



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

EMM 104 WORKSHOP PRACTICE AND PROCESS I

DATE: 22/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

QUESTION ONE (30 MARKS)

- a) The table 1 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

Table 1: gauges

Build up the following measurement

- i. 56.421mm (2 marks)
 - ii. 78.748mm (2 marks)
 - iii. 5.345mm (2 marks)
- b) Explain the duties of employer and employee in promoting safety in the workshop (6 marks)
- c) Explain three causes of accidents in the workshop (6 marks)

- d) Outline safety precautions when using the following tools
- i. hammers (2 marks)
 - ii. files (2 marks)
 - iii. chisel (2 marks)
- e) Describe any three classes of fire and the three appropriate fire extinguisher (6 marks)

QUESTION TWO (20 MARKS)

- a) Define the following terms
- i. marking out (3 marks)
 - ii. datum and explain purposes of the same (3 marks)
- b) Explain the working of the scrappers (5 marks)
- c) Describe the following
- i. surface table (3 marks)
 - ii. angle plate (3 marks)
 - iii. vernier height gauge (3 marks)

QUESTION THREE (20 MARKS)

- a) Show the following readings
- i. 40,22mm in vernier scale (1.5 marks)
 - ii. 123.12mm in vernier scale (1.5 marks)
 - iii. 9.44 mm in micrometer scale (1.5 marks)
 - iv. 16.77mm in micrometer scale (1.5 marks)
- b) Explain the working principles of
- i. snap gauges (2 marks)
 - ii. plug gauges (2 marks)
 - iii. taper gauges (2 marks)
 - iv. telescopic gauges (2 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 (3 marks)
 - ii. solid and tubular rivets (3 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 (3 marks)
 - ii. Scribing block (3 marks)
- c) Describe how electric safety measure is enhanced in the workshop (8 marks)