



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

EMC 4111 : ENGINEERING DRAWING I
SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: SEPTEMBER 2018
TIME: 3 HOURS

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments.

This paper consists of five questions.

Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (COMPULSORY) 30 Marks

Draw the isometric projection of the angle bracket shown in Fig Q1 below indicating all the dimensions.

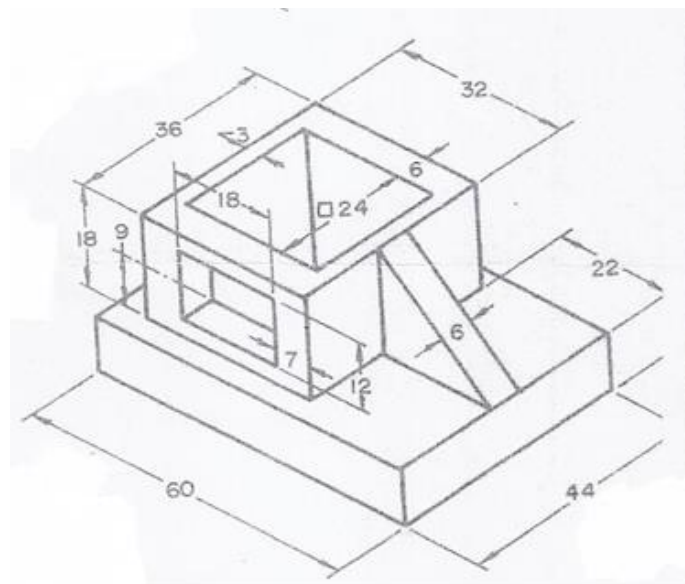


Fig Q1

ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 Marks)

In a slider crank mechanism, the crank OA is 45cm long and the connecting rod AB, 105cm long. Plot the locus of:

- i) Mid-point 'P' of AB
- ii) A point 60 cm from A on BA extended, for one revolution of the crank.

QUESTION THREE (20 Marks)

- a) Create freehand oblique sketches of the objects in Figure Q3 (a) and (b). (The objects are shown as oblique projections, so you must simply recreate the drawing by freehand sketching.)

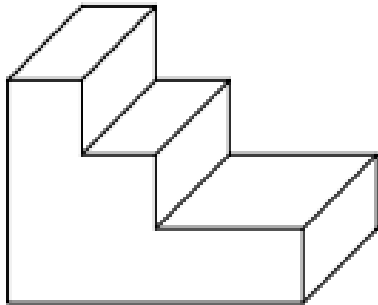


Fig Q3 (a)

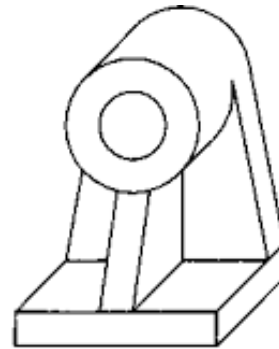


Fig Q3 (b)

- b) Create freehand isometric sketches of the objects in Figure Q3 (c) and (d). Do not dimension. (The objects are shown as isometric projections, so you must simply recreate the drawing by freehand sketching.)

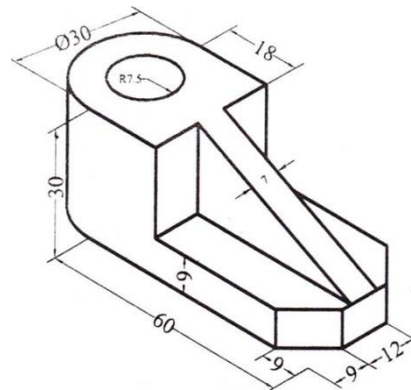
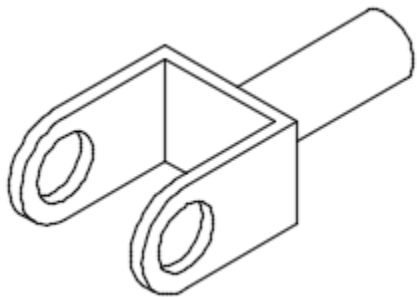


Fig Q3 (c)

Fig Q3 (d)

QUESTION FOUR (20 Marks)

Draw the third angle orthographic projection of Fig Q4 indicating all the dimensions and the relevant symbol. The arrow points in the direction of the Front Elevation.

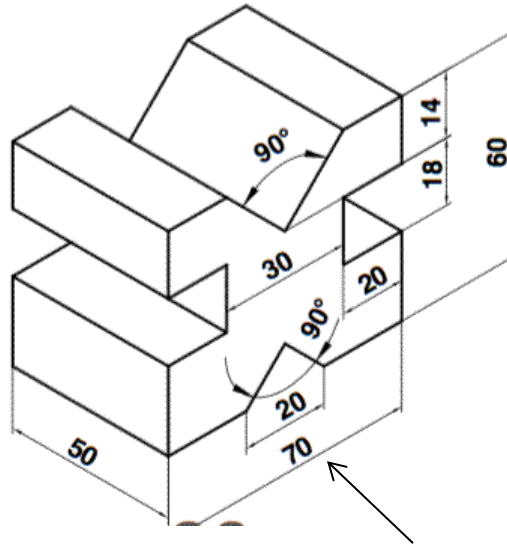


Fig Q4

QUESTION FIVE (20 Marks)

Plot the cam profile which meets the following specifications:

- 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 must be drawn twice full size