



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

DIPLOMA (I) IN ELECTRICAL & ELECTRONICS ENGINEERING (POWER,
ELECTRONICS & TELECOMMUNICATION)

MATERIALS, PROCESSES & WORKSHOP THEORY

2602/104/MWT- (POWER & ELECTRONICS OPTION)

2602/104/MV- (TELECOMMUNICATION OPTION)

DATE:

TIME: 2HRS

INSTRUCTIONS

Answer all questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- (a) State two safety precautions to be observed under each of the following in a workplace workshop;
- (i) Machinery;
 - (ii) Good house keeping;
 - (iii) Electricity;
 - (iv) Harmful substances;
 - (v) Hygiene;
- (b) Explain the measures observed in the event of electrocution.
- (10 marks)
(10 marks)

QUESTION TWO (20 MARKS)

Explain the types of fires involved in a typical bomb blast terrorist attack, together with their mitigation measures.

QUESTION THREE (20 MARKS)

- (a) Explain three types of engineering materials together with their respective applications.
- (12 marks)

(b) Define each of the following properties of materials:

- (i) Strength;
- (ii) Hardness;
- (iii) Toughness;
- (iv) Brittleness.

(8 marks)

QUESTION FOUR (20 MARKS)

(a) Define a datum in measurement.

(2 marks)

(b) Sketch each the following types of hand tools;

- (i) Flat file;
- (ii) Ball peen hammer;
- (iii) Tape measure;
- (iv) Vernier caliper;
- (v) Hacksaw.

(10 marks)

(c) Illustrate the following hand tools in use:

- (i) A vee block;
- (ii) Engineers square.

(10 marks)

QUESTION FIVE (20 MARKS)

a) Explain the following types of finishing methods.

- (iii) Chromizing;
- (iv) Coating;
- (v) Polishing;
- (vi) Bluing.

(8 marks)

b) Explain three types of cast iron together with their respective uses.

(12 marks)