# DRAWING AND DESIGN PAPER 1

# ANSWERS

# KCSE 2012

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# Drawing and Design Paper 1 (449/1)

## SECTION A

1. (a) Information regarding parastatal organizations in Kenya:

(i) Ownership
They are largely owned by the government.

(ii) Management
They are managed by government appointees.

(iii) Services
They provide subsidized services to the customers who might find it expensive to afford them if they were left to private establishments.

***(3 x 1 = 3 marks)***

(b) Steps involved in the design process:

(i) Statement/stating the problem.
(ii) Recording the design ideas in form of sketches and written notes.
(iii) Selecting the best solution.
(iv) Preparing the final drawing or mock-up (model).

***(4 x 1 = 4 marks)***

2. (a) (i) Reasons for using different types of lines in drawing:

- It makes the drawings neat and legible.
- It makes it easy for the person/people depending on the drawing to interpret the details in the drawing.

***(1 x 1 = 1 mark)***

(ii) Use of the following lines:

- ——— – ——— – ——— centre line denoting:-
  - centre of a circle
  - axis of symmetry
- ——— – – ——— – – ——— phatom to denote:-
  - folding line
  - different possible positions

***(2 x $\frac{1}{2}$ = 1 mark)***

(b) Advantages of using computers in drawing:

(i) There is higher speed in production of drawings thus saving time.
(ii) There is high degree of accuracy.
(iii) It is easy to retrieve information.
(iv) It is easier to make alterations on the drawings.
(v) It allows for interfacing/interlinking.
(vi) It allows for production of many copies.

(vii) The drawings produced are neat.

***(Any 6 x $\frac{1}{2}$ = 3 marks)***

3. (a) Disadvantages of using:

(i) Masking tape to hold paper
- it tends to peel off part of the paper

(ii) Thumb pins to hold paper
- they ruin the surface of the drawing board

***(2 x 1 = 2 marks)***

(b) (i) Plywood are manufactured boards made of thin sheets of wood (veneers) that are glued together with the grain of each layer perpendicular to the next.

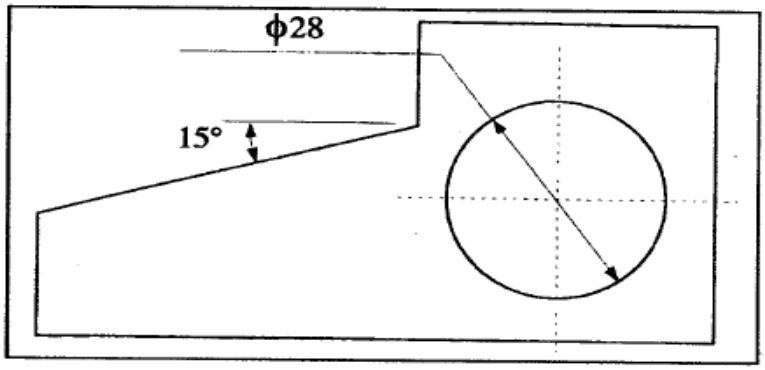
(ii) Chipboard is manufactured by chips of wood which are compressed and glued to the required density.

(iii) Blockboards are made up of blocks of timber joined on edge and faced suitably with plywood on both faces.

*Sketches to be accepted.*

***(3 x 1 = 3 marks)***

4.

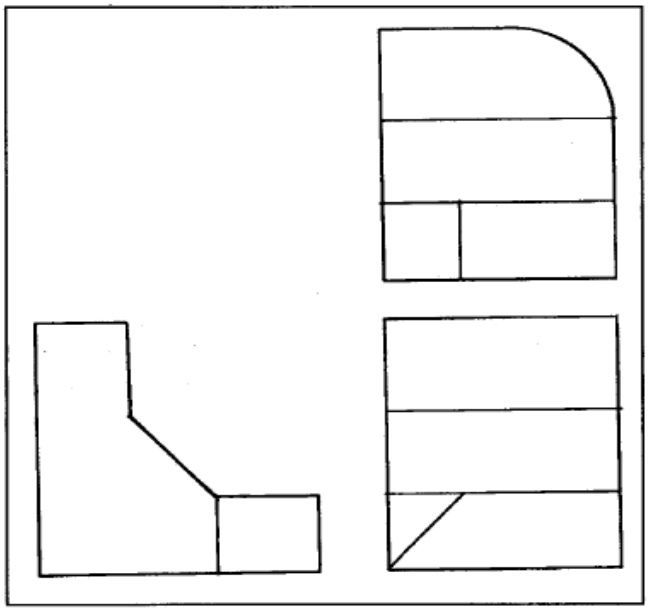



Figure

Correct ϕ 28 - $\frac{1}{2}$ mark
Correct 15° - $\frac{1}{2}$ mark
Correct arrows for ϕ 28 - $\frac{1}{2}$ mark
Correct arrows for 15° - $\frac{1}{2}$ mark

***(2 marks)***

5.

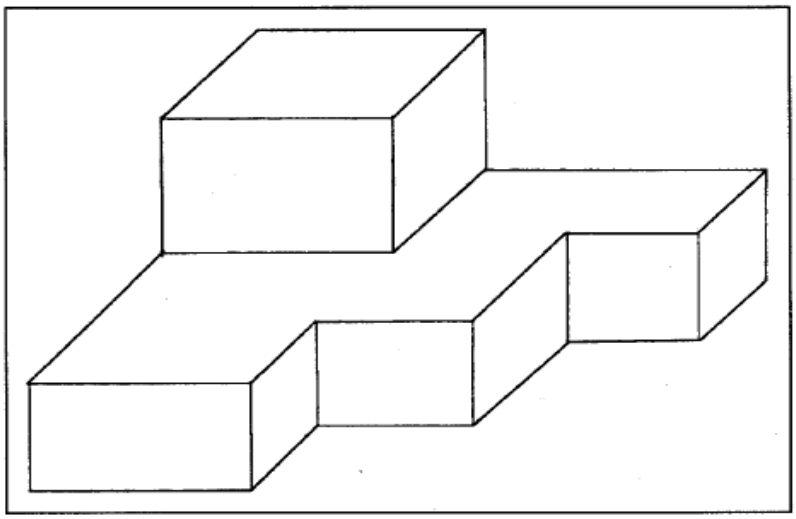


Figure

Plan - 4 faces @ $\frac{1}{2} = 2$
End elevation - 2 faces @ $\frac{1}{2} = 1$
Front elevation - 4 faces @ $\frac{1}{2} = 2$
3rd angle projection = 1 mark

***(6 marks)***

6.

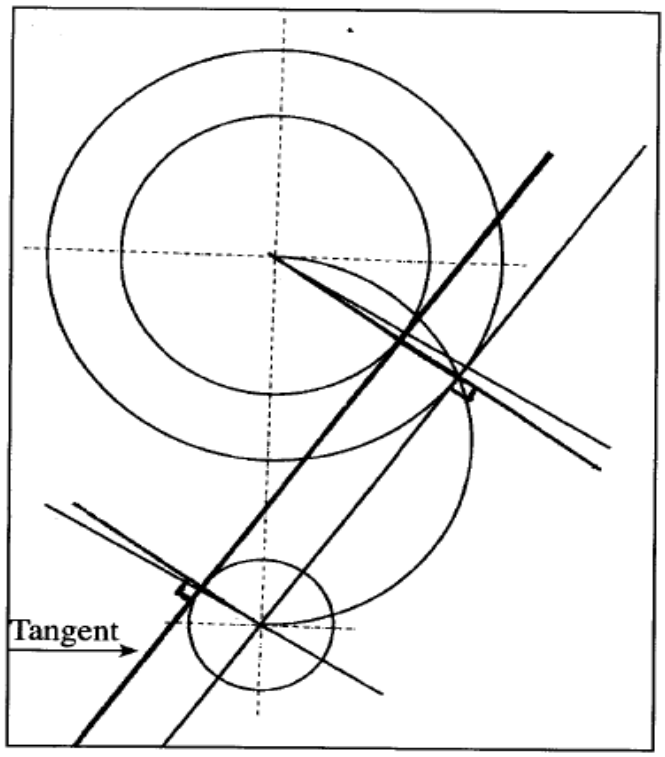


Figure

Oblique projection - 1 mark
At least 9 faced 9/3 - 3 marks
Proportionality - 1 mark
Line mark - 1 mark

***(6 marks)***

7.




Figure

Construction of:-
Correct circle radius
R1 + R2 - 2 marks
semi-circle - 2 marks
parallel lines - 2 marks
tangent (shown correctly) - 1 mark

***(7 marks)***

8. AB = measured dimension x 2 — 60 x 2 = 120mm — $1\frac{1}{2}$

CD = measured dimension x $\frac{1}{2}$ — 34 x $\frac{1}{2}$ = 17mm — $1\frac{1}{2}$

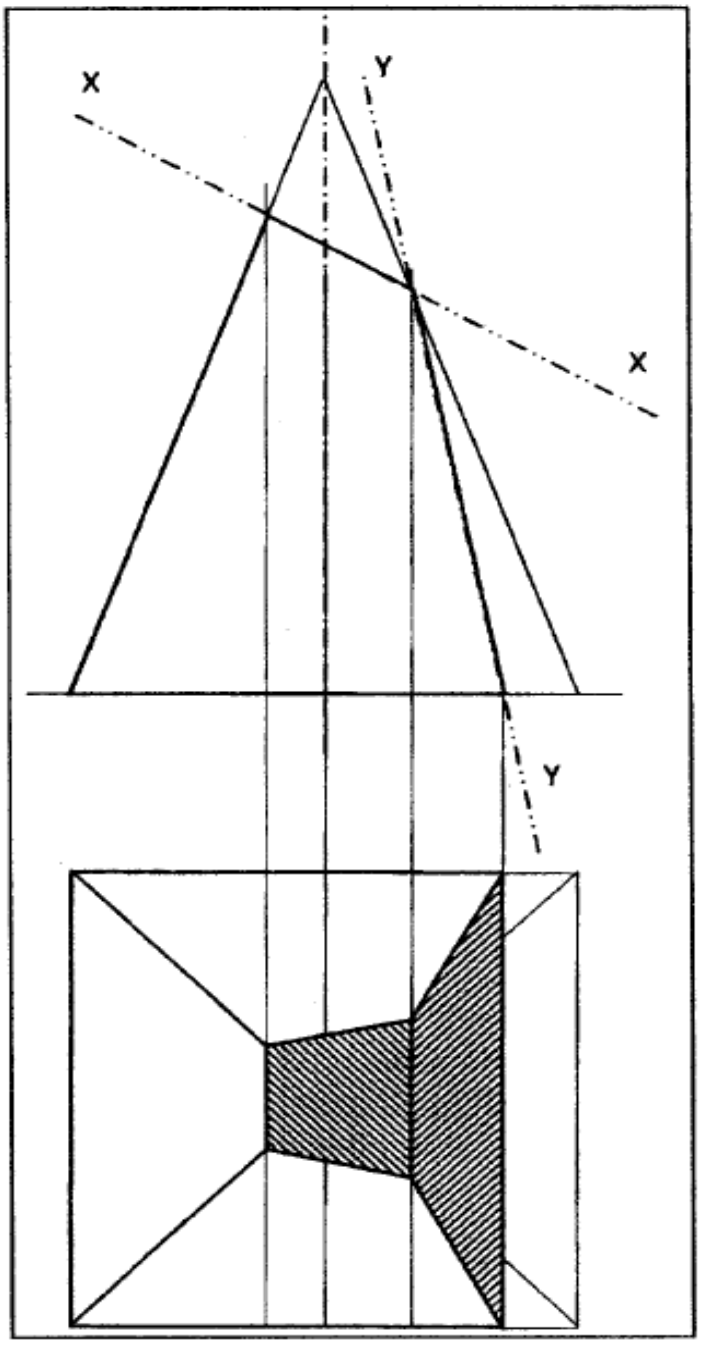
***3 marks***

**OR**

Correct measurements of AB and CD — ***(2 x $\frac{1}{2}$ = 1 mark)***
Determining the distances — ***(2 x 1 = 2 marks)***

***3 marks***

9.



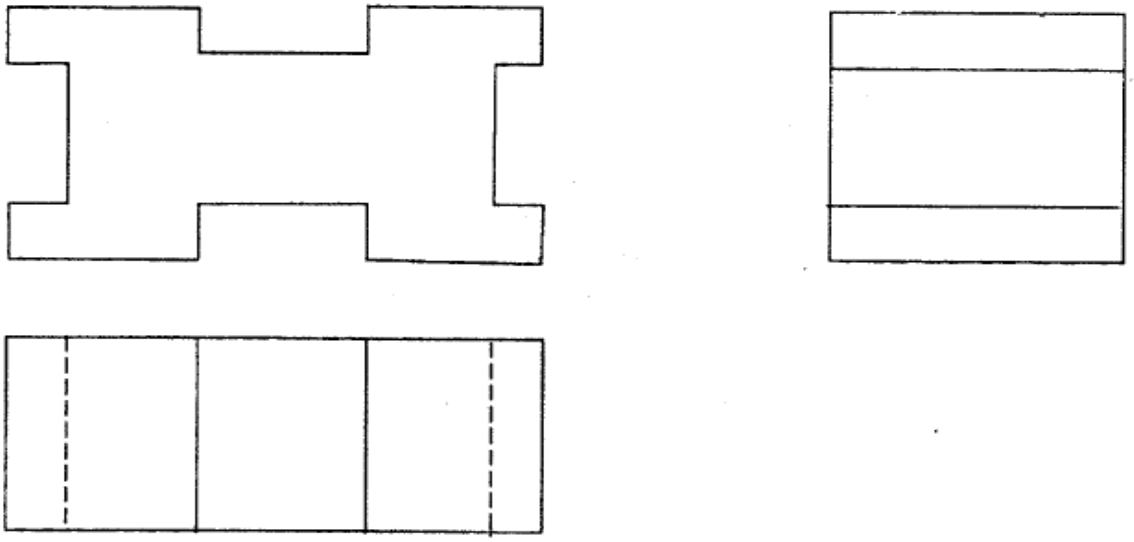

Figure

5 faces x $\frac{1}{2} = 2\frac{1}{2}$

Hatching $(2 \times \frac{1}{2}) = 1$

Line work = $\frac{1}{2}$

10.



Figure

Vertical projection lines - 1 mark
Projection lines at 45° - 1 mark
*or by use of compass*
correct outline - 2 marks
hidden details - 1 mark

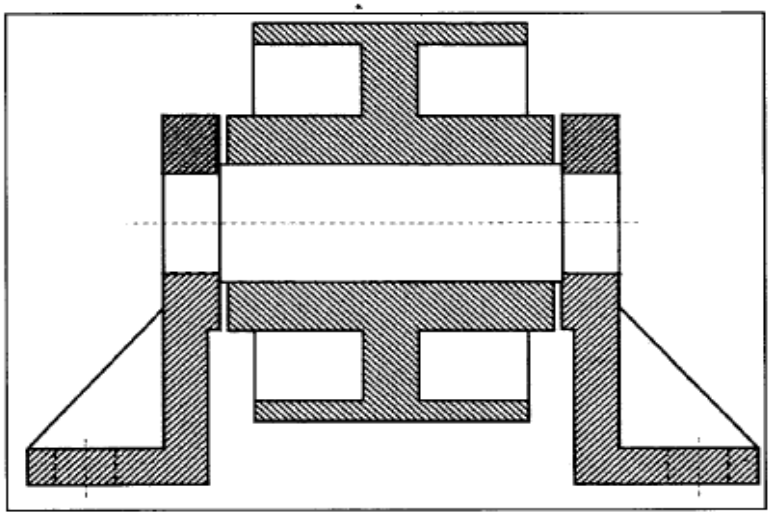
***(5 mark***

11. Section FF

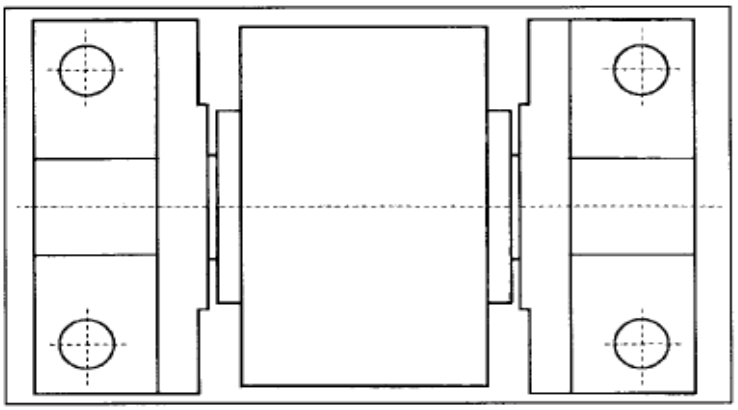
16 faces @ $\frac{1}{4}$ = 4 marks
Hatching 6x1 = 6 marks
Plan
13 faces @ $\frac{1}{2} = 6\frac{1}{2}$
4 holes @ $\frac{1}{2} = 2$
linework = $1\frac{1}{2}$

***20 marks***

11.

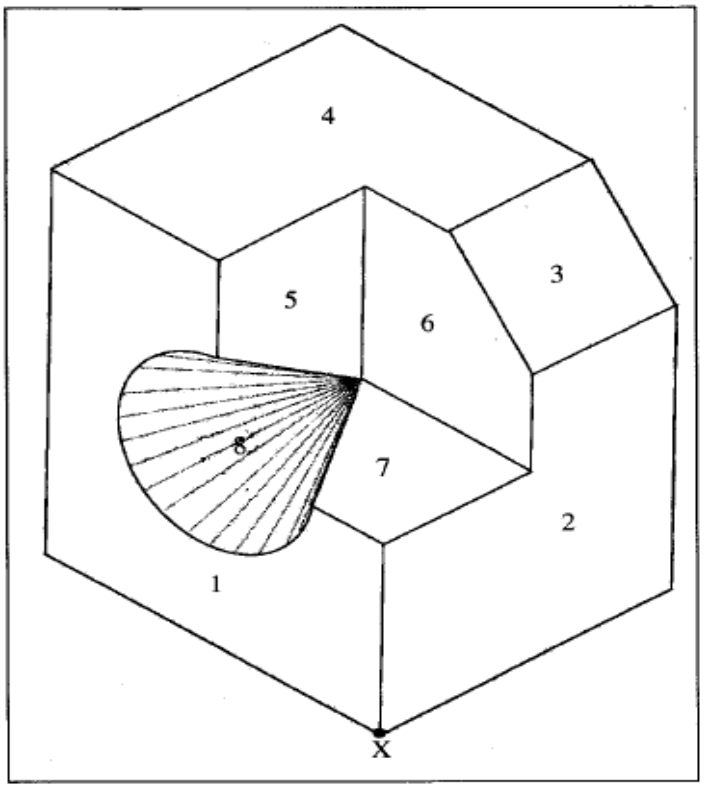


SECTIONAL FRONT ELEVATION ALONG F-F



PLAN Figure

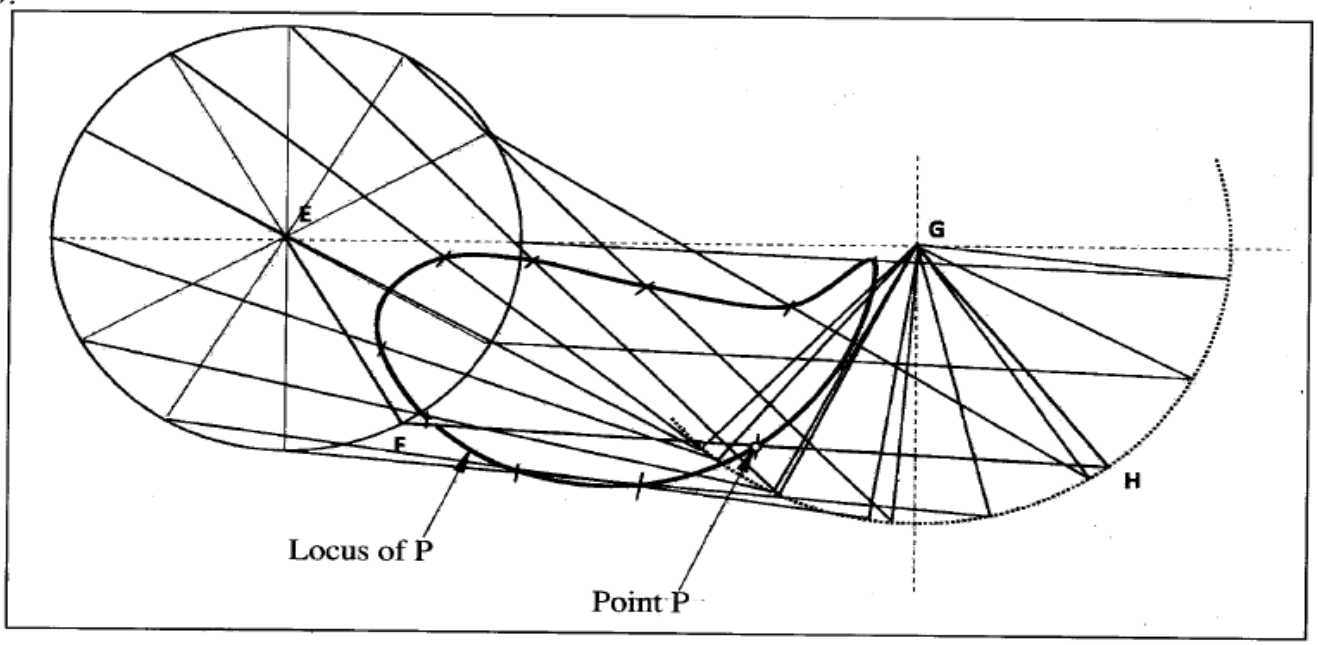
12.



faces 7x1 = 7
isometric axis = 1
low pitch X = 1
pictorial curve = 2
conical hole (8) = 2
scale = 1
linework = 1

***(15 marks)***

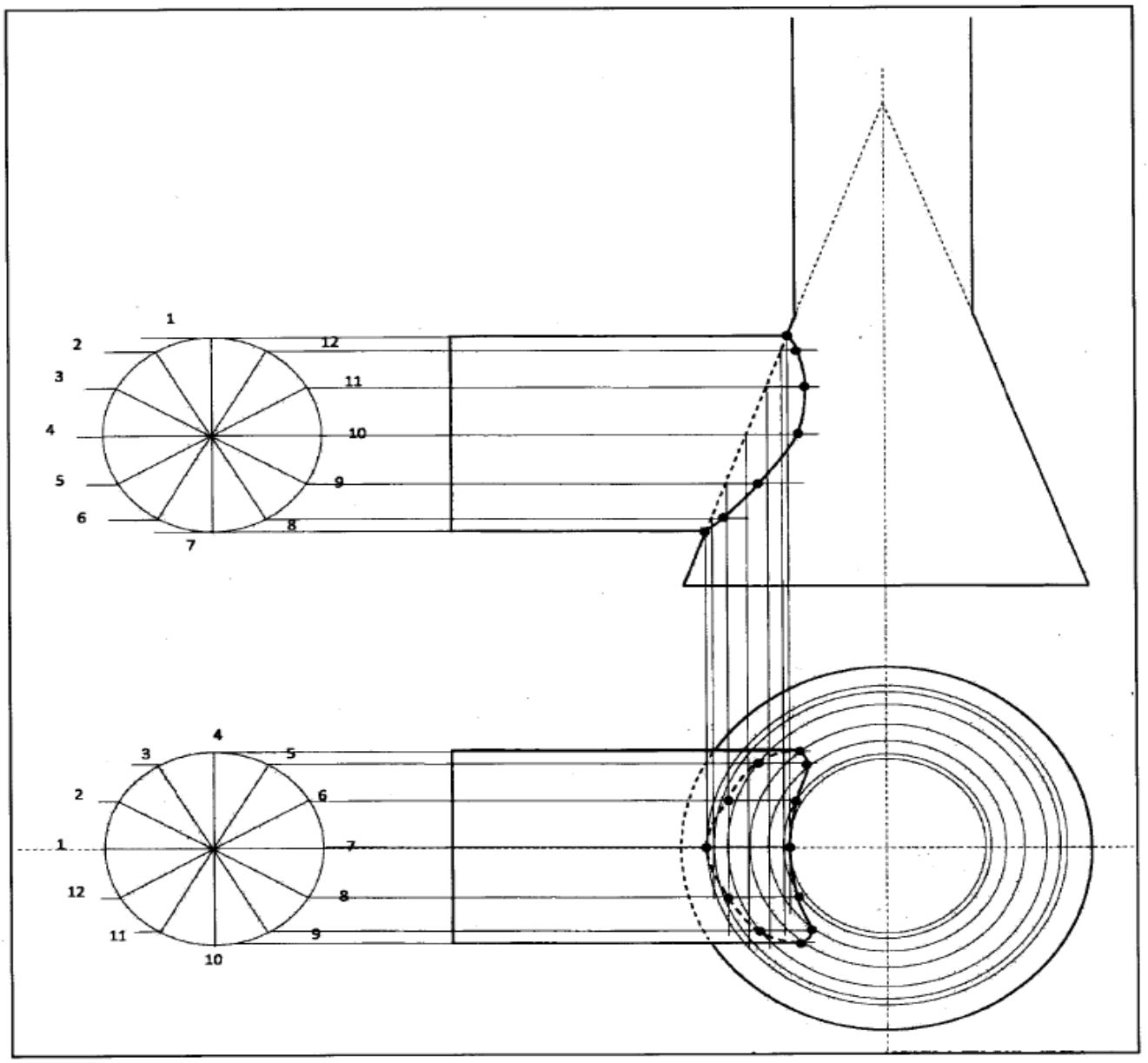
13.




copying the figure $(4x\frac{1}{2}) = 2$
locus of F = 1
division of locus F = 2
locus of H = 1
projection to H = 3
mid-point P = 3
completing locus of P = 2
linework = 1

***(15 marks)***

14.




drawn elevation = 1
drawn plan = 2
divide pipe in elevation = 1
plot points at intersection of sloping edges = 1
project elevation points to plan = 1
draw circles at intersection of plan points and elevation points = 1
mark curve of interpenetration points of plan = 2
mark points of interpenetration on elevation = 2
draw smooth curve through points of plan;
part full lines; part hidden details = 1
draw smooth curve through points of elevation = 1
construct lines = 1
outlines = 1

***(15 marks***