



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

FIRST YEAR FIRST SEMESTER EXAMINATION FOR
DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING
ENGINEERING DRAWING I

DATE: 2/12/2021

TIME: 8.30-11.30 AM

Instructions to candidates.

- Answer All questions in the A3 sheets provided.
 - Do not erase construction lines.
 - Neatness is an integral part of this examination.
1. (a) Describe the grade of pencil, giving examples and application in each case. (4 marks)
 - (b) (i) With the aid of a sketch, explain how an A5 drawing sheet may be obtained from the A0 size sheet. (5 marks)
 - (c) List FIVE types of information contained in a title block of an engineering drawing. (5 marks)
 - (d) Sketch to show TWO types of sharpened pencil lead and State ONE application in each case. (6 marks)
 2. (a) Draw the following types of line and state ONE application for each.
 - (i) Continuous narrow line;
 - (ii) Continuous narrow line with zigzags;
 - (iii) Dashed narrow line;
 - (iv) Long dashed dotted narrow line. (6 marks)

- (b) Draw a sketch and indicate the following types of line:
- (i) Outline;
 - (ii) Dimension line
 - (iii) Extension line;
 - (iv) Construction lines;
 - (v) Hatching lines;
 - (vi) Guide lines;
 - (vi) Centre lines. (8 marks)
- (c) Print upper case letters A to Z. (6 marks)
3. (a) Draw a line 123 mm long and, by construction divide it into 7 equal parts. (4 marks)
- (b) Construct a triangle whose perimeter =250mm and ratio of sides as 4:3:2. (7 marks)
- (c) Draw an ellipse whose major and minor axes are 80 mm and 60 mm respectively, using each of the following methods:
- (i) Concentric circles
 - (ii) Rectangular method. (9 marks)
4. (a) Construct a common internal tangent to TWO circles of diameters 60mm and 40mm respectively and whose centres are 80 mm apart. (10 marks)
- (b) Construct a common external tangent to circles in 4(a) above. (10 marks)
5. (a) Construct a regular pentagon within a circle of diameter, 60 mm. (5 marks)
- (b) Construct a regular heptagon, length of one side= 40 mm long. (5 marks)
- (c) Construct a polygon smaller and similar to a given polygon with sides in the ratio of 4:5 if: AB=40 mm; AE=35mm;BC=25 mm; angle at A=110 degrees; angle at B=120 degrees; CD=60 mm; and DE=65 mm (10 marks)