



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN ELECTRICAL & ELECTRONICS ENGINEERING

(POWER AND TELECOMMUNICATION OPTIONS)

2601/2602/104 MATERIALS PROCESSES & WORKSHOP TECHNOLOGY

DATE: 16/4/2019

TIME: 2.30-5.30 PM

INSTRUCTIONS:

Answer ALL questions in this paper

QUESTION ONE (20 MARKS)

- a) What is an accident? Describe briefly **four** common causes and sources of accidents. (5 marks)
- b) Describe briefly **Four** general provisions of factories act 1948, regarding safety. (4 marks)
- c) Explain how fire can be prevented in industries. (4 marks)
- d) Draw and name **six** major parts of the vernier caliper (7 marks)

QUESTION TWO (20 MARKS)

- a) Using line diagram show the following readings on;
 - Micrometer screw gauge
 - i. 5.33 mm
 - ii. 1.54 mm
 - Vernier caliper
 - i. 12.96 mm

- ii. 0.68 mm (8 marks)
- b) Describe any **four** toxic substances in a workshop. (4 marks)
- c) Explain the **four** safety colours giving an example of where they can be used. (8 marks)

QUESTION THREE (20 MARKS)

- a) Describe the following tools using sketches;
 - i. Engineer's square
 - ii. Scribing block
 - iii. Angle plate
 - iv. odd leg caliper (8 marks)
- b) Using sketches describe:
 - i. Cross Filing;
 - ii. Draw Filing (6 marks)
- c) With the aid of a well labelled diagram explain the production of aluminium (6 marks)

QUESTION FOUR (20 MARKS)

- a) Highlight **FOUR** types iron ores stating the % of iron contained (4 marks)
- b) Using sketches explain the following hand tools;
 - i. anvil
 - ii. hack saw
 - iii. swage block (9 marks)
- c) Explain **Two** safety measures each in regard to the following;
 - i. Fires
 - ii. Electric shocks (4 marks)
- d) Describe **Three** safety precautions to be observed when using chisels at the bench. (3 marks)

QUESTION FIVE (20 MARKS)

- a) Using sketches describe Upsetting (5 marks)
- b) Describe the following properties of materials
 - i. Hardness

- ii. Tensile strength
 - iii. Plasticity
 - iv. Malleability
 - v. Brittleness (10 marks)
- c) Describe swaging process using sketches. (5 marks)