



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR DEGREE IN

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

MECHANICAL ENGINEERING

EMM 108: WORKSHOP PROCESSES AND PRACTICE I

DATE: 19/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

- *Answer Question One And Any Other Two Questions*

QUESTION ONE (30 MARKS)

a) The table below shows the set of gauges available

Range	Step	Pieces
1.001 to 1.009	0.001	9
1.01 to 1.49	0.01	49
0.5 to 9.5	0.5	19
10 to 90	10	9
Total		86

Build up the following measurement

- 56.421mm
- 78.748mm
- 5.345mm

(6 marks)

- b) Explain the duties of employer and employee in promoting safety in the workshop (6 marks)
- c) Explain the causes of accidents in the workshop (6 marks)
- d) Outline safety precautions when using the following tools
- i. Hammers
 - ii. Files
 - iii. Chisel (6 marks)
- e) Describe the classes of fire and the appropriate fire extinguisher (6 marks)

QUESTION TWO (20 MARKS)

- a) Define the following terms
- i. Marking out
 - ii. Datum and explain purposes of the same (6 marks)
- b) Explain the working of the scrappers (5 marks)
- c) Describe the following
- i. Surface table
 - ii. Angle plate
 - iii. Vernier height gauge (9 marks)

QUESTION THREE (20 MARKS)

- a) Show the following readings
- i. 40,22mm in vernier scale
 - ii. 123.12mm in vernier scale
 - iii. 9.44 mm in micrometer scale
 - iv. 16.77mm in micrometer scale (6 marks)
- b) Explain the working principles of
- i. Snap gauges
 - ii. Plug gauges
 - iii. Taper gauges
 - iv. Telescopic gauges (8 marks)
- c) Describe how concentricity of a shafts is checked in the workshop(6 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the following
 - i. Blind Rivets
 - ii. Solid And tubular rivets (6 marks)
- b) Explain the term soft soldering and why fluxes are use on the same process. Outline some fluxes use. (6 marks)
- c) Using neat sketches describe three design of joints in soldering process (8 marks)

QUESTION FIVE (20 MARKS)

- a) Explain three different types of hand shears (6 marks)
- b) Describe the working principles of
 - i. Universal surface gauge
 - ii. Scribing block (6 marks)
- c) Describe how electric safety measure is enhanced in the workshop (8 marks)