



# MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

CRAFT CERTIFICATE IN ELECTRICAL AND ELECTRONICS

1601/106/WT: WORKSHOP THEORY AND PRACTICE

DATE: 3/9/2021

TIME: 2.30-5.30 PM

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## INSTRUCTIONS:

Answer ALL the questions

1. (a) State THREE safety precautions to be observed under the following in a workplace workshop;
  - i. Electrical Machinery;
  - ii. Toxic substances;
  - iii. Electricity;
  - iv. Use of ladders;
  - v. Hygiene. (15 marks)
- (b) Explain the procedure observed in the event someone suffers electric shock. (5 marks)
2. (a) Explain THREE causes of fires in workplaces. (6 marks)
- (b) Explain FOUR objectives of first aid. (8 marks)
- (c) Explain THREE aims of fire drills. (6 marks)
3. (a) State FOUR forms of supply of engineering materials. (4 marks)
- (b) Explain each of the following types of materials citing ONE example and TWO characteristics for each case.
  - i. Metals;
  - ii. Ceramics;
  - iii. Composites;
  - iv. Semi-conductors. (16 marks)

4. (a) Define each of the following mechanical properties in engineering materials.
- i. Malleability;
  - ii. Hardness;
  - iii. Ductility;
  - iv. Toughness. (8 marks)
- (b) with the aid of sketches describe each of the following finishing and decoration processes;
- i. Anodizing;
  - ii. Electroplating; (8 marks)
- (c) Describe the process of extracting Copper. (4 marks)
5. With the aid of a diagram describe the production of steel in the electric arc furnace. (20 marks)