higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PLATING AND STRUCTURAL STEEL DRAWING N4

11 AUGUST 2021

This marking guideline consists of 12 pages.

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QUESTION1: SEMI-CIRCULAR ENDS-TO-ELLIPSE TRANSFORMER

ACTIVITY	MARK
Front view	3
Top view	3
Semi-elliptical end for top end of transformer	2
Semi-elliptical end for bottom end of transformer	2
Pattern of transformer	11
Accuracy	1
Line work and projections	2
Neatness	1
TOTAL	**25**

QUESTION 2: PIPE ELBOW AT COMPLEX ANGLES

ACTIVITY	MARK
Front view without the ellipses	2
Left view without the ellipses	2
Top view without the ellipse	2
Auxiliary projection of the elbow	4
Ellipses in the front view, left view and top view (5 of in total)	5
Pattern of limb A of the elbow	6
Accuracy	1
Line work and projections	2
Neatness	1
TOTAL	**25**

QUESTION 3: TWO-WAY BREECHES PIECE

ACTIVITY	MARK
Front view of the breeches piece	3
Top view without the ellipses	2
The ellipses in the top view	3
The quarter ellipse – for shape of joint between the limbs in the front view	2
Pattern of the leg B of the breeches piece	11
Accuracy	1
Line work and projections	2
Neatness	1
TOTAL	**25**

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QUESTION 4: OBLIQUE CONE CONNECTED TO RIGHT CONE

ACTIVITY	MARK
Front view without the interpenetration curve	2
Half top view without the interpenetration curve	2
Cutting planes in front view and half top view	3
Curve of interpenetration in the half top view	3
Curve of interpenetration in the front view	2
Pattern of the oblique cone	9
Accuracy	1
Line work and projections	2
Neatness	1
TOTAL	**25**

QUESTION 5: RECTANGLE-TO-SQUARE TRANSITION PIECE

ACTIVITY	MARK
Front view (not to scale)	1
Top view (not to scale)	1
Calculations	15
Full pattern of the transition piece	6
Accuracy	1
Neatness	1
TOTAL	**25**

TOTAL	**100**

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QUESTION 1

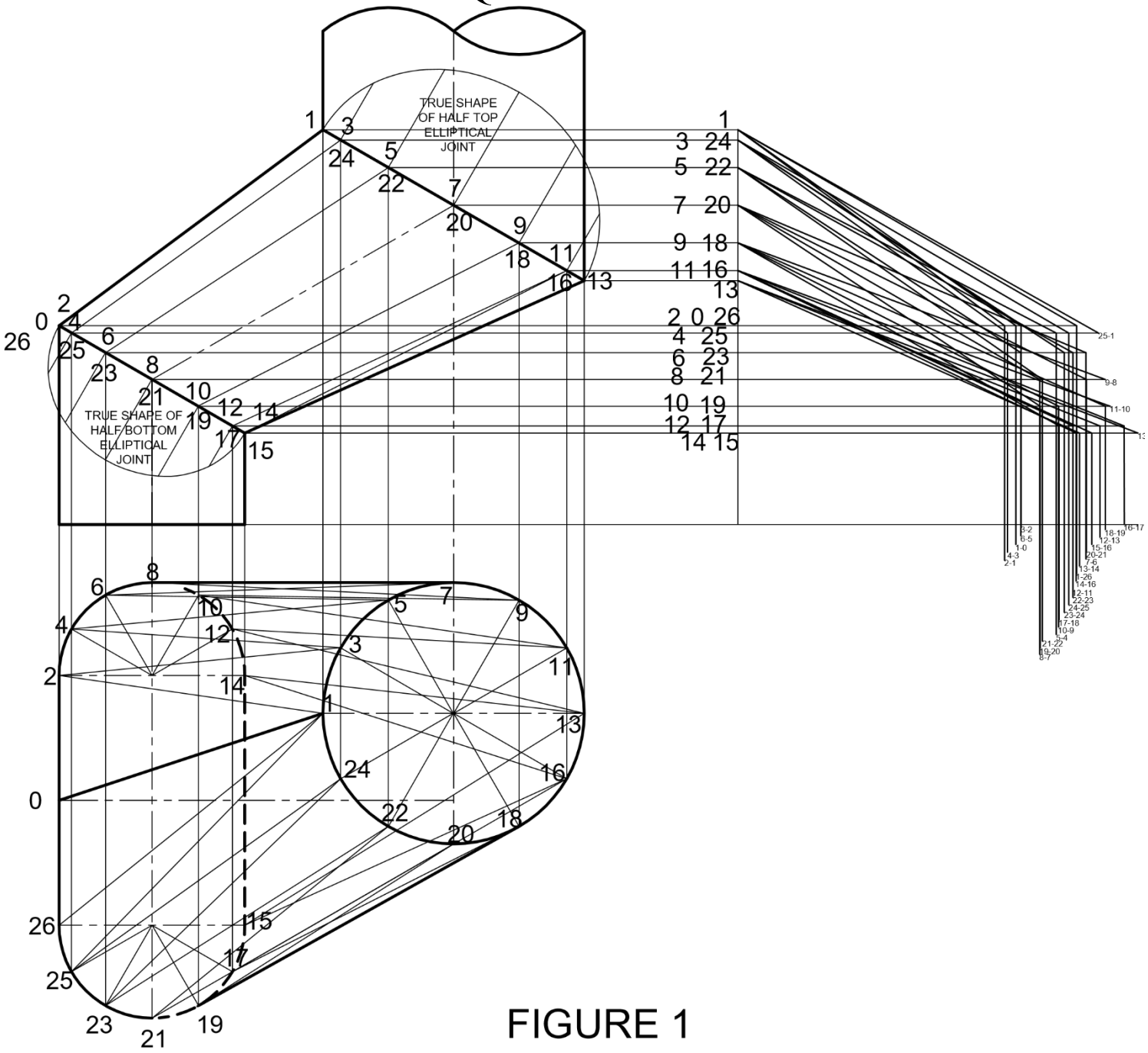


FIGURE 1

SEMI-CIRCULAR ENDS-TO-ELLIPSE TRANSFORMER
SCALE 1:20

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QUESTION 1

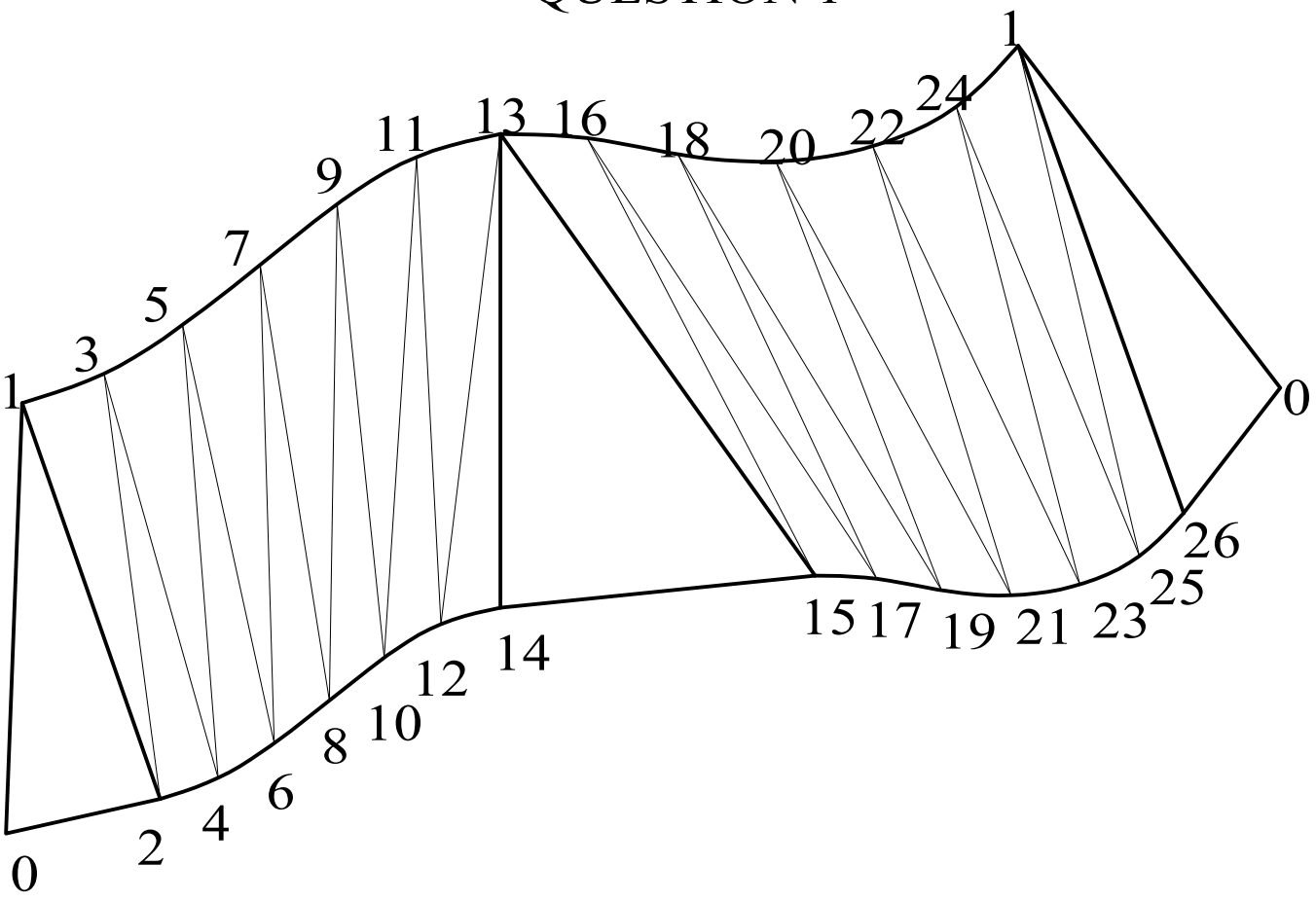


FIGURE 1

SEMI-CIRCULAR ENDS-TO-ELLIPSE TRANSFORMER
SCALE 1:20

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QUESTION 2

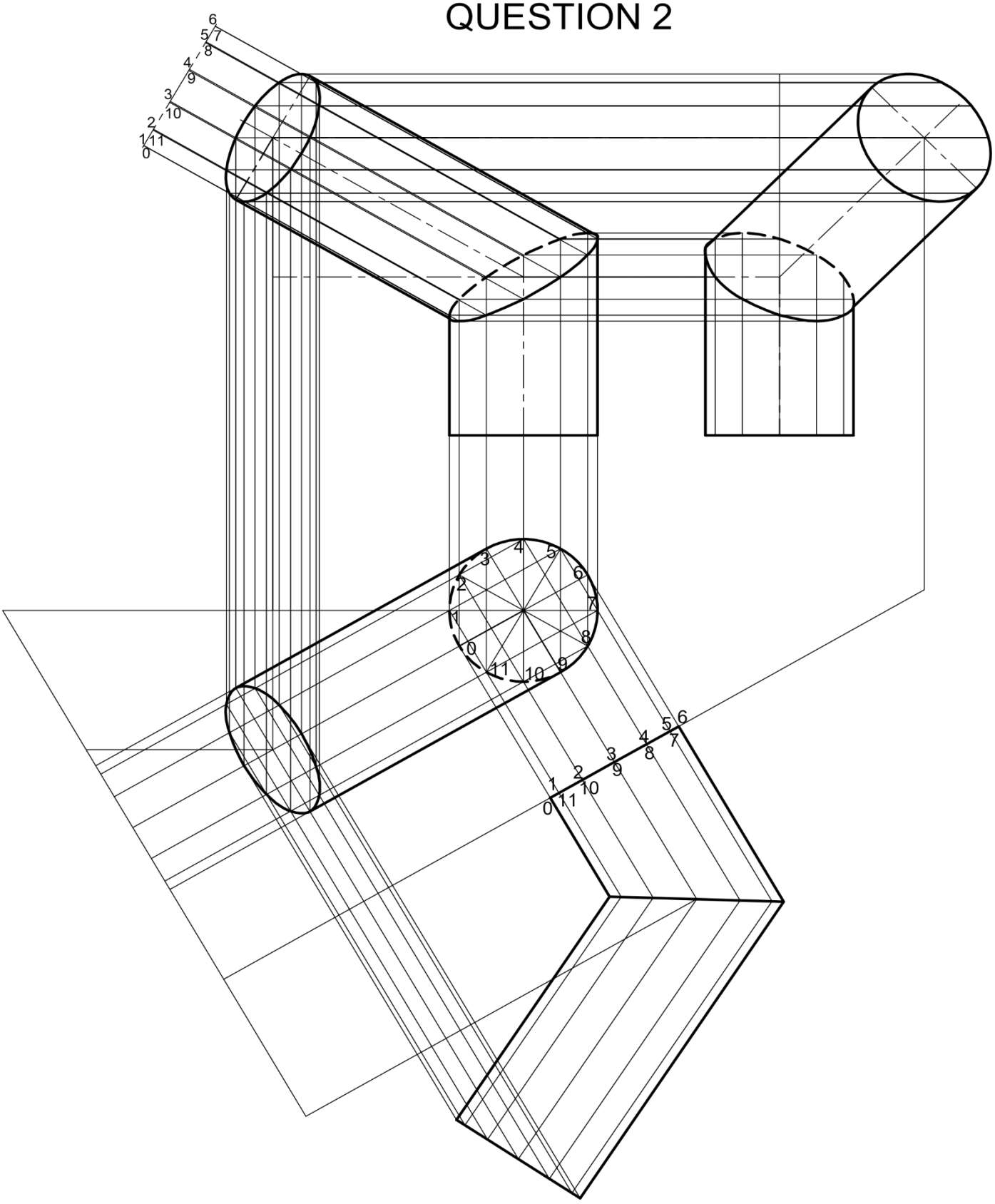


FIGURE 2

PIPE ELBOW AT COMPLEX ANGLES
SCALE 1:20

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QUESTION 2

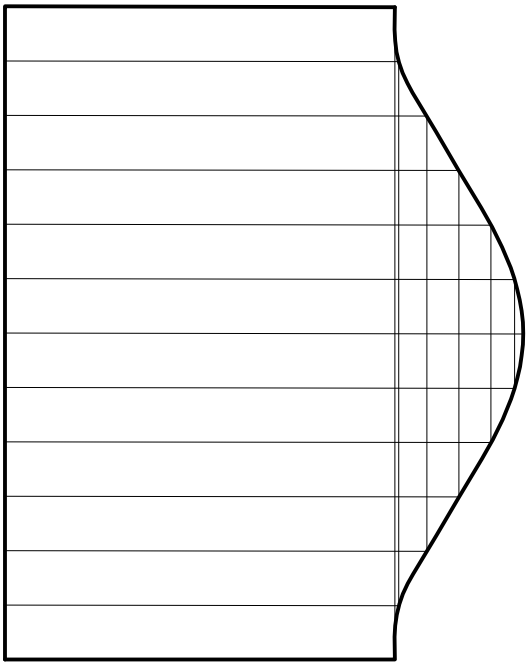


FIGURE 2

PIPE ELBOW AT COMPLEX ANGLES
SCALE 1:20

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QUESTION 3

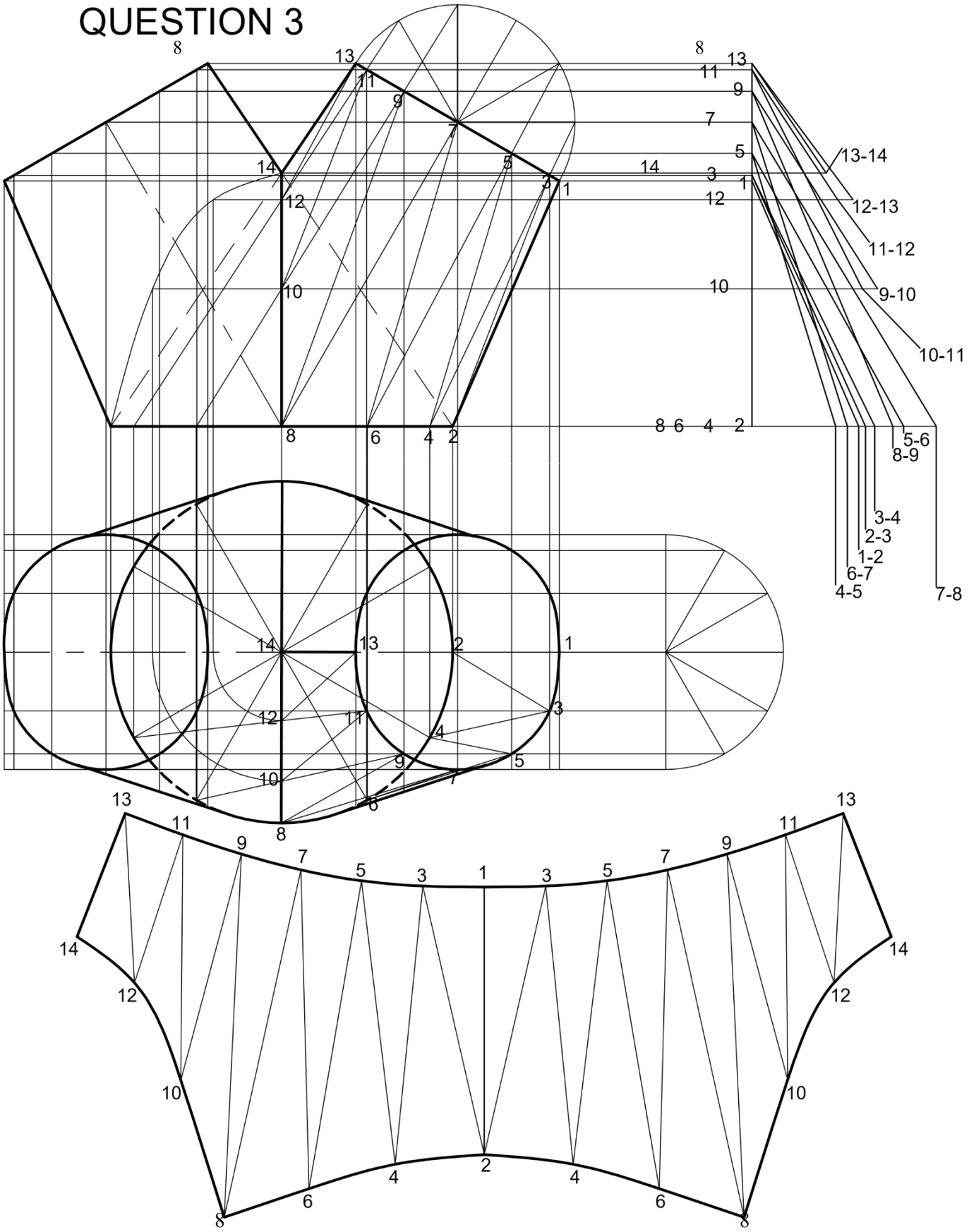


FIGURE 3
TWO-WAY BREECHES PIECE
SCALE 1:5

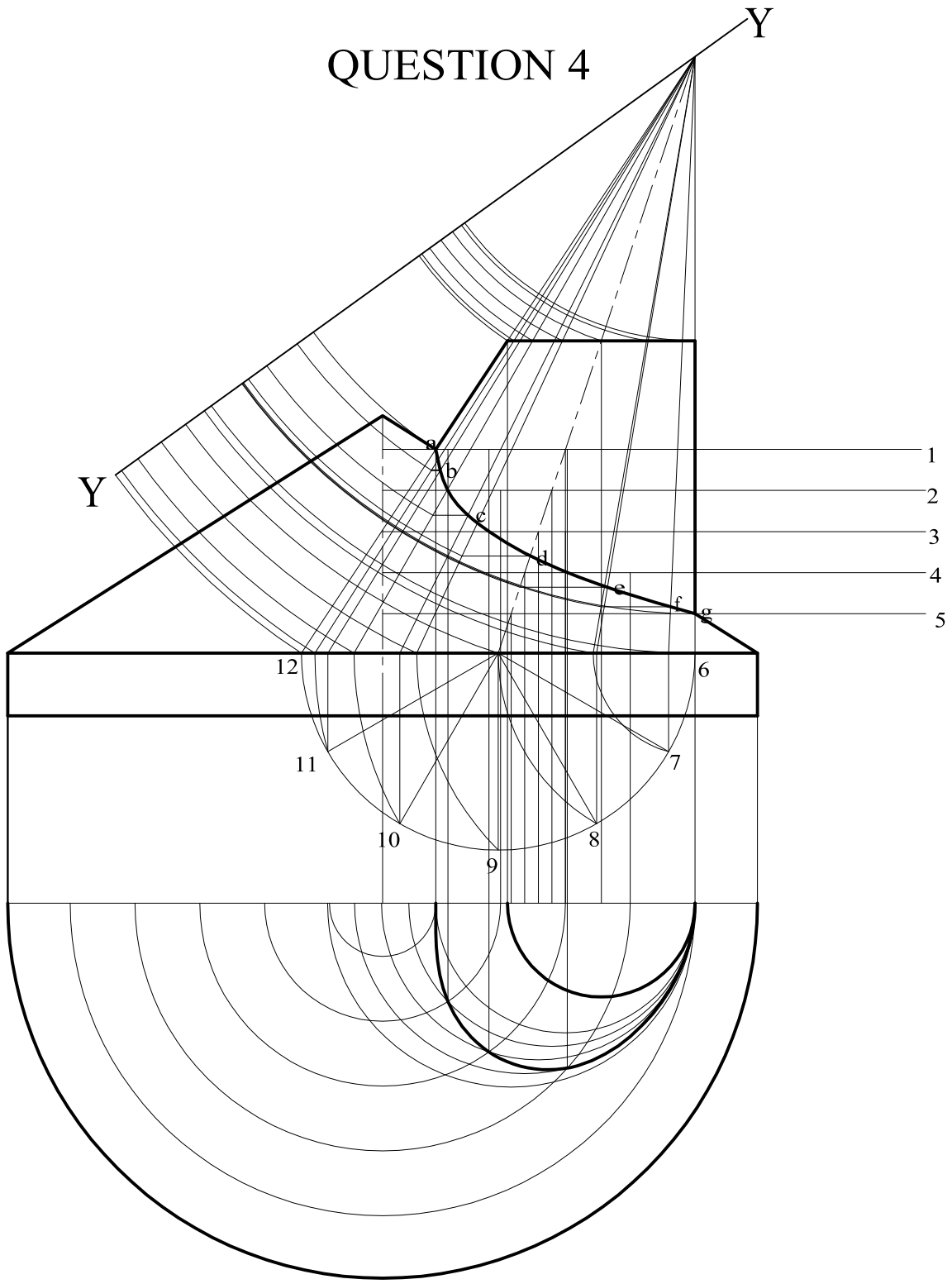


FIGURE 4

OBLIQUE CONE CONNECTED TO RIGHT CONE
SCALE 1:5

QUESTION 4

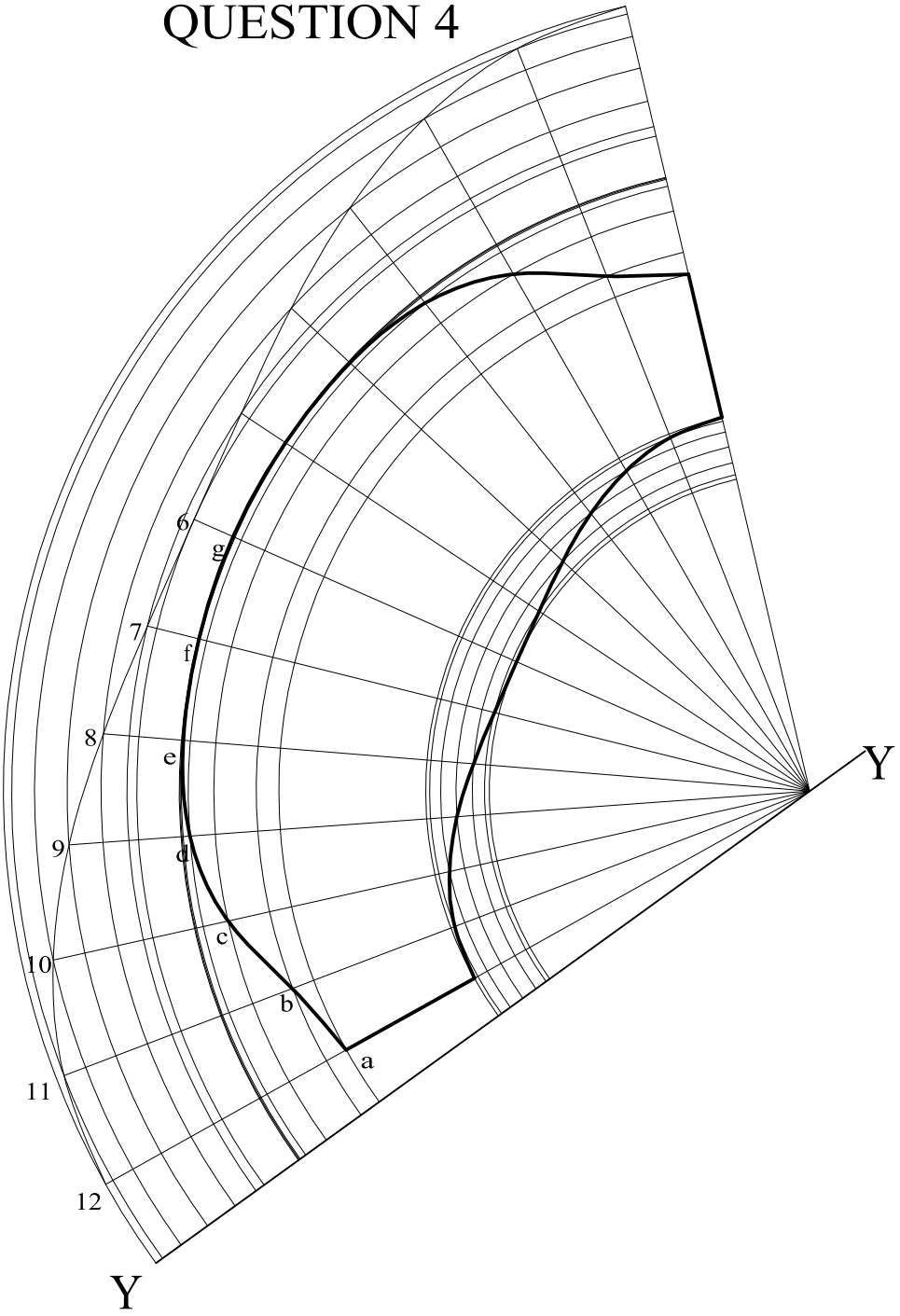
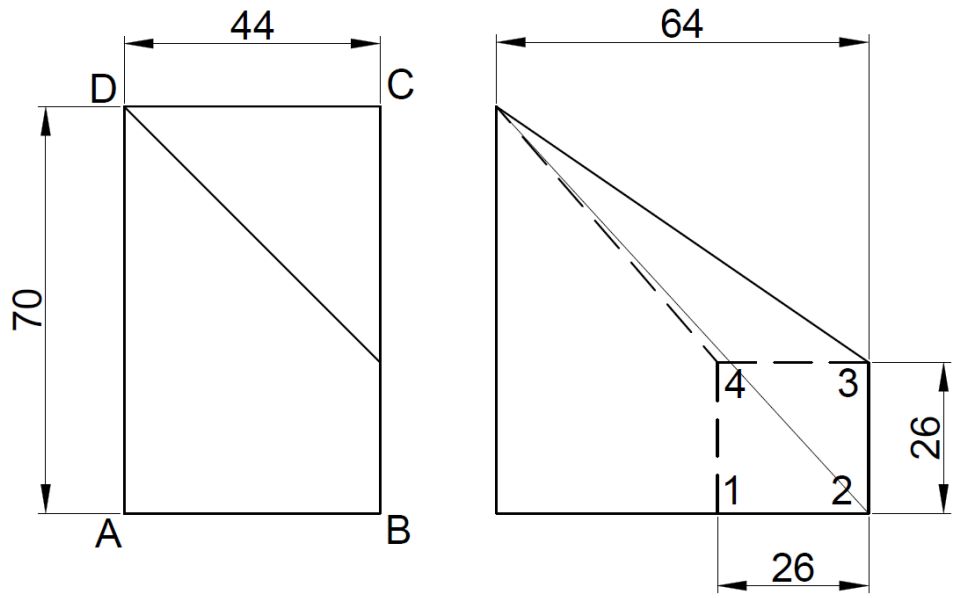


FIGURE 4

OBLIQUE CONE CONNECTED TO RIGHT CONE
SCALE 1:5

QUESTION 5

CALCULATIONS AND DIAGRAMS



AD = BC = 70		(0,5)
A2	$= \sqrt{44^2 + 64^2} = 77{,}67$	(1,5)
D2	$= \sqrt{70^2 + 44^2 + 64^2} = 104{,}56$	(2)
D3	$= \sqrt{44^2 + 44^2 + 64^2} = 89{,}26$	(2)
1 - 2 = 2 - 3 = 3 - 4 = 4 – 1 = 26		(1)
A1	$= \sqrt{44^2 + 38^2} = 58{,}14$	(1,5)
B1 = 64 – 26 = 38		(1)
AB = DC = 44		(0,5)
C1	$= \sqrt{70^2 + (64 - 26)^2} = 79{,}65$	(2)
C3	$= \sqrt{64^2 + 44^2} = 77{,}67$	(1)
C4	$= \sqrt{44^2 + (64 - 26)^2} = 58{,}14$	(2)
		[15]

FIGURE 5

RECTANGLE-TO-SQUARE TRANSITION PIECE

QUESTION 5

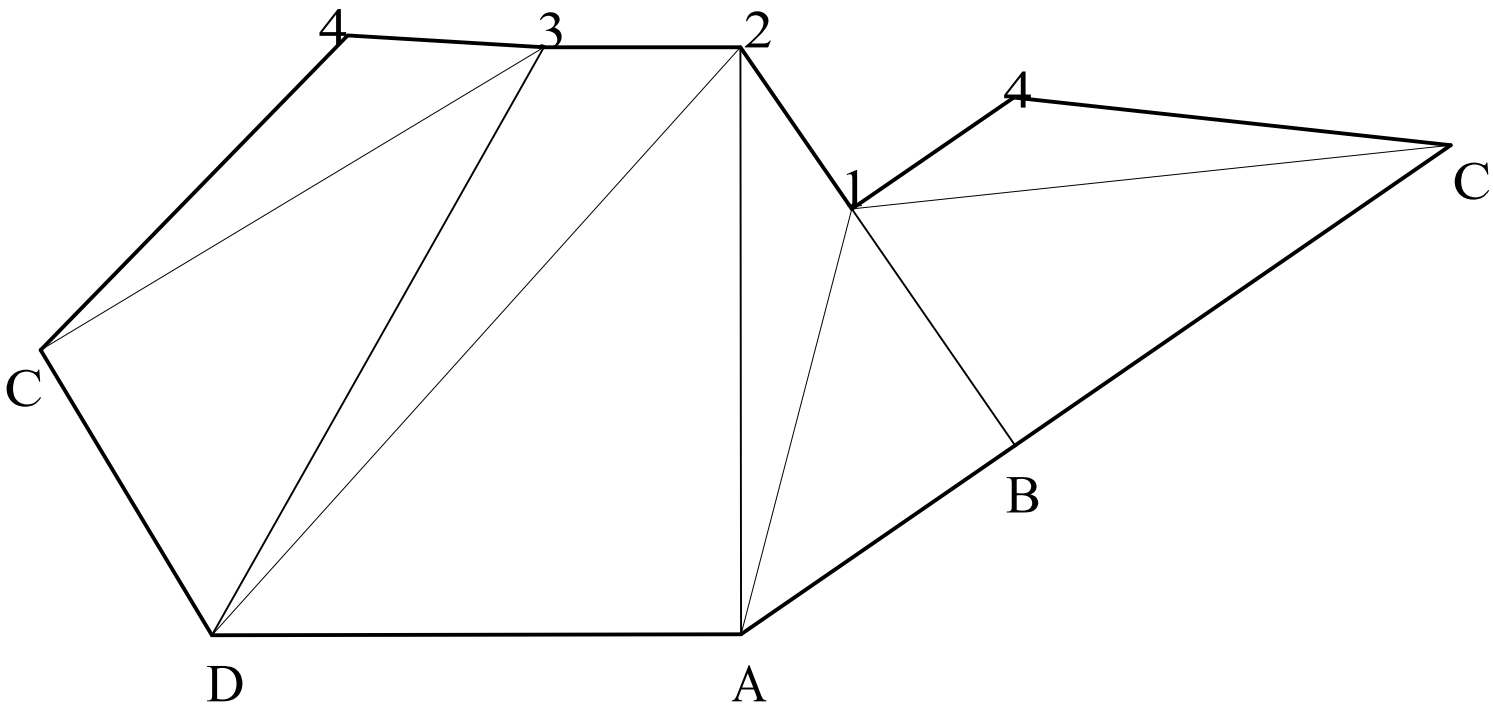


FIGURE 5

RECTANGLE-TO-SQUARE TRANSITION PIECE
SCALE 1:1

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