



# TECHNICAL UNIVERSITY OF MOMBASA

---

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

**UNIVERSITY EXAMINATION FOR:**

**BSC IN MECHANICAL ENGINEERING**

**EMG 2103 : WORKSHOP PROCESSES & PRACTICE I**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE:** Pick Date Select Month Pick Year

## **Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

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

---

## **Question ONE**

- a) List any **two** acts of Kenyan laws that have been put in place to ensure safety and health at work place. [1 mark]
- b) State the duties of the following with regard to safety and health at work place:  
I) Employer  
II) Employee. [4 marks]
- c) A public inspector visited a certain workshop after receiving a complaint from the members of the public. List any **three** steps he may take after visiting the workshop. [3 marks]
- d) Describe the first aid treatment that may be administered when a colleague suffers from  
i) Minor wounds and scratches  
ii) Severe bleeding  
iii) Fractured leg  
iv) Fainting [8 marks]
- e) Explain the procedure of lifting a heavy item and moving it from one place to another position. [4 marks]

## Question TWO

- a) Micrometers are precision measuring instruments.
- i) List the four types of micrometers and state the applications of each type. [2 marks]
  - ii) Sketch an outside micrometer and label at least six parts. [5 marks]
  - iii) A micrometer has a spindle screw of 0.5 mm pitch and its thimble has 50 divisions. For the micrometer;
    - I) Determine the least count. [1 mark]
    - II) Illustrate a reading of 8.69 mm. [3 marks]
- b) Using sketches distinguish between the following tools:
- i) Dot punch and centre punch
  - ii) Surface gauge and a vernier height gauge.
  - iii) Surface table and surface plate [9 marks]

## Question THREE

- a) Riveting is a popular metal joining technique.
- i) List any **Four** reasons as to why riveting is popular among the metal joining techniques. [2 marks]
  - ii) Sketch any **four** solid rivet standard head types. [4 marks]
  - iii) Explain the procedure of pop riveting sheet metal panel on the body of a motor vehicle. [5 marks]
- b) Describe the procedure of soft soldering an electrical wire on a stud. [9 marks]

## Question FOUR

- a) Files are metal cutting tools commonly used in bench work.
- i) Define the following terminologies associated with files:
    - I) Cut of teeth
    - II) Grade of cut
    - III) Safe edge [4<sup>1</sup>/<sub>2</sub> marks]
    - IV) Draw a file and label the different parts [2<sup>1</sup>/<sub>2</sub> marks]
    - V) Describe five classes of files according to their shape or cross-section. [10 marks]
    - VI) List any three precautions observed while handling files. [3 marks]

## Question FIVE

- a) Using sketches distinguish the following types of hammers and state their applications.
- i) Ball peen hammer.
  - ii) Cross peen hammer
  - iii) Straight peen hammer
  - iv) Soft hammer [12 marks]
- b) List any **four** materials that are used to make soft hammers. [2 marks]
- c) Distinguish the following types of calipers:
- i) Inside
  - ii) Outside and
  - iii) Odd leg (hermaphrodite). [6 marks]