



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING

BCE CD 209: ENGINEERING DRAWING III

DATE: 22/7/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS:

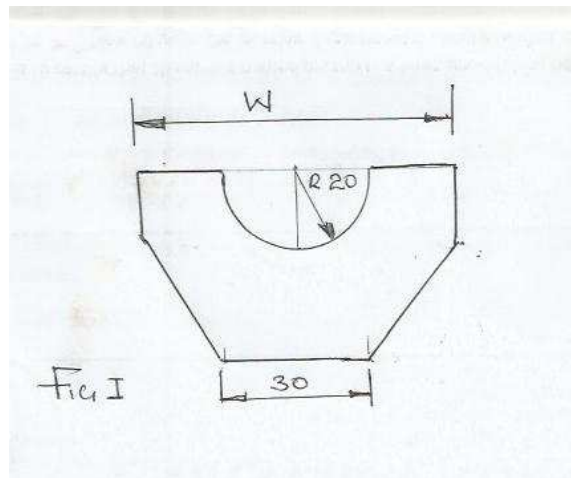
Answer questions **ONE** and any other **TWO** questions.

All dimensions are in millimeters.

Maximum marks for each part of question are as indicated.

1. a) i) With the aid of the drawing instruments, draw an irregular pentagon ABCDE given the following data;
 $AB = 30$ $BC = 40$ $CD = 50$ $DE = 70$ $AE = 40$
 $\text{Angle } ABC = 135^\circ$ $\text{Angle } BAE = 105^\circ$ (7 marks)
- ii). Convert the irregular pentagon ABCDE (a i above) into a square of equivalent area. Indicate the length of the side (10 marks)
- b) Print the following paragraph in lower case letters; “Engineering drawing is a universal language of communication in the civil engineering profession. A trainee must learn to use the correct the symbols and lines so as to avoid the undue costs which may arise due to mis-interpretation by the parties involved.” (6 marks)
- c) i) Draw a triangle ABC given the following data. $AB = 50$, $BC = 40$ $AC = 70$. (3 marks)
- ii) Construct a circle passing through the three corners of the triangle above. (4 marks)

2. a) The major and minor axis of an ellipse are given as 130 and 80 respectively. Construct the ellipse using the foci method. (12 marks)
- b) Construct a regular hexagon given $A/F = 60$. (8 marks)
3. a) With the aid of a geometrical method, construct a regular heptagon in a circle of diameter 82mm. (12 marks)
- b) Illustrate the following type of lines;
 - i. Dimension line
 - ii. hidden detail
 - iii. cutting plane line
 - iv. Break line. (8 marks)
- 4 a) Fig 1 shows the bottom half of an octagonal washer. Construct the figure and indicate the width W. (12 marks)



- b) Construct the following angle using a pair of compass (i) 75° , (ii) 30° , (iii) 120° (iv) 120° . (8 marks)
5. a) One side of a regular nonagon is given as 30mm. Construct the polygon using the universal method. (12 marks)
- b) Draw the following set square angles 75° , 105° , 15° , 135° (8 marks)