



TECHNICAL UNIVERSITY OF MOMBASA

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR THE DEGREE IN BACHELOR OF SCIENCE IN
ELECTRICAL ENGINEERING (BSEE 1)

EME 2101 ENGINEERING DRAWING & DESIGN I

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER, 2013

TIME: 2 HOURS

INSTRUCTION TO CANDIDATES

1. You should have the following for this examination:-
 - Scientific Calculator
 - Drawing Instruments
 2. This paper consists of **FIVE** questions.
 3. Answer Question **ONE** is **COMPULSORY** and any other **TWO** Questions.
 4. Maximum marks for each part of Question are as shown.
 5. This paper consists of **FOUR** printed pages.
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Question ONE (Compulsory)

Draw in the THIRD ANGLE orthographic projection to show the views of the component shown in Figure 1 to include:

- (i) Front elevation in plane F
- (ii) End elevation in plane E
- (iii) Plan elevation in plane P
- (iv) Full dimension

(30 marks)

Question TWO

Figure 2 shows the orthographic projection of an engineering design. On a scale 1:1, construct to show the isometric pictorial view of the component. **(20 marks)**

Question THREE

Figure 3 shows a crank/rod/slider mechanism. Slider B is constrained to reciprocate along plane ST as crank OA rotates in the clockwise direction:

- (i) Construct to show the system set up
 - (ii) Plot the locus of point Q for one rotation of crank OA
 - (iii) Determine the maximum horizontal and vertical distance covered by Point Q
- (20 marks)**

Question FOUR

The involute spur gear for an engineering system has the following specifications:

Pressure angle	20°
Module	10
No. of teeth	24

- (i) Calculate to show the necessary design data.
- (ii) Draw as accurately as possible on a scale of 1:1 to show **THREE** consecutive teeth of the gear wheel.

(20 marks)

Question FIVE

A cam of minimum dia 30mm with a knife edge follower is required. If the cam is to rotate in the clockwise direction, construct the displacement graph if the cam has to impart the following motions:

0° – 60° Rise 20mm with UV
60° – 180° Rise 40mm with SHM
180° – 240° Dwell
240° – 360° Fall 60mm with UA& R

(20 marks)