



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN MECHANICAL
ENGINEERING

MATERIALS, METALLURGY AND WORKSHOP TECHNOLOGY

DATE: 5/8/2016

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

This paper consists of two sections. Section A is compulsory, and then answer any other two questions from section B

SECTION A: (COMPULSORY)

1. a) State any **five** objectives of industrial safety. (5 marks)
- b) Highlight any **five** precautions to be observed in prevention of electric shock (5 marks)
- c) Describe any **four** metals used in sheet metal work (8 marks)
- d) State and explain the **four** strength properties of materials (8 marks)
- e) Differentiate between the following;
 - i. Ferrous and non ferrous metals
 - ii. Chipping and scrapping (4 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

2. a) Describe any five toxic substances in a workshop. (7 marks)
b) Briefly describe the filing process. (5 marks)
c) Explain the four safety colors' giving an example of where they can be used. (8 marks)
- 3 a) Define and briefly describe the following engineering materials giving two properties of each
i) Conductor
ii) Semi-conductor
iii) Modern dielectrics. (15 marks)
b) Describe the hack sawing process (5 marks)
4. a) sketch the following hand tools
i) Chisel
ii) Scriber
iii) Hacksaw
iv) Ball peen hammer (8 marks)
b) Differentiate between the following exercises
i. Measuring and marking
ii. Cutting and shearing
iii. Plasticity and malleability. (6 marks)
c) Highlight any twelve causes of accidents in workshops. (6 marks)
5. a) describe the following properties of materials
i. Ductility
ii. Fusibility
iii. Elasticity
iv. Malleability
v. Creep resistance
vi. Hardness (12 marks)
b) Briefly highlight five properties of Aluminum that makes it a preference in Electrical appliances. (5 marks)
c) Sketch and label a bench vice. (3 marks)