



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

**FIRST YEAR SEMESTER ONE EXAMINATION FOR
CRAFT CERTIFICATE IN MECHANICAL ENGINEERING**

AUTOMOTIVE AND PRODUCTION (MODULE 1)

ENGINEERING DRAWING 1

DATE: 1/12/2021

TIME: 11.30-2.30 PM

INSTRUCTIONS: ANSWER ALL QUESTIONS

1.
 - a) with the aid of a sketch, state five items included in a title block (5 marks)
 - b) Using the uppercase and lowercase letters, print letters A-Z and numbers 0-9 (10 marks)
 - c) Illustrate a method of dividing a straight line measuring 100mm into a ratio of 3:4:5 (5 marks)

2.
 - a) Construct an external tangent to two unequal circles diameter 40 mm and 70mm with centers O, O₁ 125mm apart respectively. (10 marks)
 - b) Construct the following angles.
 - i. 127.5°
 - ii. 105°
 - iii. 15° (6 marks)

- c) Sketch the following types of lines and highlight two uses of each
- i. Border line
 - ii. Construction line
 - iii. Hidden line
 - iv. Centre line (4 marks)
3. a) Construct a tangent to a point P 110 mm away from the center of a circle diameter 50mm. (10 marks)
- b) Construct a heptagon given the diameter of a circle 70 mm. (10 marks)
4. a) Construct an internal tangent to two unequal circles radii $R_1=25$ mm and $R_2=40$ mm with centre distance between the circles= 80 mm. (10 marks)
- b) Use concentric circles method to draw an ellipse with the following dimensions
- Major diameter = 100mm
 - Minor diameter = 60mm
 - The ellipse should lie vertically (10 marks)
5. a) Draw an involute to a given circle of diameter 50 mm (10 marks)
- b) Construct two curves blending two circles given the following specifications.
- i. $R_1= 20$ mm
 - ii. $R_2= 35$ mm
- c) Distance between center = 100mm (10 marks)