTRUCTION: Answer THREE (3) questions ONLY.****Please use the answer booklet provided.****Question 4**

Explain in details the types of inspection that could be done in figure 1. Your answer should include each of Geometrical Test Method base on BS ISO 230-1:1996 test parameters, procedures and illustration.

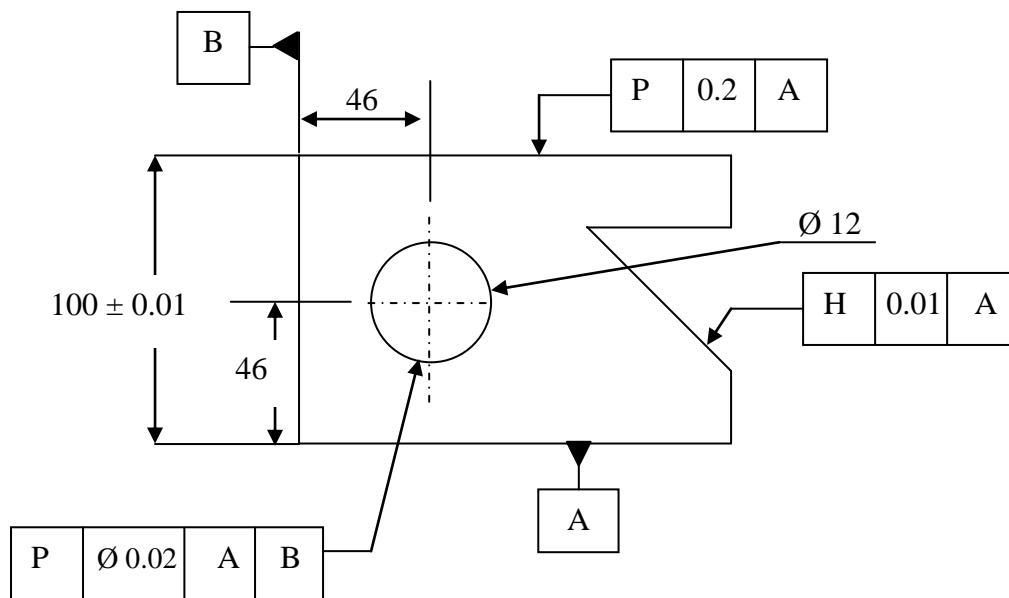


Figure 1

(20 marks)

Question 5

Explain the concepts structure of an optical profile projector, your answer should describe the magnification of an image of component and the basic stepwise procedure.

(20 marks)

Question 6

Sketch and label the basic parts of vernier caliper, and explain the basic concept how the vernier scale of 0.02mm is determine.

(20 marks)

Question 7

Label and describe briefly the function of a dial gauge parts in figure 2 and list five (5) safety precautions when using this measuring instrument.

(20 marks)



Figure 2

END OF QUESTION