

4.7 DRAWING AND DESIGN (449)

4.7.1 Drawing and Design Paper 1 (449/1)



MANYAM FRANCHISE
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SECTION A (50 marks)

Answer *all* the questions in this section in the spaces provided.

- 1 (a) Give the following information regarding parastatal organizations in Kenya with respect to:
- (i) ownership; (1 mark)
 - (ii) management; (1 mark)
 - (iii) services; (1 mark)
- (b) Describe **four** main steps involved in design process. (4 marks)
- 2 (a) (i) State **one** reason for using different types of lines in drawing. (1 mark)
- (ii) Explain **one** use of each of the following lines:
- _____
- _____
- (1 mark)
- (b) Outline **six** advantages of using computers in drawing. (3 marks)
- 3 (a) State **one** disadvantage of using each of the following items to hold paper on the drawing board.
- (i) masking tape; (1 mark)
 - (ii) thumb pins. (1 mark)
- (b) Describe each of the following manufactured boards:
- (i) plywood; (1 mark)
 - (ii) chip board; (1 mark)
 - (iii) blockboard. (1 mark)

4 Figure 1 shows a template drawn full size.

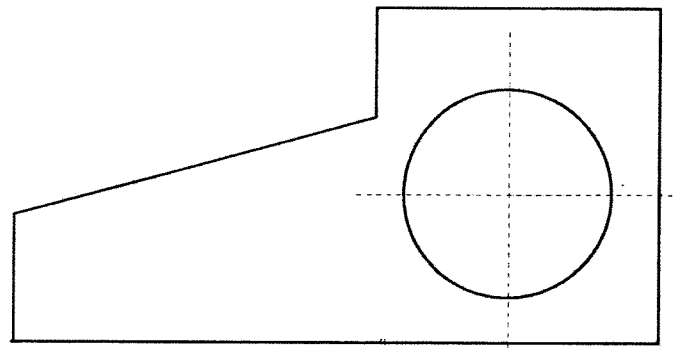


Figure 1

Measure and dimension the hole and angle of the slanting face.

(2 marks)

5 Figure 2 shows a pictorial view of a block.

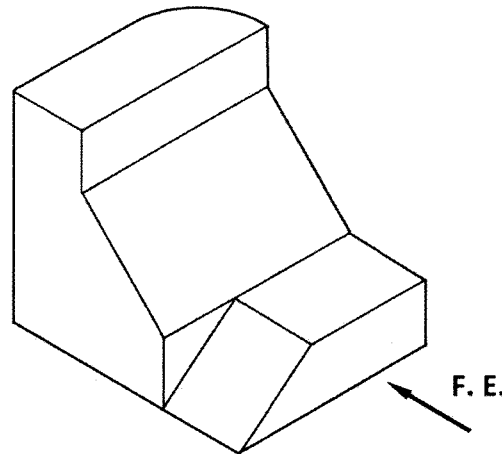


Figure 2

Using third angle projection, sketch in good proportion the orthographic views of the block.

(6 marks)

6. Figure 3 shows two views of a block drawn in first angle projection. In good proportionality sketch the block in oblique projection.

(6 marks)

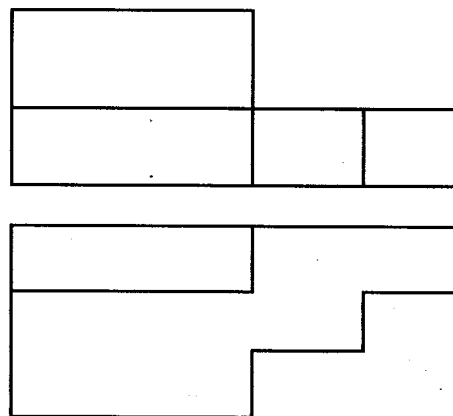


Figure 3

7 Construct an internal common tangent to the circles given in figure 4.

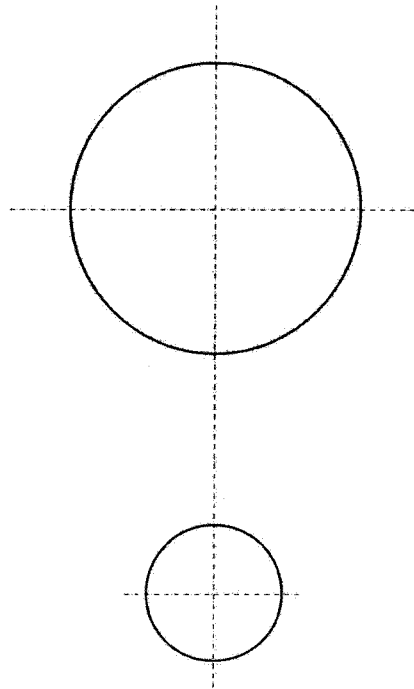


Figure 4

(7 marks)

8 The following lines were drawn using different scales.

(a) A _____ B

(b) C _____ D

Determine the distance represented by each line using the given scale. (3 marks)

(i) Line AB if the scale used is 1:2

(ii) Line CD if the scale used is 2:1.

- 9 A right square pyramid is truncated along X-X and Y-Y as shown in figure 5.

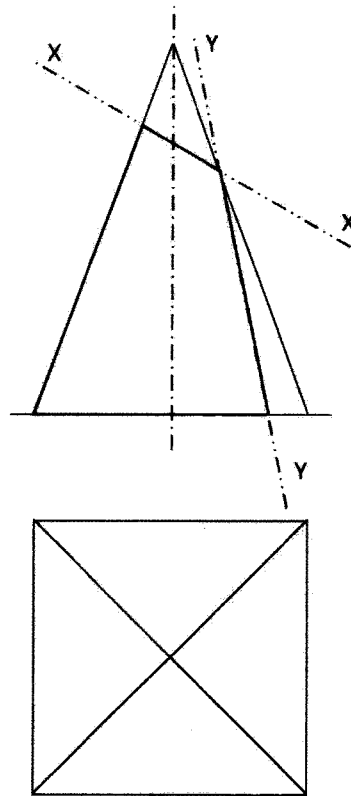


Figure 5

Complete the plan.

(4 marks)

- 10 Figure 6 shows two views of a shaped block drawn in first angle projection. Sketch the third view by projecting from the given views.

(5 marks)

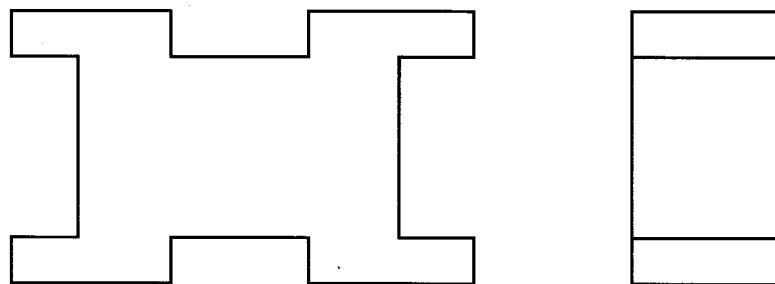


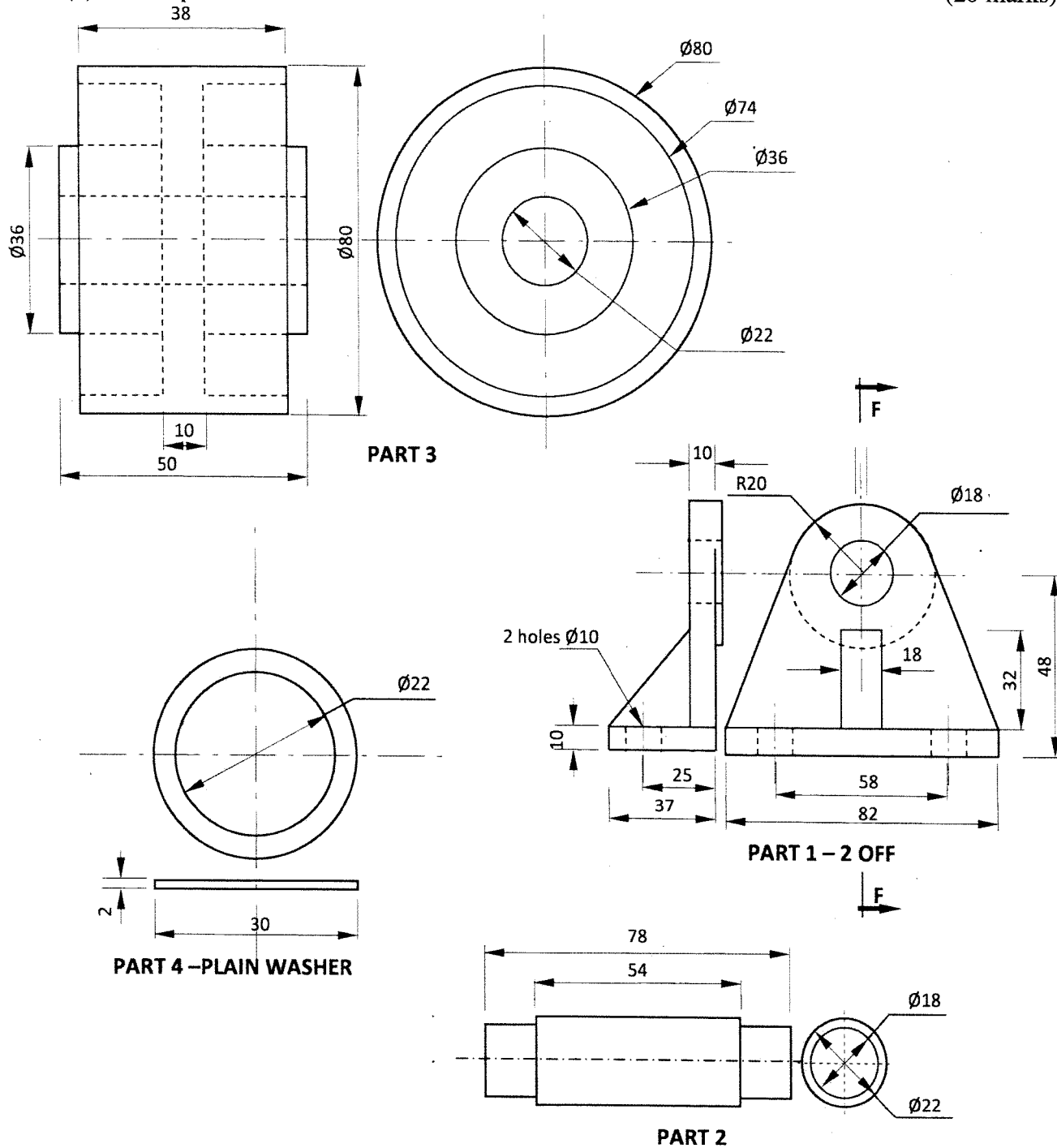
Figure 6

SECTION B (20 marks)
This question is compulsory.

11 Figure 7 shows parts of a machined component drawn in first angle projection. Assemble the parts and draw the following:

- (a) sectional front elevation through the cutting plane F-F;
- (b) the plan.

(20 marks)



SECTION C (30 marks)

Answer any two questions from this section.

- 12** Figure 8 shows the three orthographic views of a machined block drawn in first angle projection. Draw full size, the isometric view of the block taking corner **X** as the lowest point. (15 marks)

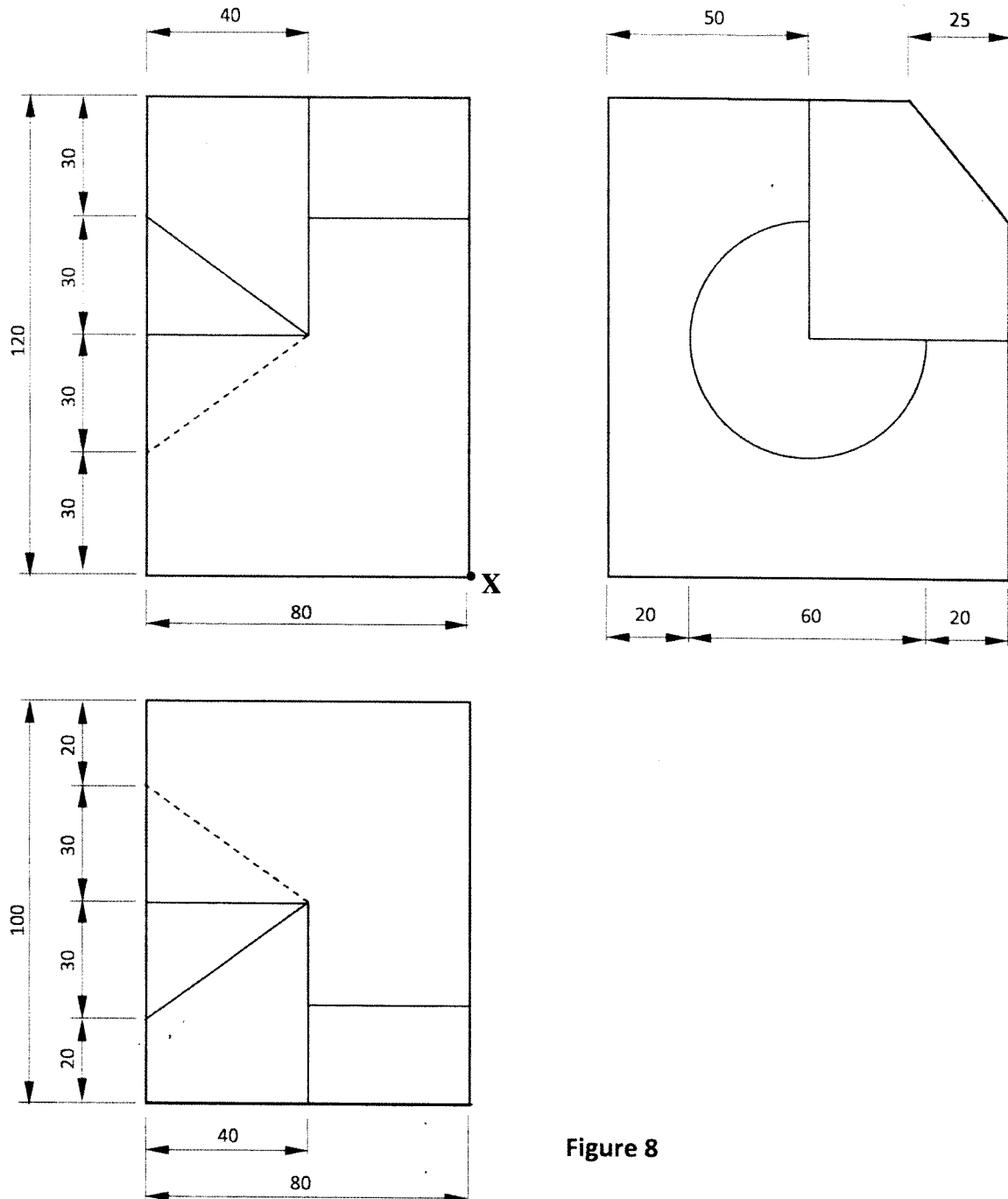


Figure 8

13 In the mechanism shown in figure 9, the crank EF rotates about centre E while GH oscillates about G.

Plot the locus of point P for one complete revolution of EF.

(15 marks)

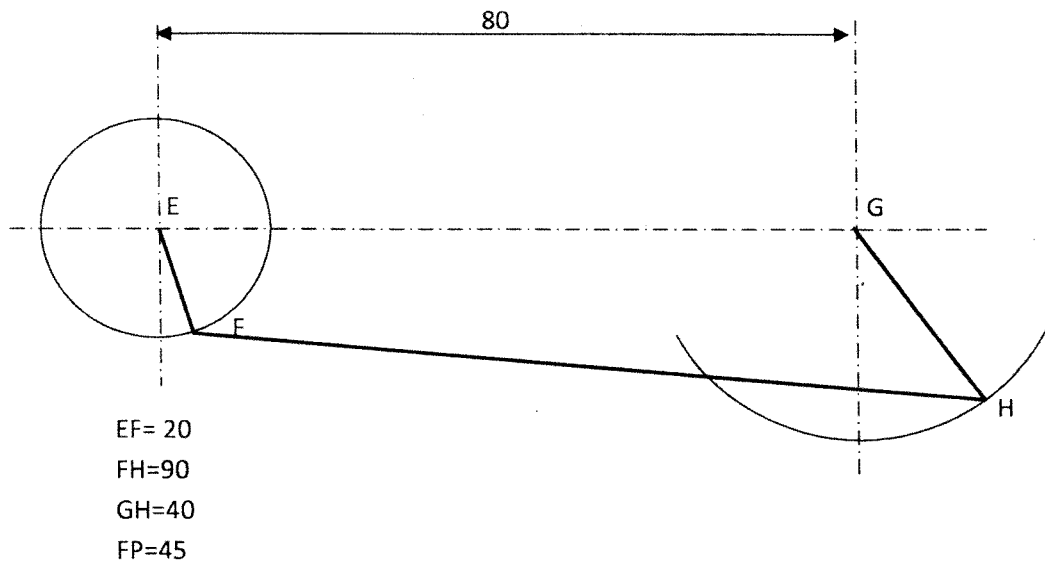


Figure 9

14 Figure 10 shows a branch pipe A connected to a conical shaped base of a chimney B.

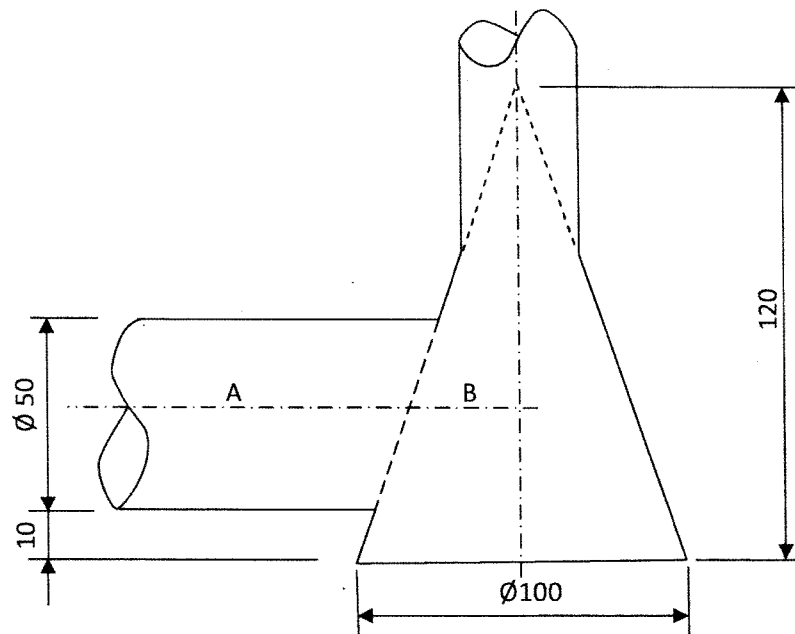


Figure 10

Draw the curves of interpenetration between the pipe and the conical base in:

- (a) plan
- (b) elevation.

(15 marks)

4.7.2 Drawing and Design Paper 2 (449/2)

DESIGN PROBLEM (40 marks)

Urban lifestyle may not provide adequate outdoor space for cloth lines. This compels the house occupants to utilize any available space inside the house to hang washed clothes to dry.

Design a suitable device that can hold several hanging lines considering the following:

- (i) the device should be collapsible for ease of movement and storage;
- (ii) it should be stable and strong enough to hold clothes to dry;
- (iii) it should also be adjustable to different heights.

REQUIREMENTS

- (a) Make freehand pictorial sketches of **two** possible designs of the device. (6 marks)
- (b) Select one of the designs in (a) above and make a refined pictorial sketch and label two parts. (16 marks)
- (c) Make detailed exploded sketches of the mechanisms used in considerations i and iii above. (12 marks)
- (d)
 - (i) List **two** different materials used in the device.
 - (ii) State **one** reason for the choice of each material. (3 marks)
- (e) List **two** methods that could be used in joining the parts of the device and state where each is applied. (3 marks)