



TECHNICAL UNIVERSITY OF MOMBASA  
**Faculty of Engineering &  
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DECREE IN:

**BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE 14S)**

ECE 2101: ENGINEERING DRAWING I

**END OF SEMESTER EXAMINATION**

SERIES: DECEMBER 2014

**TIME ALLOWED: 3 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

Use neat, large and well labeled diagrams where required

This paper consists of **THREE** printed pages

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**Question One (Compulsory)**

Construct the isometric projection of the casting shown in figure 1 below. Draw in first angle projection the top view, front view and end view of the casting. The arrow points in the direction of the front view.

Show the projection symbol and pay attention to line work, neatness and technical presentation. Show the SIX most important dimensions **(30 marks)**

### **Question Two**

Draw a two-point perspective drawing of figure 2 below. Label the vanishing points. Show ALL necessary constructions. Do not dimension. **(20 marks)**

### Question Three

The rod BC is attached to the crank AO at A as shown in figure 3 below. OA rotate about O and the rod BC is constrained to pass through the point Q. Draw the loci of the ends B and C for the one complete revolution of OA. BC = 120cm; OA = 22.5cm; AB = 30cm and OQ = 52.5cm **(20 marks)**

### Question Four

Plot the cam profile which meets the following specification:

Shaft diameter – 12.5mm

Minimum diameter – 30mm

Lift – 12.5mm

Performance – 60° dwell

- 90° simple harmonic motion to half lift
- 30° dwell
- 60° uniform acceleration to maximum lift
- 120° uniform velocity to maximum fall

Rotation – Anti-clockwise

Your cam profile is to be drawn twice full size

**(20 marks)**

### Question Five

Draw to scale 1:1 the front view, side view and top view of a hexagonal nut of size M30, keeping its axis vertical. Give standard dimensions in terms of  $d$  **(20 marks)**