YEAR 12C & 12D TECHNICAL DRAWING WORKSHEET 1

Attempt the given exercises on beams, centroids, rolling wheel, scales and involute.

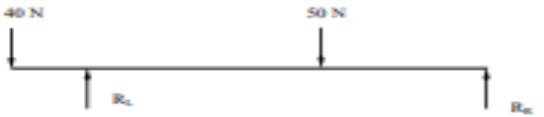
QUESTION 1

PART A **(8 marks)**

Given: A space diagram of a beam drawn to a scale of 1 : 100.

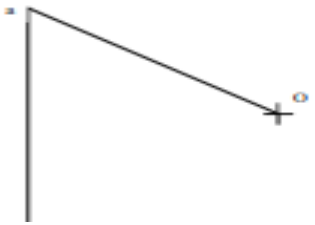
Required: (i) Complete the space diagram using Bow's Notation. **(2 marks)**

(ii) Draw the shear force diagram. **(6 marks)**



1	Correct/Bows notation used	1	
2	Correct no. of labels observed	1	
3	Accuracy – load line	1	
4	Correct polar diagram	1	
5	Correct funicular polygon	2	
6	Correct shear force diagram	2	
9	Correct calculations of rectangle A area	1	
10	Correct calculations of trapezium B area	1	
11	Correct simplified ratio	1	
12	Accuracy – Correct position of 'C' of rectangle A	1	
13	Accuracy – Correct position of 'C' of trapezium B	1	
14	Accuracy – Correct position of 'C'	1	
15	Correct method	1	

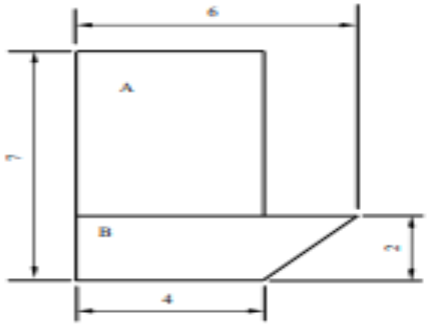
Load line scale: 10 mm = 10 N



PART B **(7 marks)**

Given: A composite geometrical shape of a trapezium and a rectangle.

Required: Locate the centroid by using the ratio method.



Calculations

Area A:

Area B:

Simplified Ratio A : B

QUESTION 2

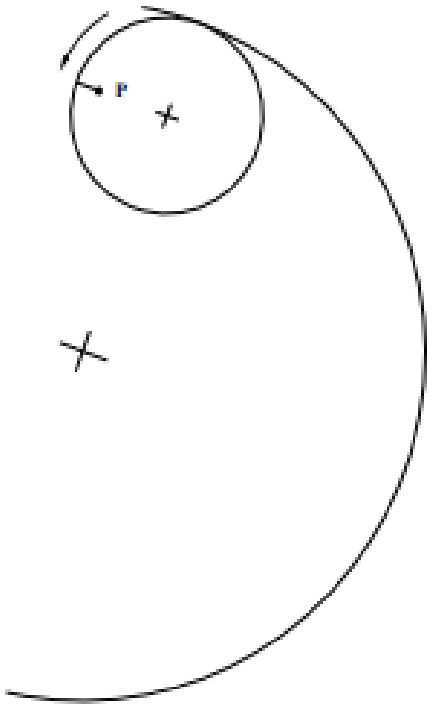
QUESTION 4 **(15 marks)**

PART A **(7 marks)**

Given: A rolling circle moving along a curved path in an anti-clockwise direction.

Required: Draw the locus of point **P** inside the rolling circle for ½ revolution. **(6 marks)**

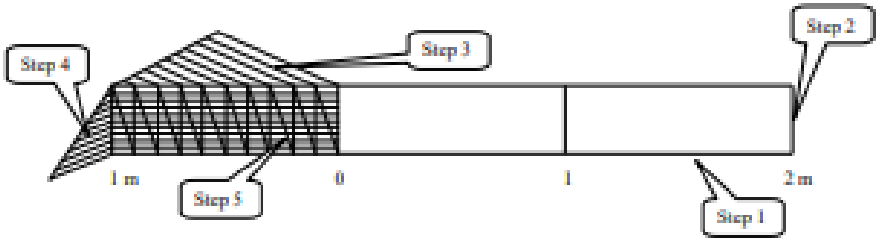
Name the curve formed: _____ **(1 mark)**



BQ4A			
1	Correct divisions of circle	1	
2	Correct divisions on rolling circle and labels shown	1	
3	Correct generating lines or method	1	
4	Accuracy of C_1 to C_6 locations	1	
5	Accuracy of P_1 to P_6 locations	1	
6	Correct shape of locus	1	
7	Correct name of the curve	1	
BQ4B			
8	Correct 5 steps	5	
BQ4C			
9	Correct method	1	
10	Correct curve	1	
11	Neatness	1	

PART B **(5 marks)**

Given: A diagonal scale of 50 mm equals to 1 m which reads up to 3 m.



Required: Write the 5 steps that are required to construct the above diagonal scale.

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Step 5: _____

PART C **(3 marks)**

Given: A triangle **ABC**.

Required: Construct the involute of triangle **ABC** which unwinds in a clockwise direction.