## Drawing and Design Paper 1 (449/1)

### 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)

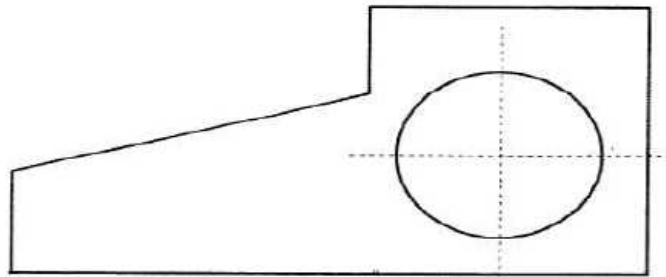          (iii)   blockboard.                                                                         (1 mark)

4     Figure 1 shows a template drawn full size.



**Figure 1**

Measure and dimension the hole and angle of the slanting face.          (2 mark

5     Figure 2 shows a pictorial view of a block.



F. E.

**Figure 2**

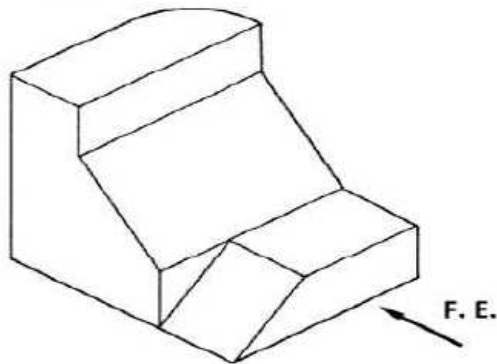Using third angle projection, sketch in good proportion the orthographic views of the block.
                                                                        (6 mark

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)
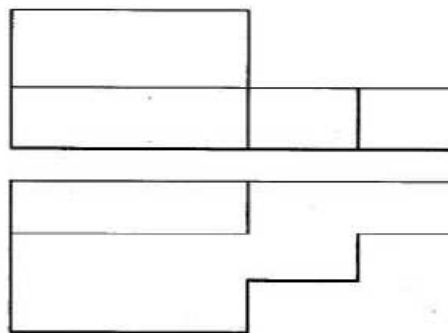


**Figure 3**

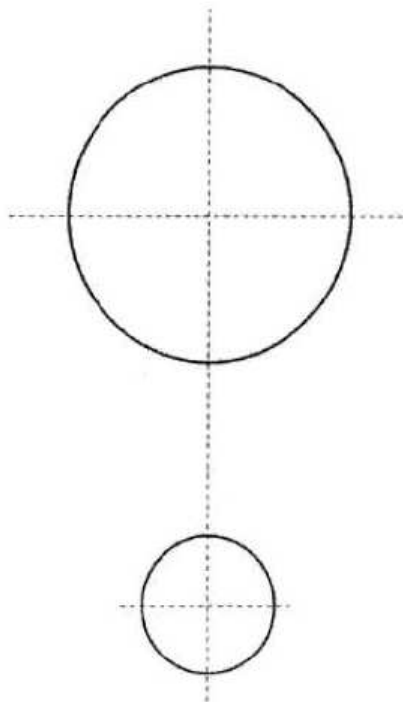7    Construct an internal common tangent to the circles given in figure 4.

**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.

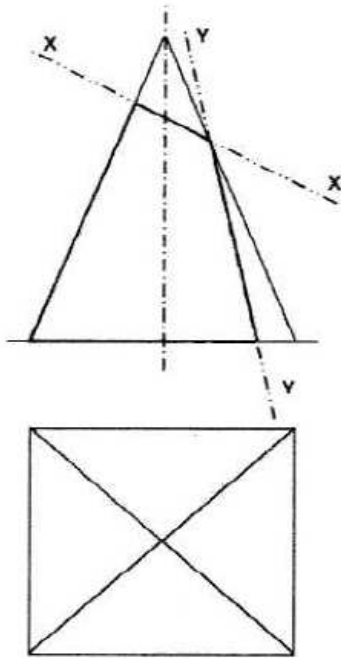**9**    A right square pyramid is truncated along X-X and Y-Y as shown in figure 5.



**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)
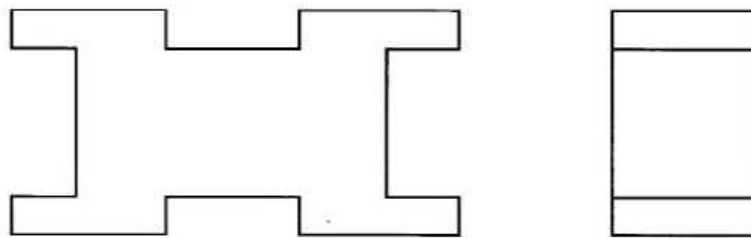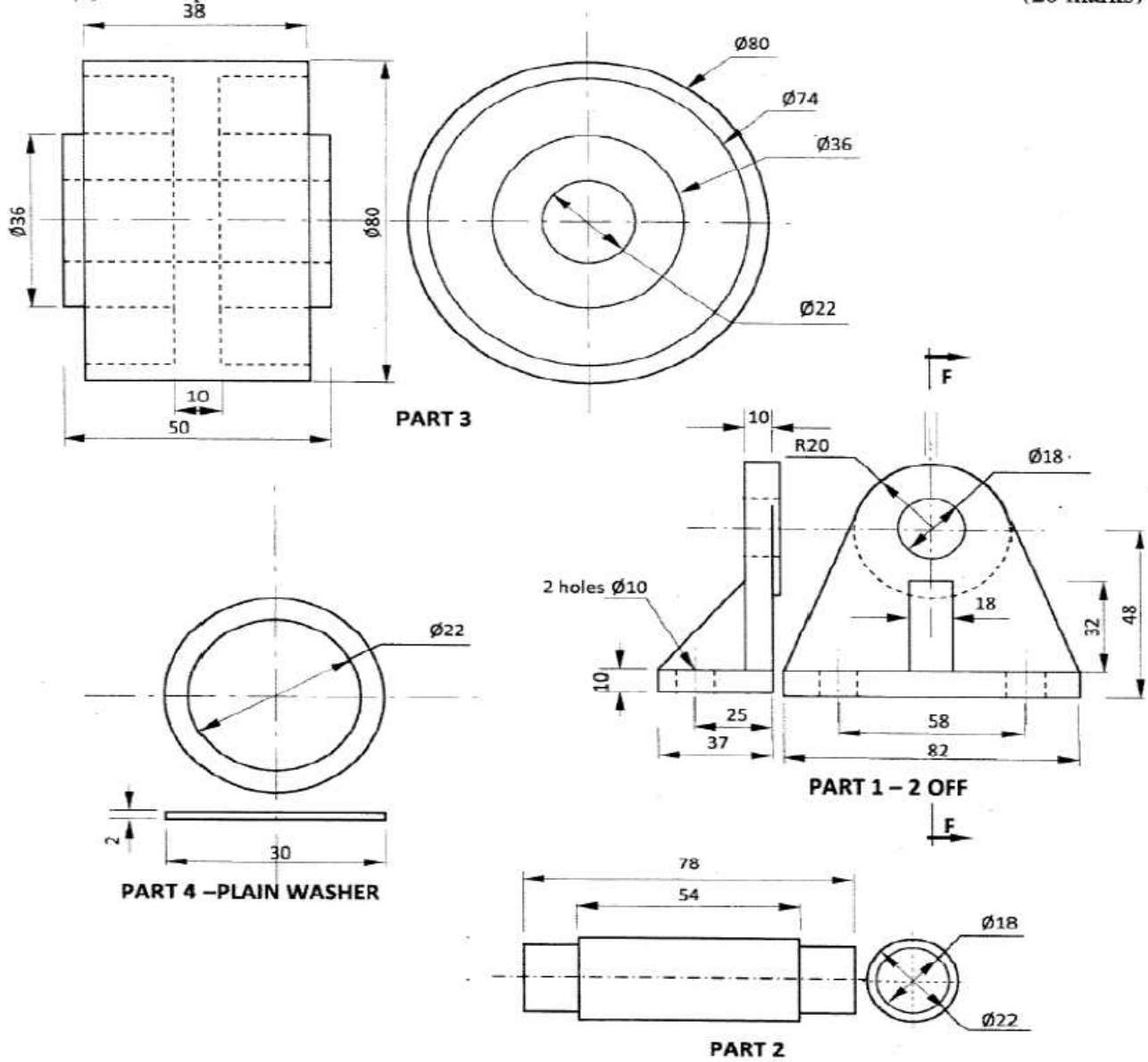


**Figure 6**

**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)



PART 3

PART 4 –PLAIN WASHER

PART 1 – 2 OFF

PART 2

## 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
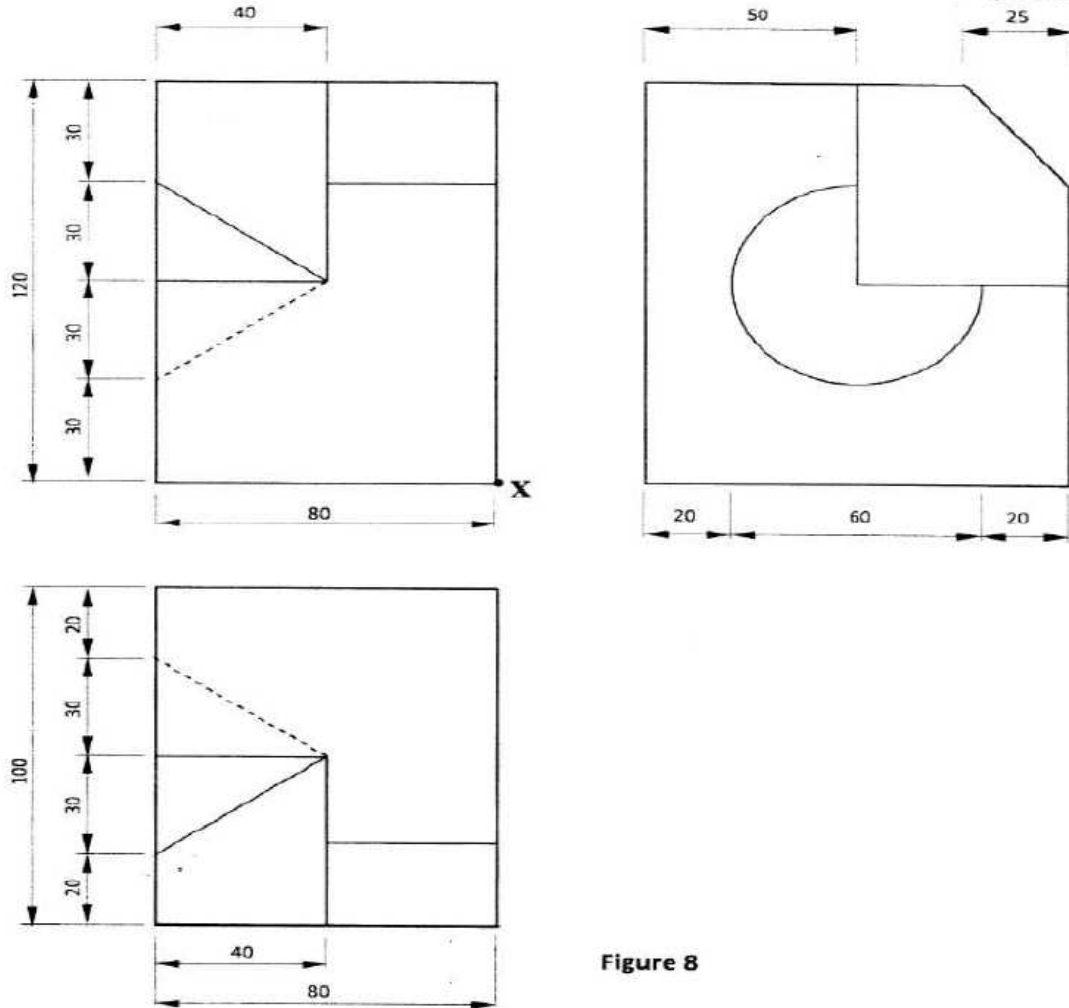
(15 marks)



**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)
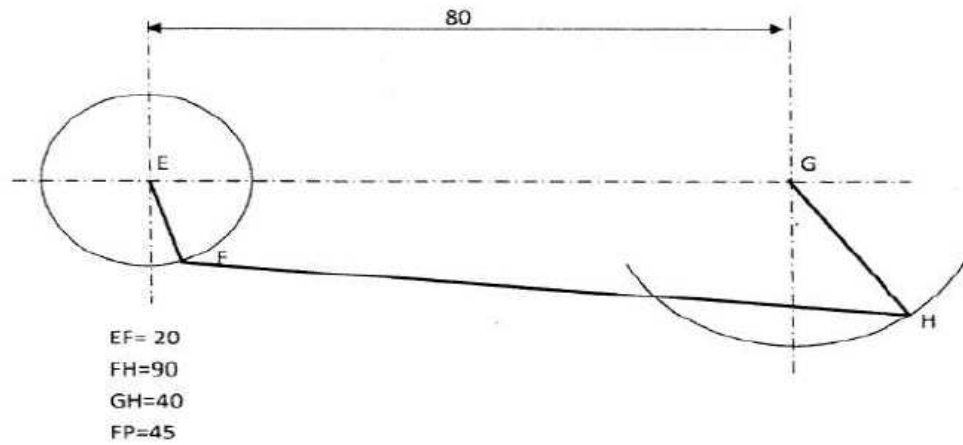
80

E                                                                    G

EF= 20
FH=90
GH=40
FP=45

Figure 9

14    Figure 10 shows a branch pipe A connected to a conical shaped base of a chimney B.
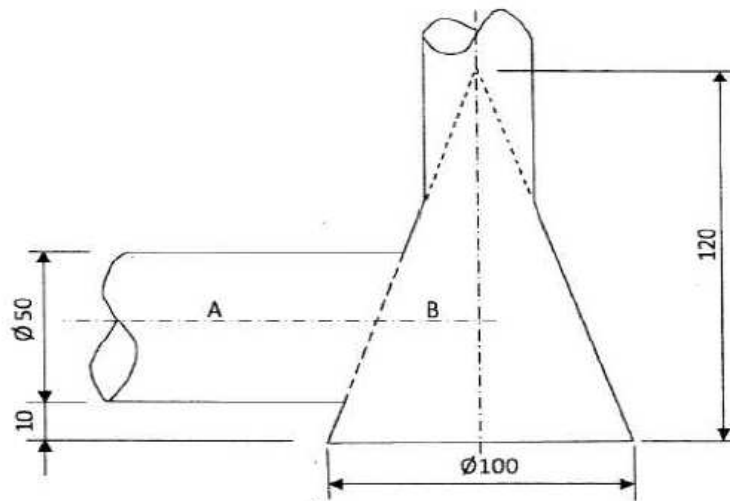
120

Ø 50

10

A                    B

Ø100

Figure 10

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

(a)    plan
(b)    elevation.

(15 marks)