



TECHNICAL UNIVERSITY OF MOMBASA

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

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

EME 2102 ENGINEERING DRAWING 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 **SIX** printed pages.
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Question ONE (Compulsory)

Figure Q1 shows a pictorial drawing of a machined block. Draw full size, using first angle orthographic projection, the following:

- (a) Front view (F)
- (b) End view (E)
- (c) Plan

(Include six main dimensions)

(30 marks)

Question TWO

- (a) Construct an ellipse of 140mm and 90mm, major and minor axes respectively using the rectangle method. **(5 marks)**
- (b) A slider mechanism is illustrated in Figure Q2. Drive from crank AB moves a reciprocating slider through connecting rod BC. Copy the initial configuration of the mechanism and construct the locus of point, P, for one complete revolution of the crank AB. **(15 marks)**

Question THREE

Construct a cam profile for a disc cam with an in-line roller follower, 25mm diameter to the following specifications.

Minimum cam radius 50mm

Follower to:

- Rise 40mm with uniform acceleration and deceleration in 120° of cam rotation
- Dwell for 60° of cam rotation
- Fall 40mm with simple harmonic motion in 180° of cam rotation
- Rotation of cam anti-clockwise

(20 marks)

Question FOUR

- (a) Figure Q4 shows two views of a component. Draw the block in isometric view with P as the lowest corner. **(16 marks)**
- (b) Draw the symbols for the following electrical components:
- (i) Relay
 - (ii) D.C generator
 - (iii) Circuit breaker
 - (iv) Transformer with magnetic core

(4 marks)

Question FIVE

(a) Write in full the meaning of the following abbreviations as used in engineering drawing:

- (i) HEX HD
- (ii) PCD
- (iii) BSP
- (iv) U' CUT
- (v) UNF
- (vi) RD HD

(3 marks)

(b) Sketch the following fastening devices:

- (i) Woodruff key
- (ii) Cotter pin
- (iii) Gib-head key
- (iv) Lock nut assembly

(6 marks)

(c) Figure Q.5 shows the profile of a crane hook. Draw the profile and show all the construction work.

(11 marks)