PVP 23

Code: 23ES1104

I B.Tech - I Semester – Regular / Supplementary Examinations
DECEMBER 2025

ENGINEERING GRAPHICS
(Common for CE, AIML, DS)

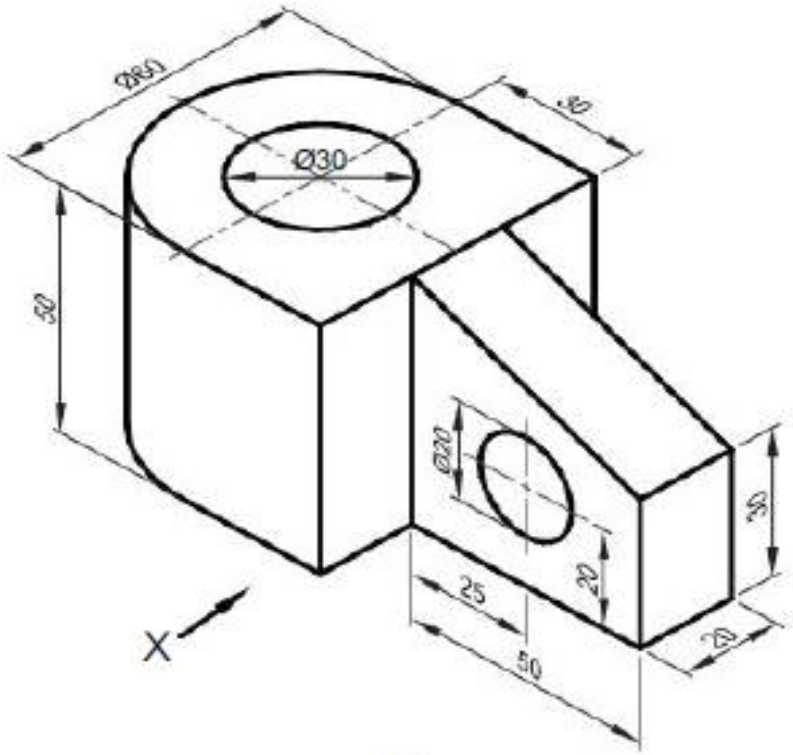
Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.
BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1		Draw an involute of a circle of diameter 50 mm. Also, draw a normal and a tangent at a point 100 mm from the centre of the circle.	L3	CO1	14 M
OR					
2	a)	Construct a scale of 1:5 to show decimetres and centimetres and long enough to measure up to 1 m. Show a distance of 6.3 dm on it.	L1	CO1	5 M
	b)	Construct a scale to measure kilometre, $1/8^{th}$ of a kilometre, and $1/40^{th}$ of a kilometre, in which 1 km is represented by 3 cm. Mark on this scale a distance of 4.825 km.	L2	CO1	9 M
UNIT-II					
3		The top view of the 75 mm long line PQ measures 50 mm. The end P is 15 mm above the	L3	CO2	14 M

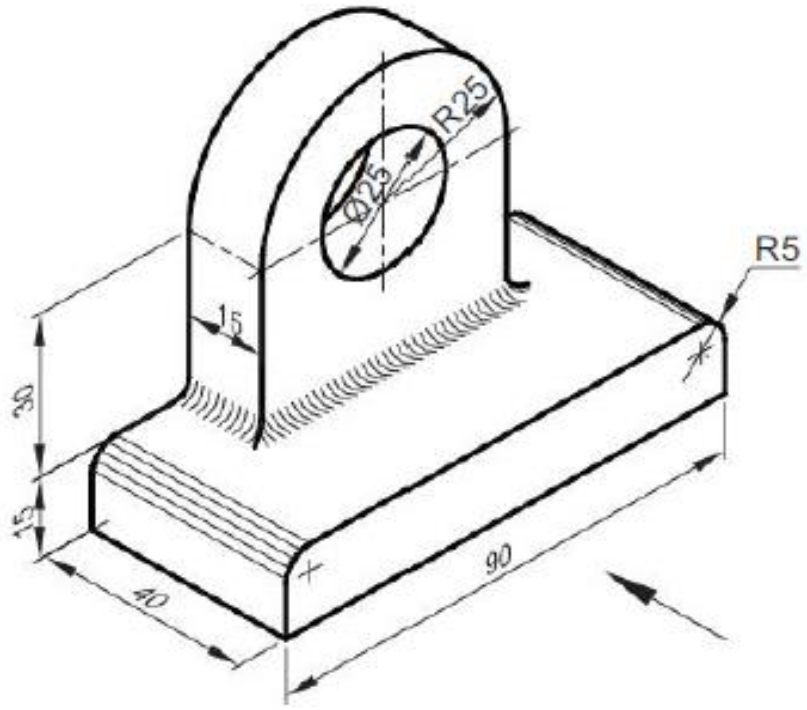
		H.P. and 50 mm in front of the V.P. The end Q is 20 mm in front of the V.P. and above the H.P. Draw the projections of PQ and determine its inclinations with the reference planes.			
OR					
4	a)	Draw the projections of the following points on a common reference line keeping the distance between their projectors 25 mm apart. i) Point A is 40 mm above the H.P. and 25 mm in front of the V.P. ii) Point B is 40 mm above the H.P. and in the V.P. iii) Point C is 25 mm in front of the V.P. and in the H.P. iv) Point D is 25 mm above the H.P. and 30 mm behind the V.P. v) Point E is in the H.P. and 30 mm behind the V.P. vi) Point F is 40 mm below the H.P. and 30 mm behind the V.P.	L2	CO2	9 M
	b)	Draw the projections of a point H, lying 70 mm above the H.P. and on the V.P. Draw the projections of a point F, lying 70 mm above the H.P. and on the V.P.	L1	CO2	5 M
UNIT-III					
5		A rectangular plane of edges 35 mm and 70 mm is resting on an edge in the H.P. The surface is inclined to the H.P. such that the top view	L3	CO2	14 M

	appears as a square. Draw its projections when the edge resting on the H.P. is inclined at 30° to the V.P.			
	OR			
6	A cylinder of base diameter 50 mm and axis 70 mm has a generator in the V.P. and inclined at 45° to the H.P. Draw its projections.	L3	CO2	14 M
	UNIT-IV			
7	A pentagonal pyramid of base side 30 mm and axis 60 mm is resting on its base in the H.P., with an edge of the base parallel to the V.P. A horizontal section plane cuts the pyramid bisecting the axis. Draw its front view and sectional top view.	L3	CO2	14 M
	OR			
8	A square hole of side 25 mm is cut in a cylindrical drum of diameter 50 mm and height 70 mm. The faces of the hole are inclined at 45° to the H.P., and the axis intersects with that of the drum at right angles. Draw the development of its lateral surface.	L3	CO3	14 M
	UNIT-V			
9	Pictorial view of an object is shown in below Figure. Using first-angle projection, draw its i) front view, ii) top view, and iii) right-hand side view	L3	CO4	14 M



OR

10	Pictorial view of an object is shown in Figure below. Using first-angle projection, draw its i) front view, ii) top view, and iii) side view.	L3	CO4	14 M



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UNIT-I

1.	Construction of Involute	– 10M
	Tangent and normal	– 2M
	Dimensioning	– 2M
	OR	
2. A	Construction of scale	-5M.
B	Construction of scale	-9M.

UNIT-II

3	Drawing the line with True inclination with HP	– 4M
	Drawing the line with True inclination with VP	– 4M
	Drawing the final projections	– 4M
	Dimensioning	– 2M
	OR	
4	A Drawing each point	-3 M
	B Drawing each point	-2.5M

UNIT-III

5	Drawing initial positions	– 4M
	Drawing first stage Projections	– 4M
	Drawing Second stage Projections	– 4M
	Dimensioning	– 2M
	OR	
6	Drawing first stage Projections	– 6M
	Drawing Second stage Projections	– 6M
	Dimensioning	– 2M

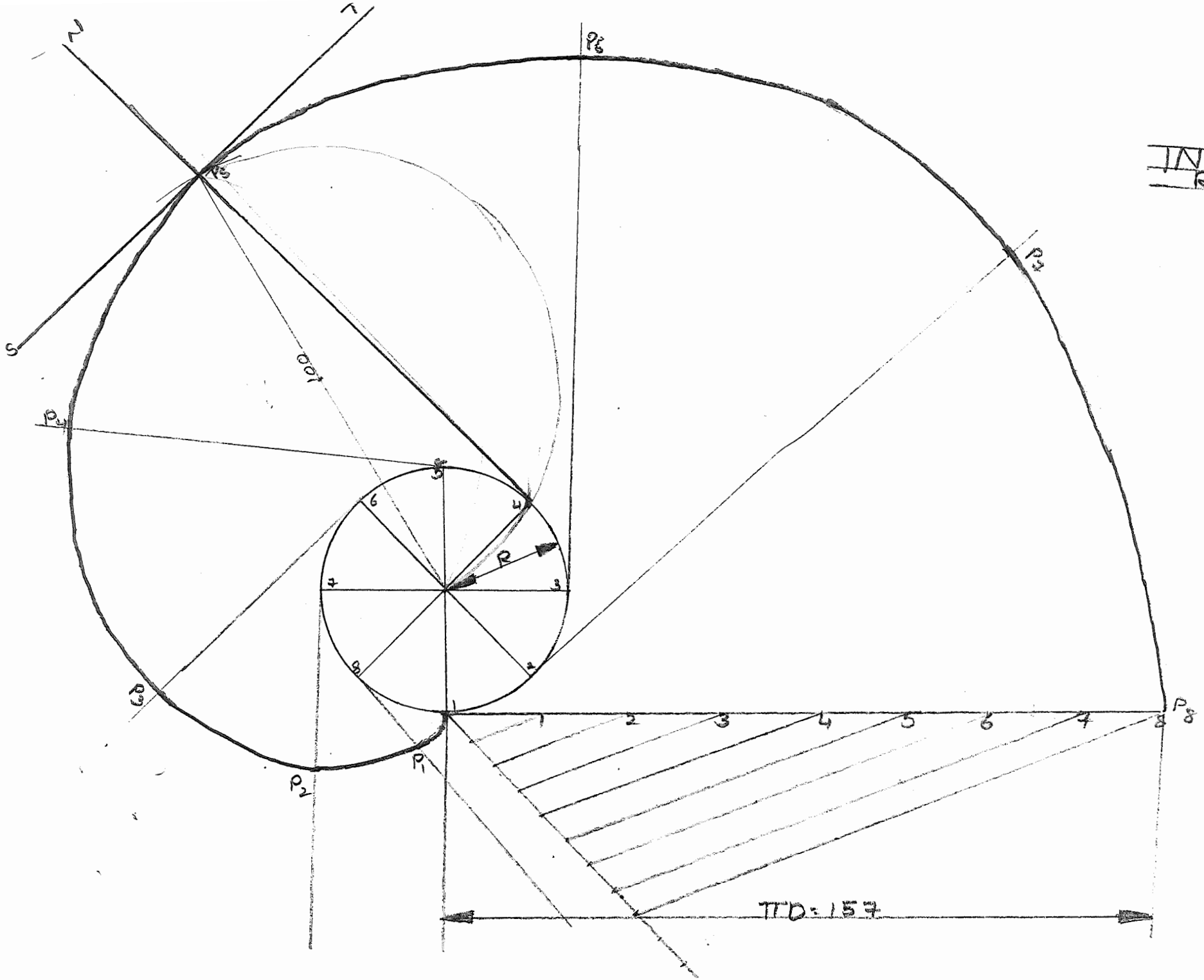
UNIT-IV

7	Drawing Front View and sectional top view	– 12M
	Dimensioning	– 2M
	OR	
8	Drawing initial positions	– 6M
	Development	– 6M
	Dimensioning	– 2M

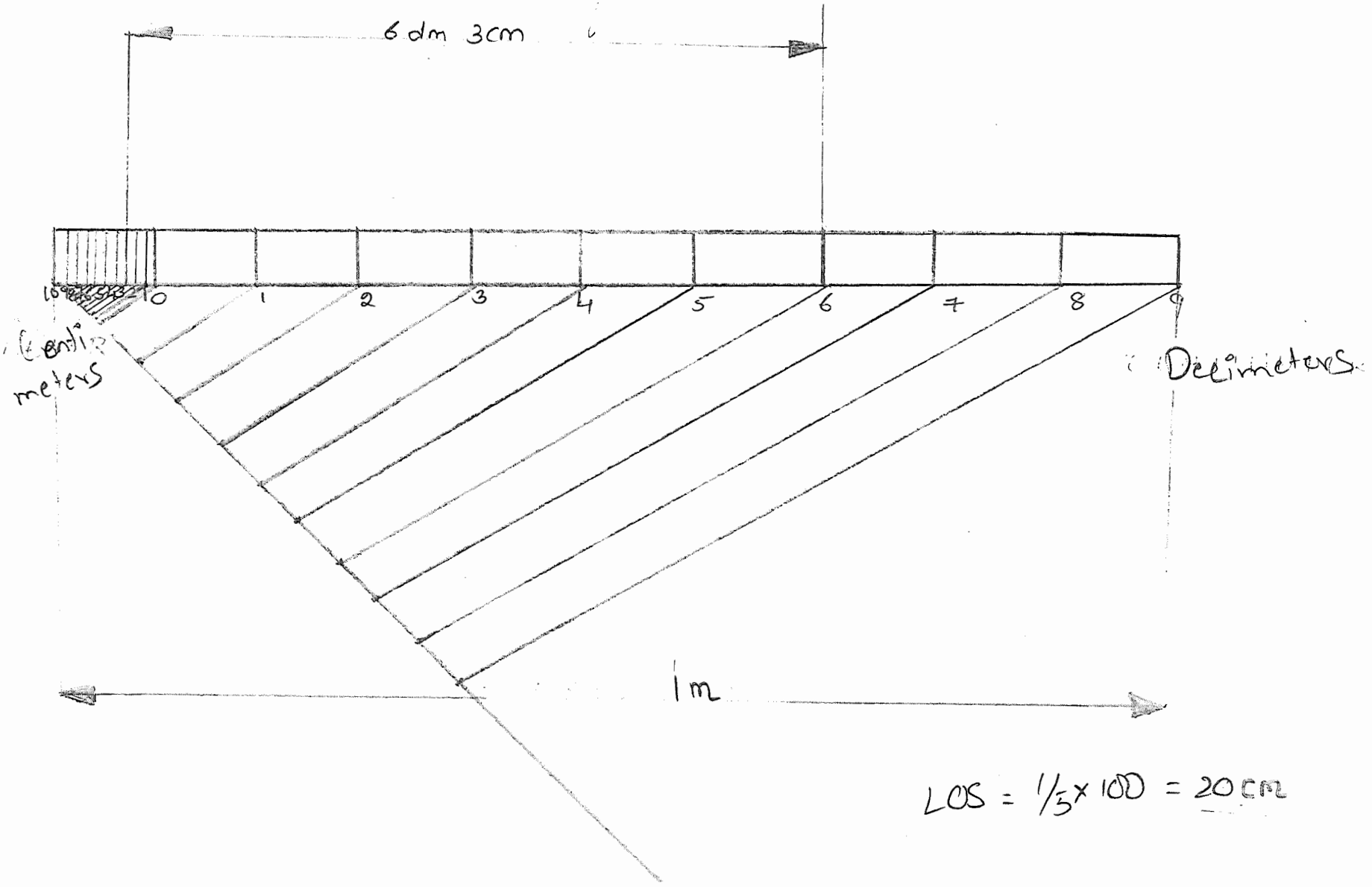
UNIT-V

9	Front View	– 5M
	Top view	– 4M
	Side view	– 3M
	Dimensioning	– 2M
	OR	

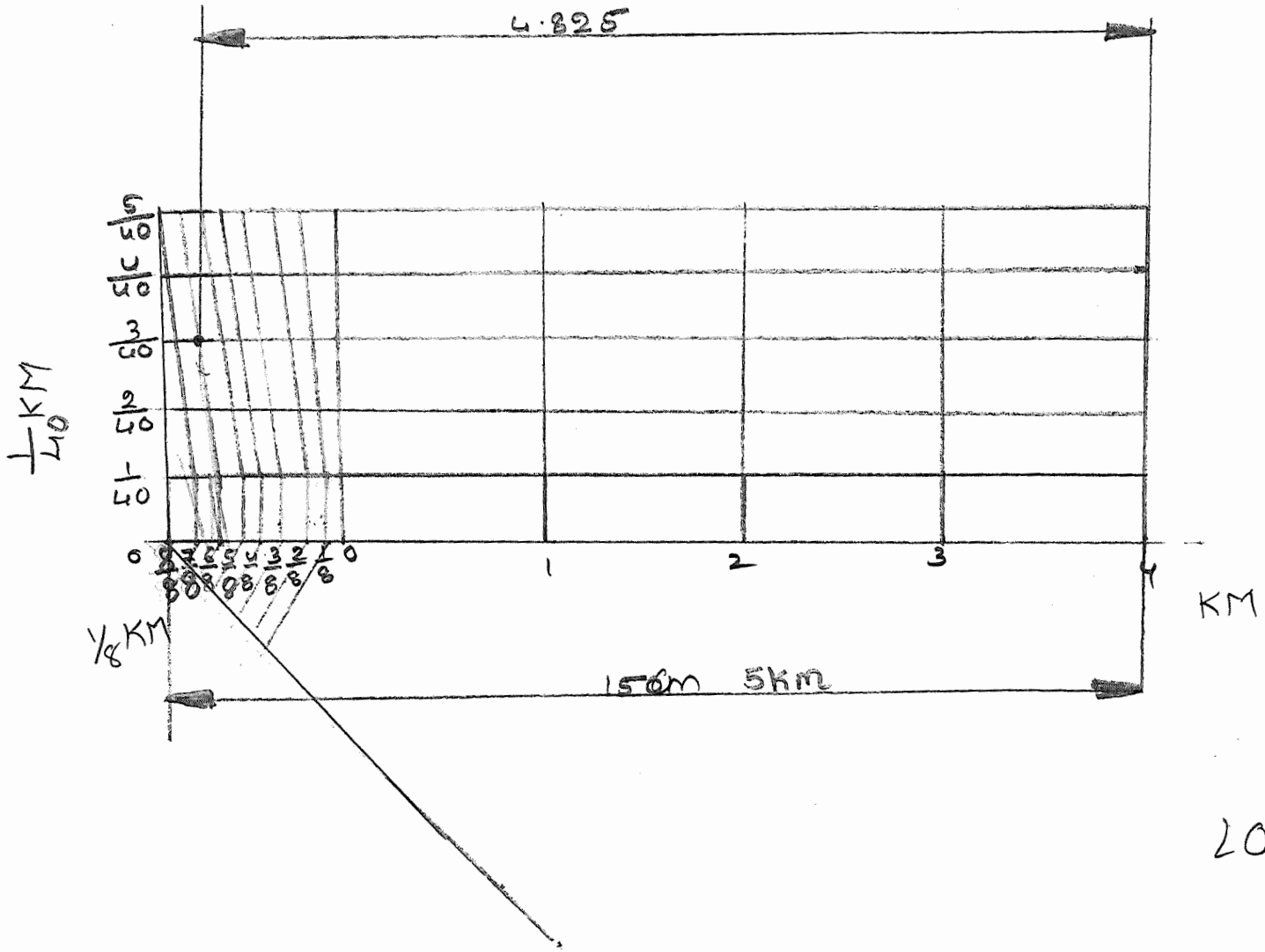
10 Front View – 5M
Top view – 4M
Side view – 3M
Dimensioning – 2M


INVOLUTE
R = 25
P1
P2
P3
P4
P5
P6
P7
P8
R
TTD: 157

(2)

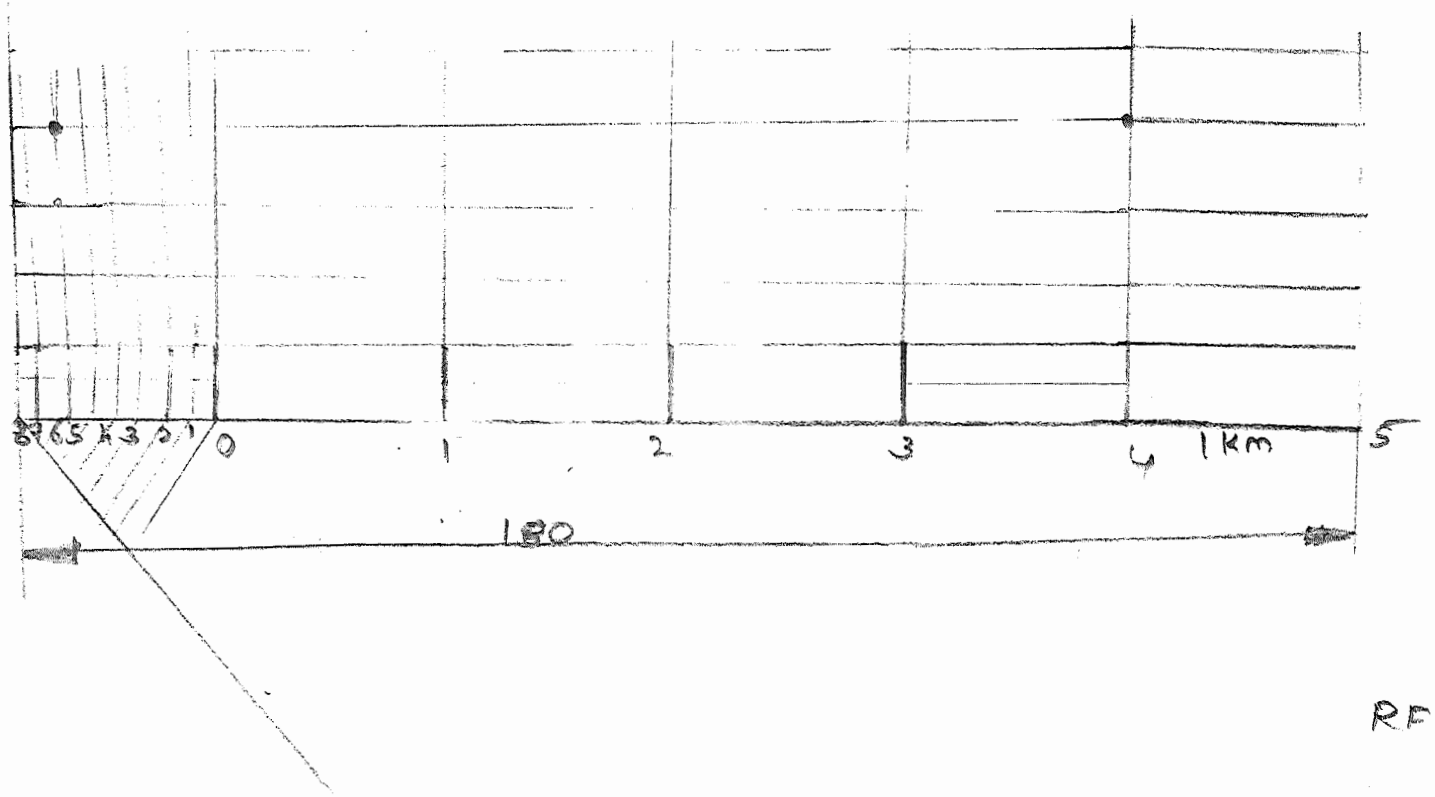


LOS = 1/5 × 100 = 20 cm



$$LOS = \frac{3\,cm}{1\,km} \times 5\,km$$

$$= 15\,cm \simeq 5\,km$$

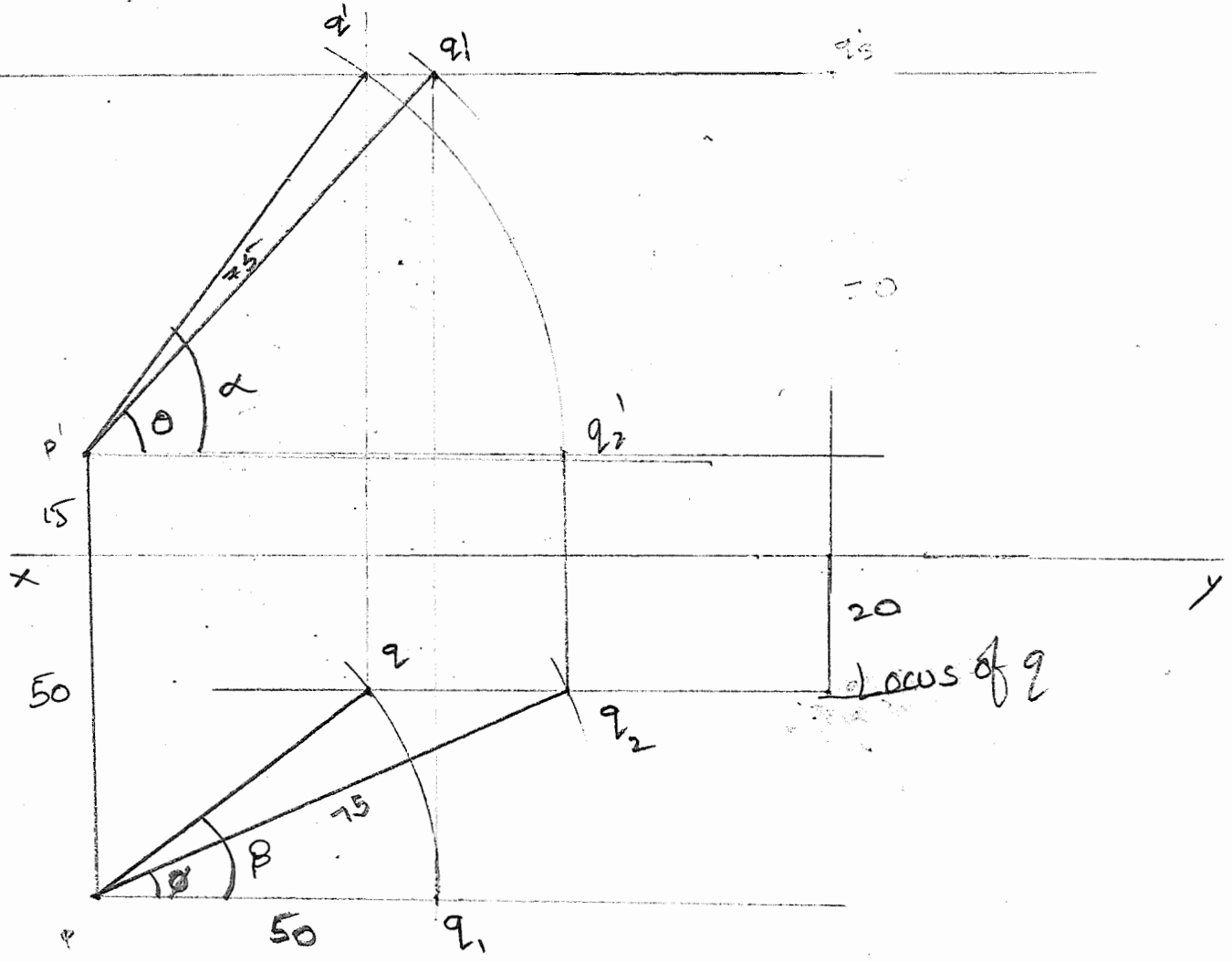


$\frac{1}{8}$th km

RF : $\frac{3}{100000}$

LOS : 180

(3)

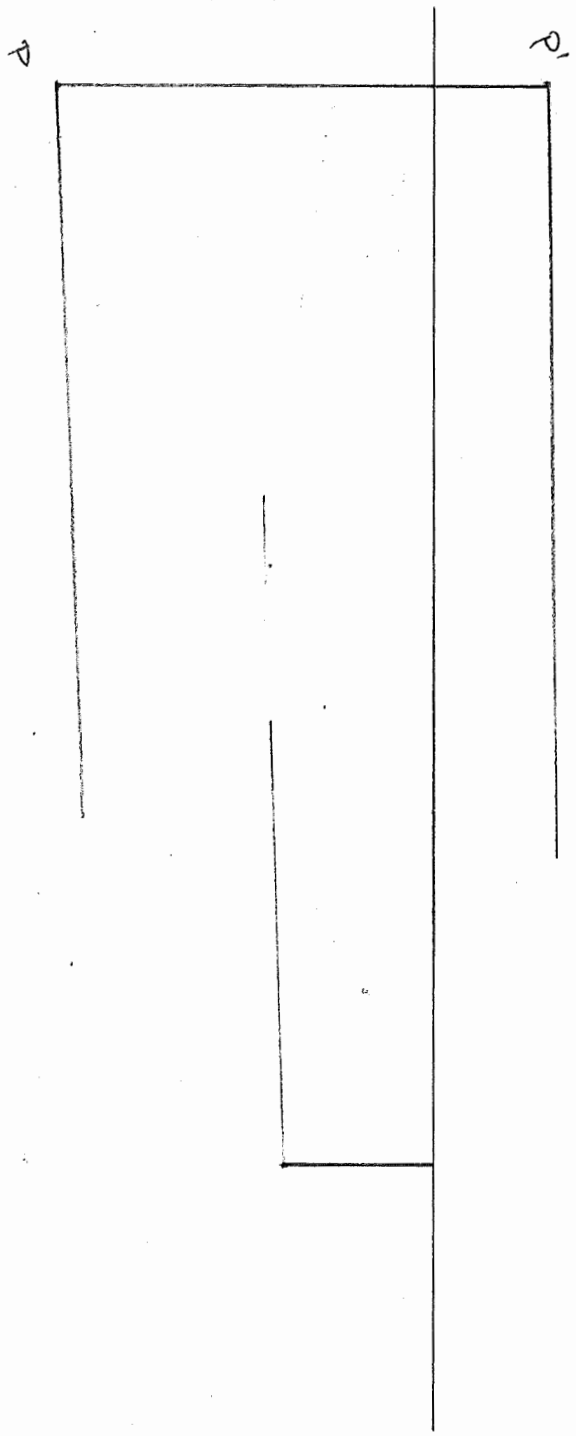


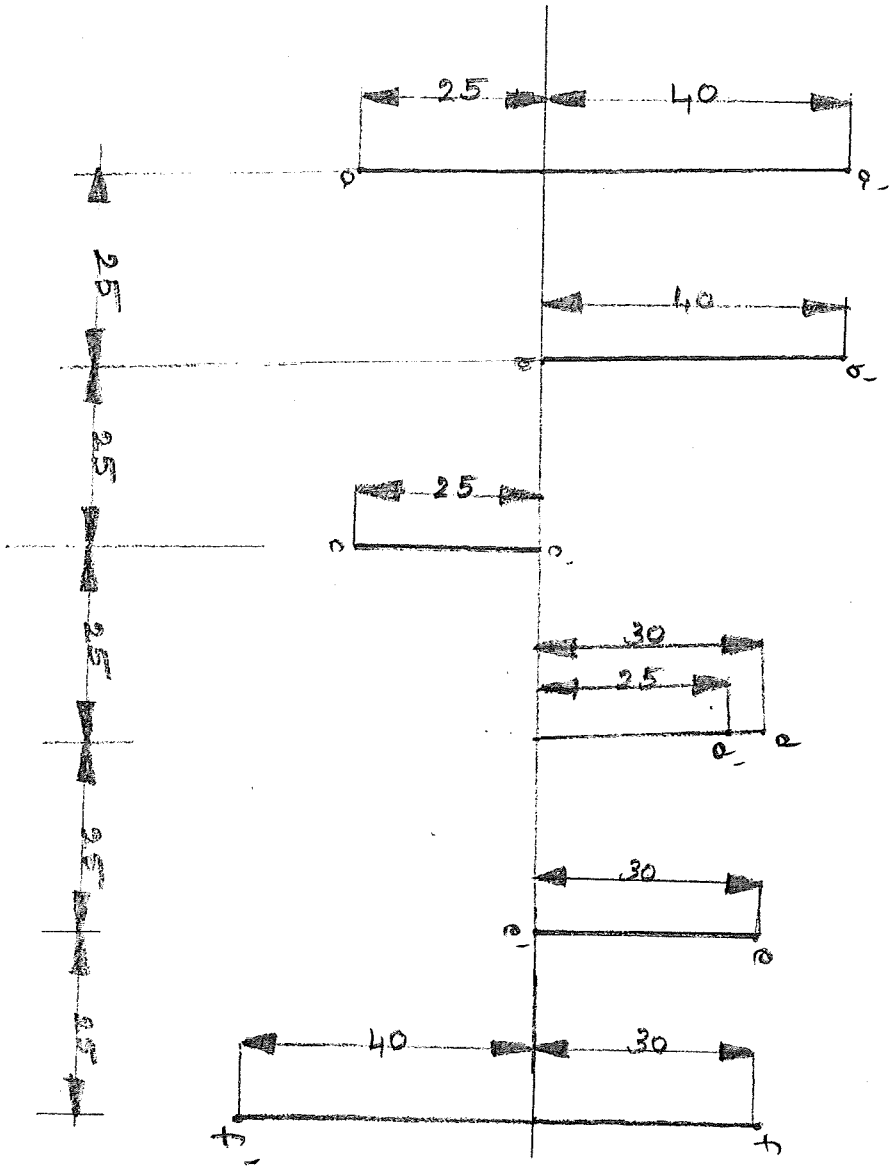
$\theta = 48^\circ$

$\alpha = 53^\circ$

$\beta = 36^\circ$

$\phi = 23$


A
D


25
40
40
25
30
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30
40
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25
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25
25
25

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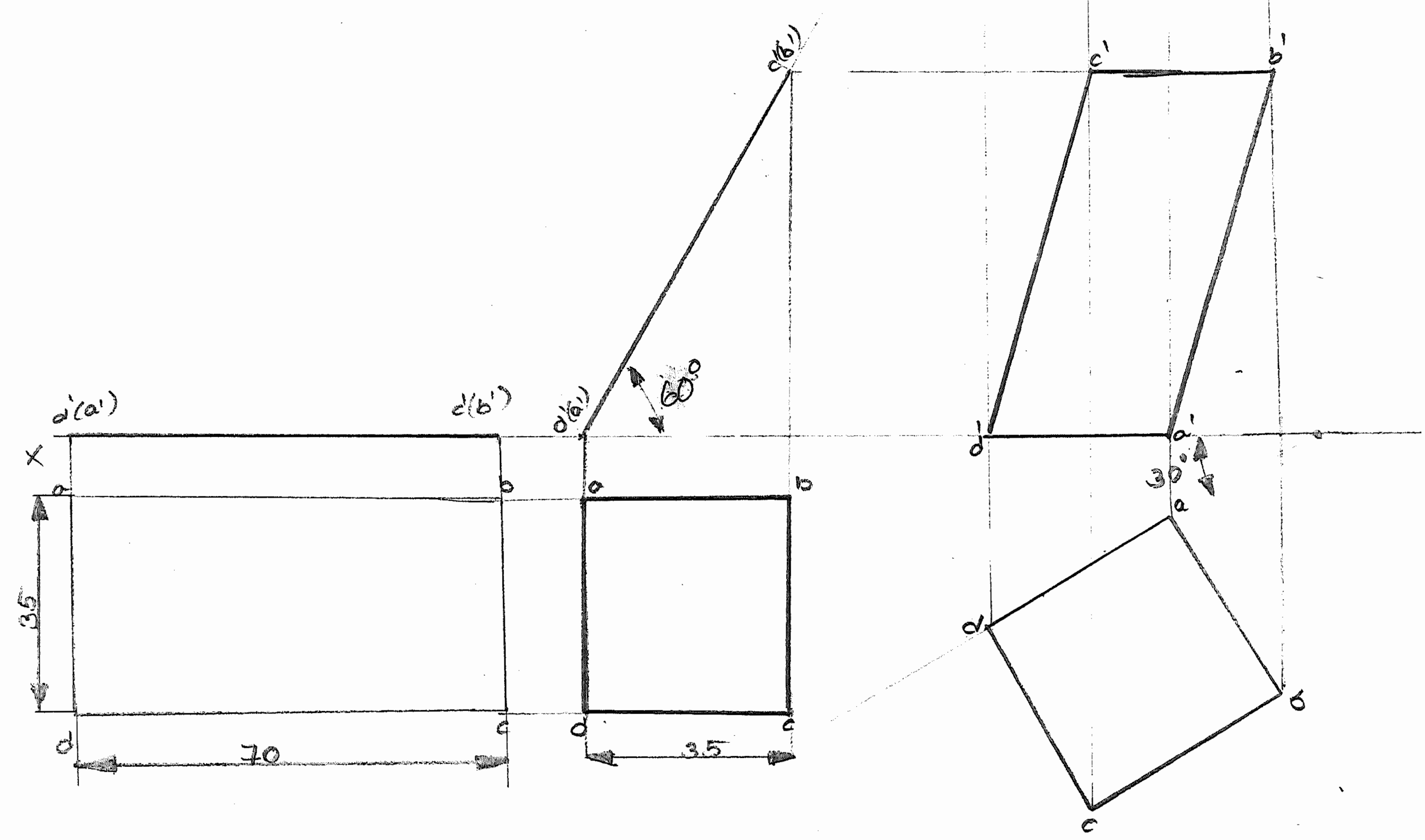
٣٥

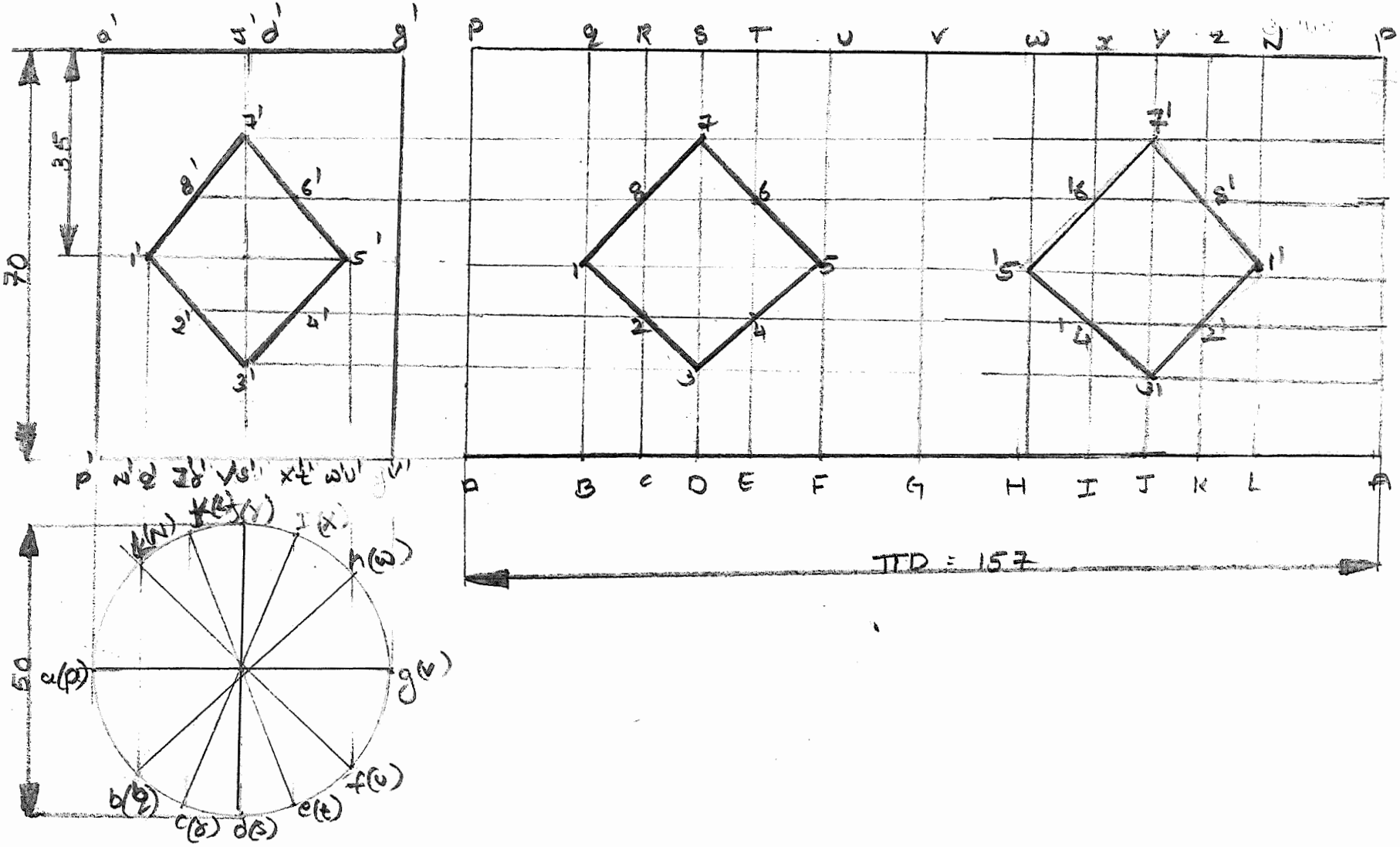
5

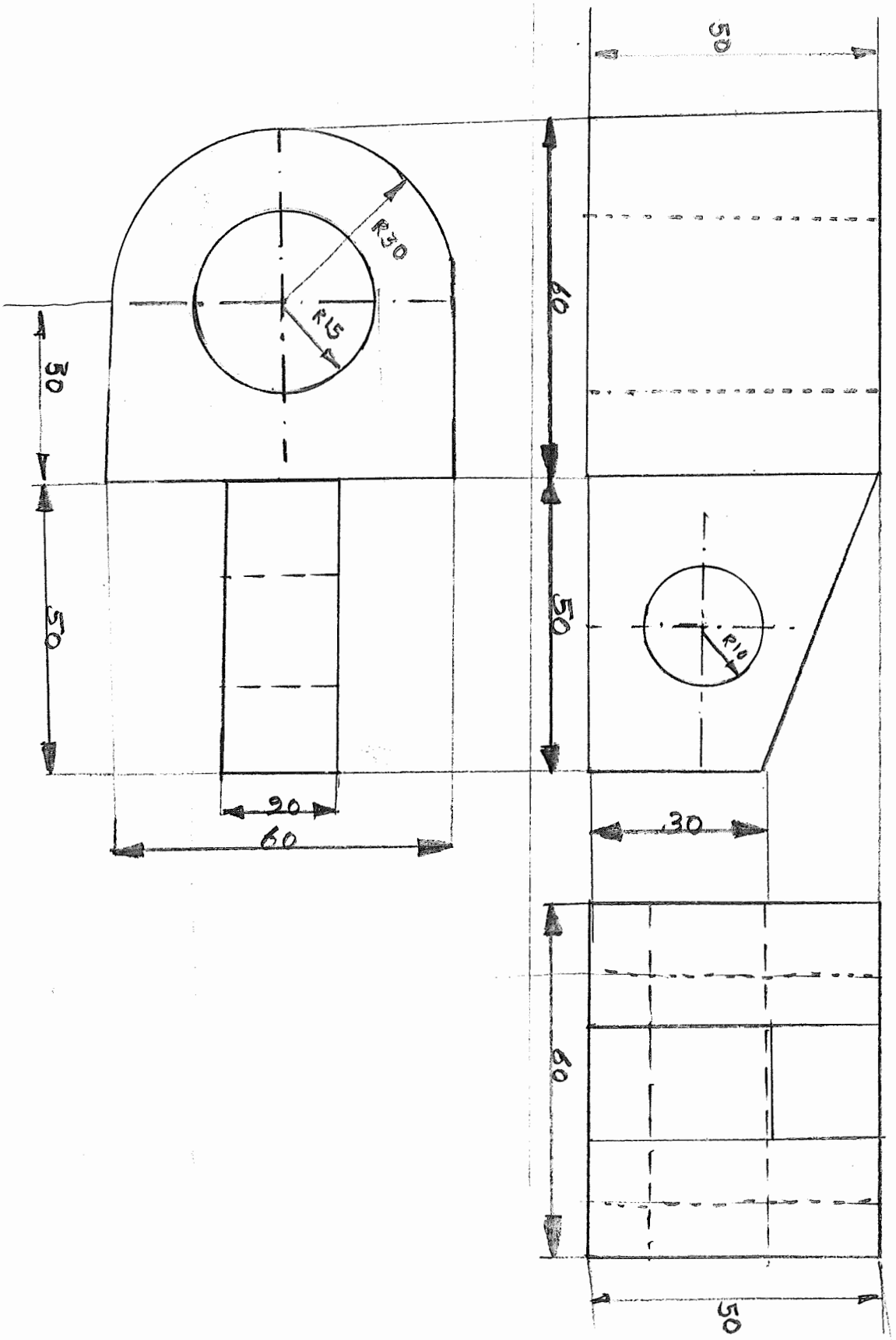


50
70
X
Y

X
60
30
30
Y

80


a' j' d' g'
7' 8' 6' 1' 5' 2' 4' 3'
3.5
7.0
P Q R S T U V W X Y Z N P
A B C D E F G H I J K L A
ITD = 157
5.0
a(p) g(e) h(w) f(c) e(t) d(s) c(r) b(q)


R30
R15
50
50
90
60
50
60
50
R10
30
60
50

(10)