



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of Medical Engineering
UNIVERSITY EXAMINATION FOR:
BSc. Medical Engineering
BTech. Medical Engineering
EME 4102 : Engineering Drawing I
SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: SEPTEMBER 2018
TIME: 3 HOURS
DATE: Pick Date Sep 2018

Instruction to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions. All length dimensions are in *mm*.

Maximum marks for each part of a question are as shown.

Do not write on the question paper.

Question ONE

- (a) Figure 1(a) shows a metal plate which has been poorly dimensioned. Copy the given diagram and by proper dimensioning using baseline technique, distinguish between aligned and unidirectional methods of dimensioning. In each case, use a separate diagram. (6 Marks)
- (b) Figure 1(b) shows two orthographic views of a machine component drawn in third angle projection. From the views, copy the end elevation and then draw in full size the following views of the component.
- A sectional front elevation defined by the cutting plane X-X.
 - A plan in projection with the front elevation.

Add all the necessary dimensions.

(24

Marks)

Question TWO

Figure 2 shows views of a certain object drawn in third angle projection. Draw, full size, the isometric projection of the object making the face marked X to be at the top of the drawing.
No dimensioning is required. (20 Marks)

Question THREE

(a) Figure 3 shows an isometric view of a certain metal block. Draw in first angle orthographic projection:

- (i) The front in the direction shown by the arrow.
- (ii) The plan in projection with the front.

Include only Four important dimensions. (8 Marks)

(b) From the isometric view in Figure 3, make an oblique drawing of the given view in cavalier projection. (12 Marks)

Question FOUR

(a) Construct a regular nonagon given the length of its sides as 35mm. (8 Marks)

(b) Draw an Archimedean spiral of two convolutions, the greatest and the least radii being 114mm and 15mm. (12 Marks)

Question FIVE

Plot the cam profile which meets the following specifications:

Shaft diameter = 10mm

Minimum diameter = 25mm

Performance:

- 0 – 180°, simple harmonic motion to maximum lift of 50 mm.
- At 180°, instant fall of 25 mm.
- 180° – 360°, uniform velocity to maximum fall.

Take rotation to be anticlockwise. (20 Marks)

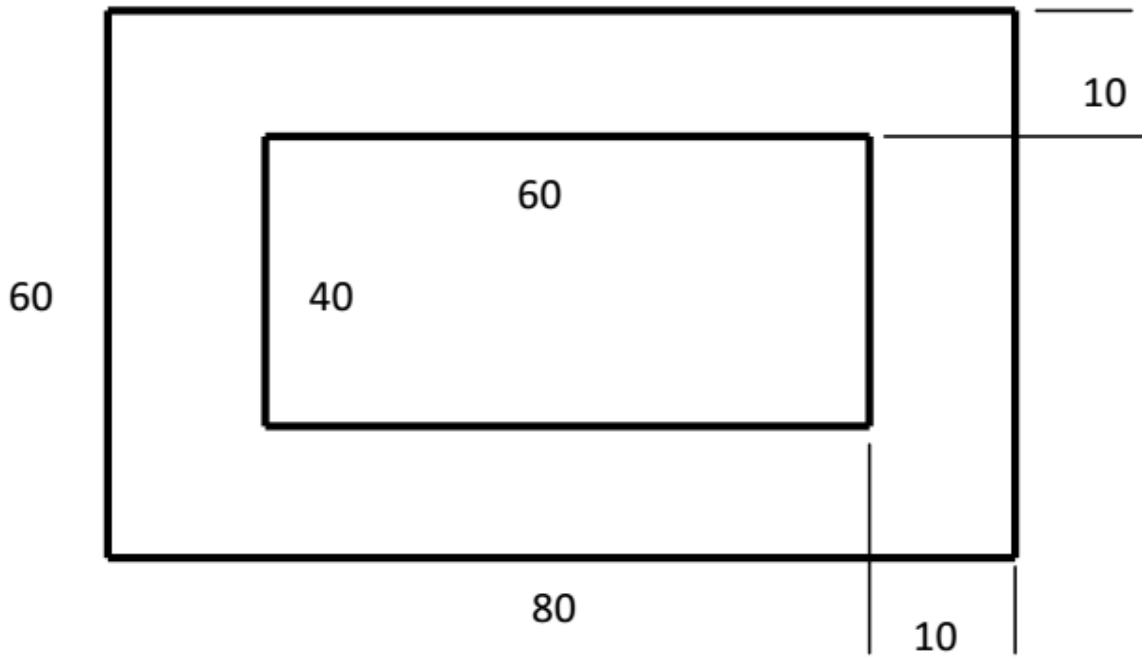


Figure 1(a)

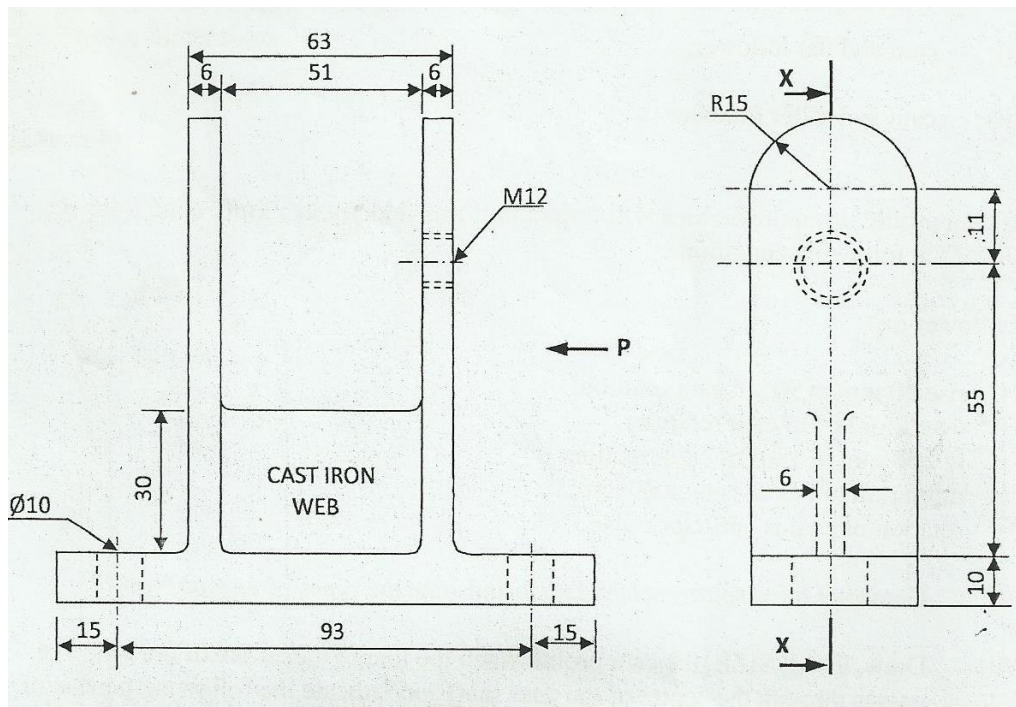


Figure 1(b)

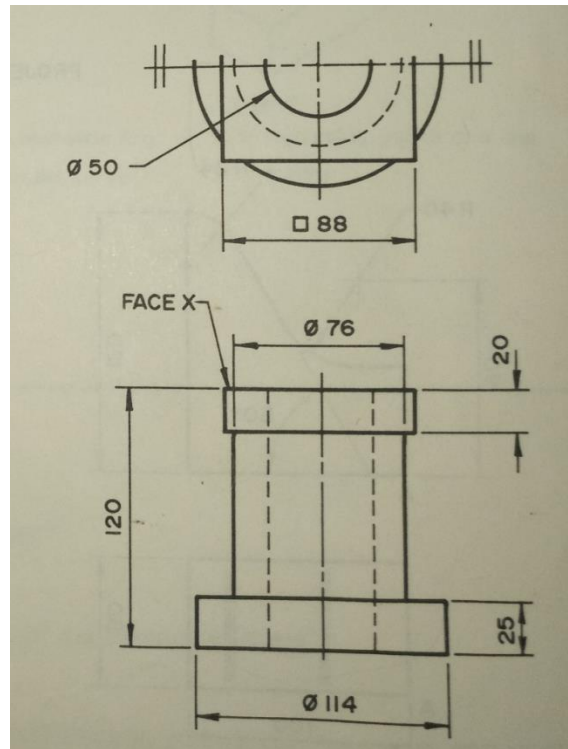


Figure 2

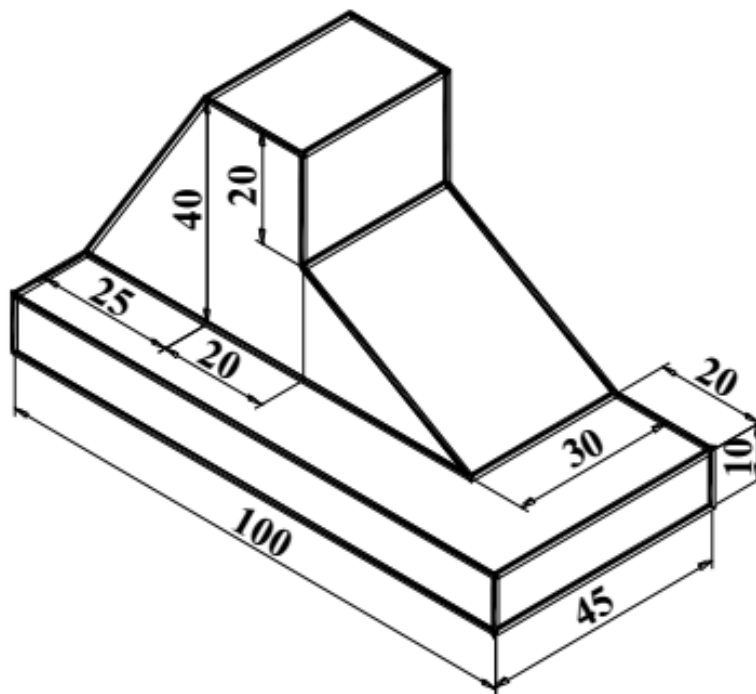


Figure 3