



# MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

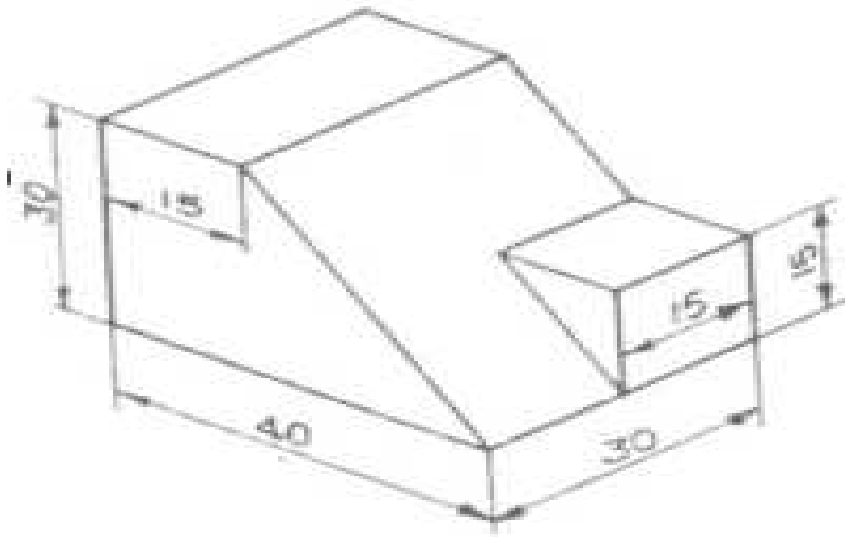
ECV 100: CIVIL ENGINEERING DRAWING I

DATE: 31/7/2019

TIME: 2.00-4.00 PM

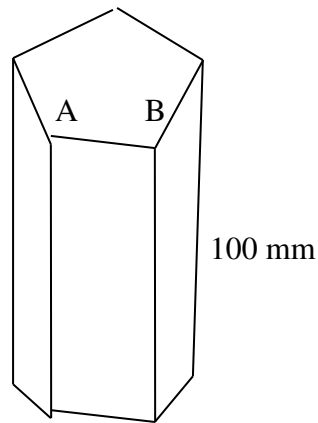
**INSTRUCTIONS:** Answer questions **ONE** and any other **TWO** questions.

1. a) Construct an ellipse whose  
Major axis=100mm  
Minor axis=80mm, using Concentric circle method (10 marks)
- b) Draw Tangent and Normal to the ellipse in 1b) above (10 marks)
- c) Construct an Archimedian Spiral in a base circle of diameter 50 mm (10 marks)
2. a) Construct a parabola with focus (f) 25mm from a horizontal directrix. (10 marks)
- b) Construct a hyperbola with an eccentricity of 1.25 and focus(f) of 20mm from a vertical directrix. (10 marks)
3. a) Construct a helix of diameter 60mm and determine; (10 marks)
  - i. Helix pitch (5 marks)
  - ii. Helix angle (5 marks)
4. **Fig. Q 4** shows a solid block. Using Third angle orthographic projection, draw;
  - a) Front Elevation in the direction F (10 marks)
  - b) Plan (5 marks)
  - c) End View (5 marks)



**Fig. Q 4**

5. a) Draw a regular hexagon of side 50 mm using the **universal method** (5 marks)
- b) **Fig. Q5** shows a regular pentagonal prism. Using first angle orthographic projection draw
  - i. Front Elevation (5 marks)
  - ii. Plan (5 marks)
  - iii. End elevation (5 marks)



**Fig. Q5**

$AB = 40 \text{ mm}$

height = 100 mm