



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

ARTISAN IN MECHANICAL ENGINEERING

FOOD AND BEVERAGE PRODUCTION

CLOTHING TECHNOLOGY

ELECTRICAL AND ELECTRONICS ENGINEERING

WELDING TECHNOLOGY

APPLIED SCIENCE

DATE: 15/4/2019

TIME: 2.30-5.30 PM

INSTRUCTIONS:

Answer all questions

QUESTION ONE (20 MARKS)

- a) Define the four laws of reflection (8 marks)
- b) With aid of simple sketches explain the characteristics of images formed by concave mirrors when the object is at the following
 - i. Infinity
 - ii. Object beyond C
 - iii. Object at C
 - iv. Object at between C and F
 - v. Object at F
 - vi. Between F and P (12 marks)

QUESTION TWO (20 MARKS)

A convex Mirror of focal length 9 Cm produces an image on it's axis 6cm away from the mirror. If the images is 3cm high, determine by scale drawing.

- a) The object distance from the mirror.
- b) The size of the object.

(Nb) Use a suitable scale in this case is 1cm to represent 3 cm of actual length on vertical scale and 1cm to represent 4 cm on horizontal scale. (20 marks).

QUESTION THREE (20 MARKS)

- a) Define sound (2 marks)
- b) Name any 4 sources of sound (8 marks)
- c) In air the speed of sound is about 330m/s .This speed is dependent on various factors. List them (6 marks)
- c) Reflected sound is called (2 marks)
- d) In some hall sound waves are reflected from the walls, floor and ceiling. Since the echo time is short, the Echo overlaps with the original sound. The original sound thus seems to be prolonged. This effect is called (2 marks)

QUESTION FIVE (20 MARKS)

- a) List 6 types of cast iron (12 marks)
- b) Explain Four ways of minimizing friction (8 marks)

QUESTION FIVE (20 MARKS)

- a) Outline two characteristics why copper is popularly used among non-ferrous materials (4 marks)
- b) Explain five properties of copper (8 marks)
- c) List and explain any four properties of brasses (8 marks)