



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

EMM 104: WORKSHOP PROCESSES AND PRACTICES I

DATE: 1/8/2019

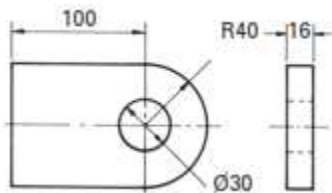
TIME: 8.30-10.30 AM

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

QUESTION ONE- 30 MARKS (COMPULSORY)

- a) Outline six safety precaution to be observe when in workshop (3 marks)
- b) The component below is to be fabricated in the workshops out of a flat bar work piece of the dimension 20mm by 100mm by 180 mm length.



- i. Outline the hand five tools required
 - ii. Specify the safety precaution to be adhered to when using the above hand tools
 - iii. Explain the procedure required to fabricated this component (12 marks)
- c) Describe in detail the basic procedure required when soldering (6 marks)
- d) Describe three types of sheet metal used in fabricating components in workshop (9 marks)

QUESTION TWO- 20 MARKS

- a) Explain three types of accident in the workshop (6 marks)
- b) Using sketch show the following reading
 - i. 40.22 mm in vernier scale
 - ii. 123.12mm in vernier scale
 - iii. 9.44mm in micrometer scale
 - iv. 16.77 mm in micrometer scale (8 marks)
- c) Using well labeled sketch explain the working principle of a micrometer screw gauge (6 marks)

QUESTION THREE- 20 MARKS

- a) Explain the term marking out and highlight the importance of creating the datum (3 marks)
- b) Explain three types of fire in the workshop and describe the appropriate types of fire extinguishers (8 marks)
- c) Explain how the following tools are used in marking out
 - i. V- block
 - ii. Angle block
 - iii. Vernier Height gauge (9 marks)

QUESTION FOUR- 20 MARKS

- a) Explain the functions of three types of hand shear (5 marks)
- b) Describe the following terms
 - i. Single seam
 - ii. Double seam
 - iii. Groove seam
 - iv. tapping (9 marks)
- c) Using sketches, explain the following types of joints
 - i. Lap joint
 - ii. Seam joint
 - iii. Locked seam joints (6 marks)

QUESTION FIVE- 20 MARKS

- a) Explain three types of hacksaw blades (6 marks)
- b) Describe how surface gauge is use as a marking out tool (5 marks)
- c) Explain three brazing methods (9 marks)