

**TECHNICAL UNIVERSITY OF MOMBASA**

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FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF MEDICAL ENGINEERING

**UNIVERSITY EXAMINATION FOR:**  
**DIPLOMA IN MEDICAL ENGINEERING**

EHL 2102: WORKSHOP TECHNOLOGY & PRACTICE 1  
END OF SEMESTER EXAMINATION

**SERIES: DECEMBER 2016**

**TIME: 2 HOURS**

**DATE: 9 Dec 2016**

**Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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### Question ONE

- a) Explain any **FIVE** workshop Rules and Regulations **10 Marks**
- b) i) Describe any **FIVE** bench hand tools
- ii) State any typical use(s) of each bench tool in 1 b) i) **10 Marks**
- c) Differentiate between temporary and permanent joints giving **THREE** examples in each case **10 Marks**

### Question TWO

- a) Define the term “sacrificial corrosion” **4 Marks**
- b) Explain any **FIVE** metal surface protection processes **10 Marks**
- c) Differentiate the following terms as used in steel production
- i) Foundry
- ii) Furnace **6 Marks**

### Question THREE

- a) Sketch a thread waveform and label the following:-
- i) Nominal diameter
- ii) Root diameter
- iii) Crest
- iv) Root
- v) Pitch **10 marks**
- b) i) Figure 1 shows a Vernier calliper. Name parts marked from 1 to 4 **4 Marks**
- ii) Figure 2 shows **THREE** vernier calliper measurements, a), b) and c).  
Write down the measurements in each case **6 Marks**

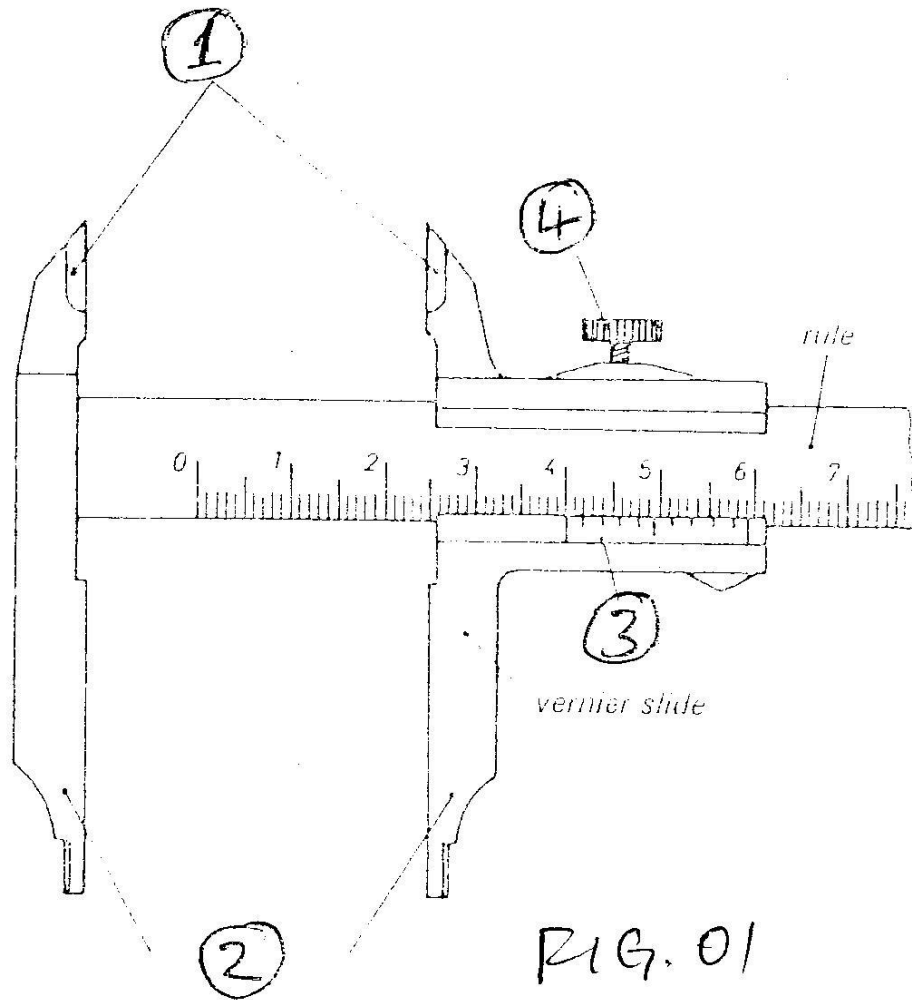
## Question FOUR

- a) Explain the **TWO** main classes of engineering materials **3 Marks**
- b) Explain the following terms and give **TWO** examples in each case
- i) Ferrous metals
  - ii) Non-ferrous metals **5 Marks**
- c) Explain the following engineering properties
- i) Brittleness
  - ii) Toughness
  - iii) Ductility
  - iv) Hardness
  - vi) Plasticity **12 Marks**

## Question FIVE

- a) Define the following terms as used in steel production
- i) Alloying
  - ii) Heat treatment **3 Marks**
- b) Explain the meaning of “Eutectic system” **2 Marks**
- c) With the aid of phase diagram of eutectic composition of two elements A and B, show the following:-
- i) Eutectic point
  - ii) Eutectic composition
  - iii) Eutectic temperature **15 Marks**

FIG. 01; VERNIER CALIPER



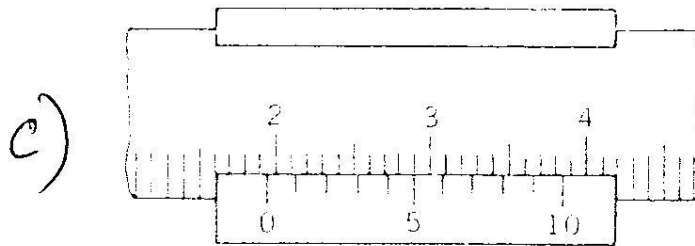
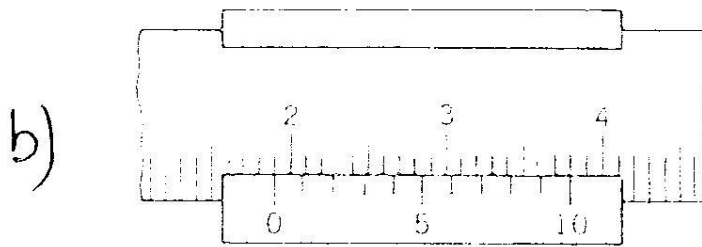
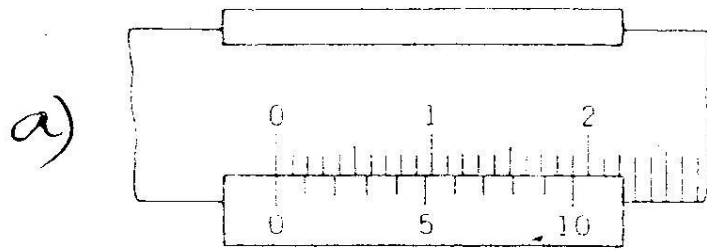


FIG: 02: VERNIER CALIPER.  
MEASUREMENTS.