



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2017/2018
FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN ENERGY TECHNOLOGY
TCU 102: TECHNICAL DRAWING 1

DATE: Wednesday, 21st February 2018

TIME: 11.00a.m-1.00p.m

INSTRUCTIONS:

- (i) This paper contains **FIVE (5)** questions.
- (ii) You are required to answer **THREE (3)** questions only.
- (iii) Answer question one and any two questions out of the remaining four.
- (iv) Question one carries 30 marks and the others carry 20 marks each.
- (v) Construction lines should be faint and should not be erased.
- (vi) All dimensions are in millimeters unless otherwise stated.
- (vii) Missing and mismatching dimensions, if any, may be suitably assumed.

QUESTION ONE (COMPULSORY) (30 MARKS)

An object is shown by a pictorial view in Figure Q1. Draw, to a suitable scale, the following views in 1st angle orthographic projection

- (a) A front elevation with hidden details (7 marks)
- (b) A plan view with hidden projected from the front elevation (6 marks)
- (c) An end view (without hidden detail) (6 marks)
- (d) Insert six dimensions (3 marks)
- (e) The projection symbol according to standard drawing conventions (2 marks)
- (f) A suitable title block (6 marks)

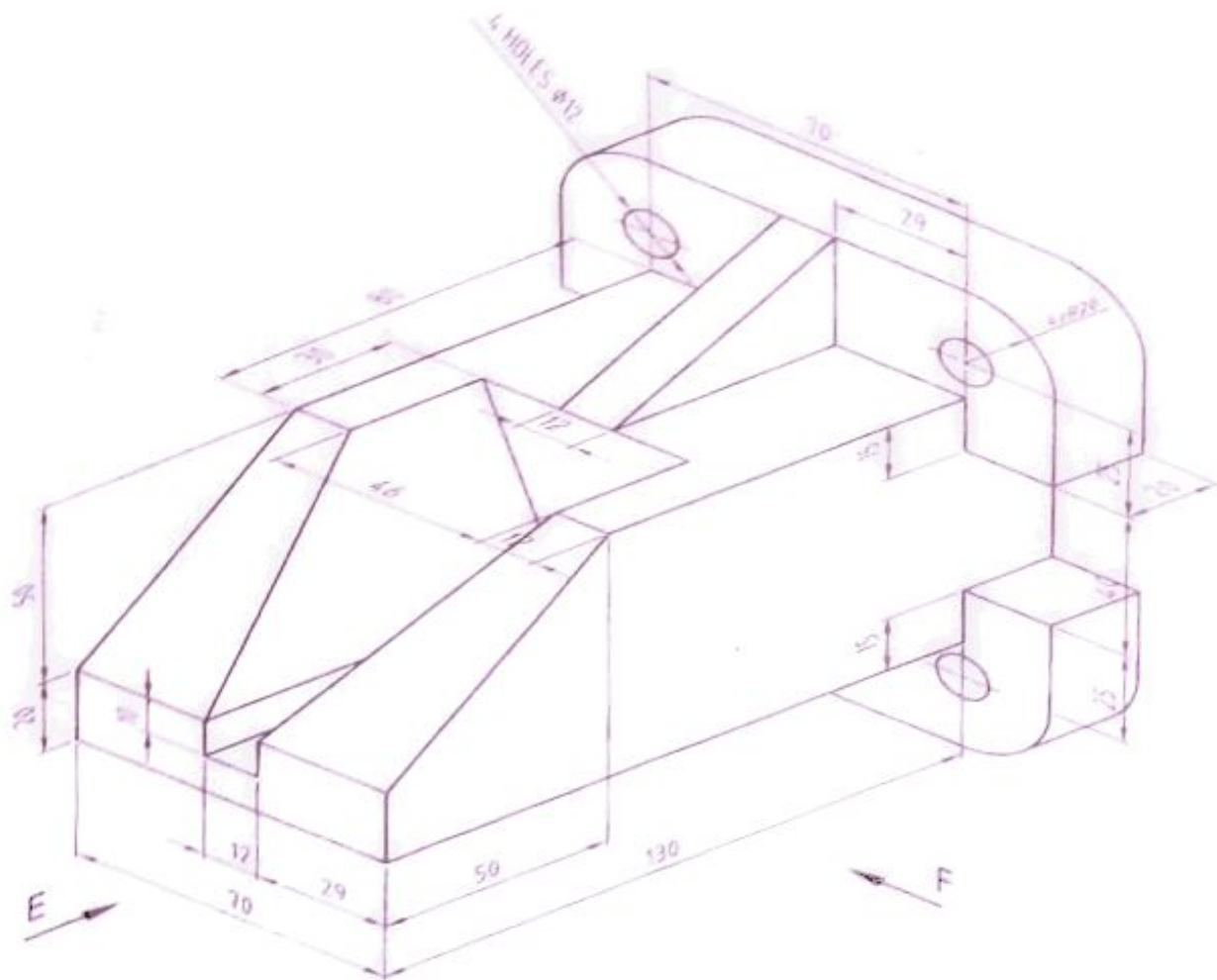


Figure Q1

QUESTION TWO (20 MARKS)

- (a) Figure 2 Question Two (a) shows two orthographic views a cast iron bearing bracket. Draw full size an isometric view of the bracket making corner A the lowest point of the drawing. (10 marks)
- (b) Figure 3 Question Two (b) shows two orthographic views of a block. Draw a full size oblique view in cavalier projection. (10 marks)

QUESTION THREE (20 MARKS)

Draw the graph and profile of a cam with the following specification:

Plate cam, rotating anticlockwise. Roller follower. Least radius of cam, 30 mm. Camshaft diameter, 20 mm.

0° - 90° , follower rises 20 mm with uniform velocity.

90° - 150° , follower rises 30 mm with simple harmonic motion.

150° - 210° , dwell period.

210° - 270° , follower falls 20 mm with uniform acceleration.

270° - 360° , follower falls 30 mm with uniform retardation.

QUESTION FOUR (20 MARKS)

(a) The views in Fig. Q4(a) represent two discs which roll along AB. Both discs start at the same point and roll in the same direction. Plot the curves for the movement of points p and q and state the perpendicular height of p above AB where q again coincides with the line AB. (13 marks)

(b) Fig. Q4(b) shows a crank OA which revolves in clockwise direction around pivot O. Link AB is pin-jointed at A and end B always slides along the horizontal line CD. Plot the locus of point P on the line for one revolution of OA. (7 marks)

QUESTION FIVE (20 MARKS)

Sketch freehand the isometric blocks represented by the orthographic views in fig. Q5 and draw the views missing in spaces shown. Show hidden detail where applicable.

(20 marks)

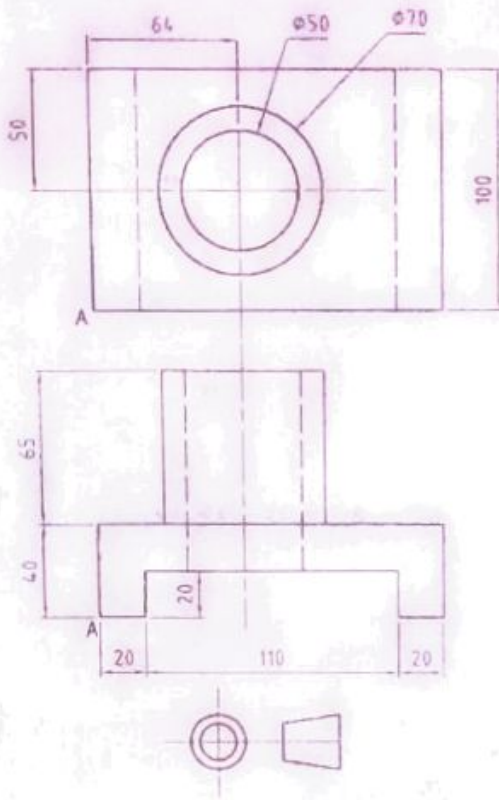


Figure 2: Question TWO (a)

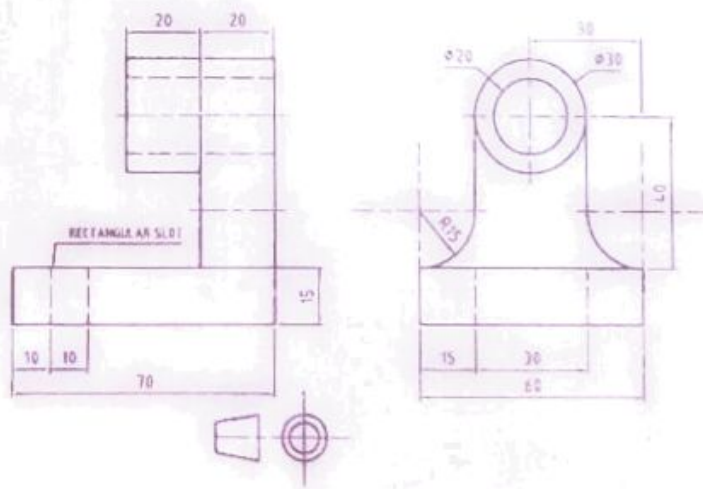


Figure 3: Question TWO (b)

