



# TECHNICAL UNIVERSITY OF MOMBASA

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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.**

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## **Question ONE**

- a) List any **four** causes of injury at a workplace. (2 marks)
- b) For each of the following health hazards explain the precautions taken:
- i) Dust and fumes
  - ii) Toxic substances
  - iii) Noise
  - iv) Contact with skin (8 marks)
- c) For each of the following safety colors state their meaning and application
- i) Red
  - ii) Yellow
  - iii) Green
  - iv) Blue (4 marks)
- d) Explain the **four** classes of fire extinguishers and state the application of each. (6 marks)

## Question TWO

- a) Vernier instruments are precision measuring instruments.
- i) List the **three** types of vernier instruments and state the applications of each type. (3 marks)
  - ii) Sketch vernier caliper and label at least six parts. (5 marks)
  - iii) A vernier caliper has a smallest division on the main scale of 0.5 mm and the vernier scale has 25 divisions. For the vernier caliper;
    - I) Determine the least count.
    - II) Illustrate a reading of 26.66 mm. (4 marks)
- b) Using sketches describe a combination set and state the application of each part. (6 marks)
- c) Explain the use of a center squire and a vee-block to determine the center of a shaft. (2 marks)

## Question THREE

- a) Brazing is a popular metal joining technique.
- i) Distinguish between brazing and soldering. (2 marks)
  - ii) Briefly explain the procedure of brazing a handle of a dust pan made of mild steel sheet. (8 marks)
- b) Describe the procedure of hand cutting an external screw thread. (10 marks)

## Question FOUR

- a) Hacksaw is a tool used for cutting rods, bars and pipes.
- i) With the aid of sketches name the four types of hacksaws used in a workshop. (6 marks)
  - ii) Explain the following terminologies associated with hacksaw blades:
    - I) Setting of teeth.
    - II) Pitch of teeth
    - III) Number of teeth in contact with work (4 marks)
  - iii) Describe the **three** types of hack saw blades that are commonly used. (6 marks)
  - iv) State any **four** causes of hacksaw blade breakage. (4 marks)

## Question FIVE

- a) Using sketches distinguish the following types of cold chisels and state their applications.
- i) Flat chisel.
  - ii) Cross-cut chisel
  - iii) Half round chisel
  - iv) Diamond point chisel (8 mark)
- b) Distinguish the following operations under taken using a chisel:
- i) shearing
  - ii) chopping and
  - iii) chipping (6 marks)
- c) Explain the following terms associated to inspection:
- i) Limit
  - ii) Fit
  - iii) Tolerance (6 marks)