



Province of the  
**EASTERN CAPE**  
EDUCATION



# **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2023**

**ENGINEERING GRAPHICS AND DESIGN P2**

**SEPTEMBER 2023**

**PREPARATORY EXAMINATION  
MARKING GUIDELINE**

**MARKS: 200**

**TIME: 3 hours**

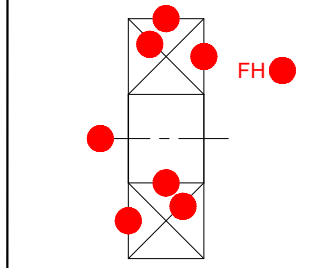
**This marking guideline consists of 7 pages.**

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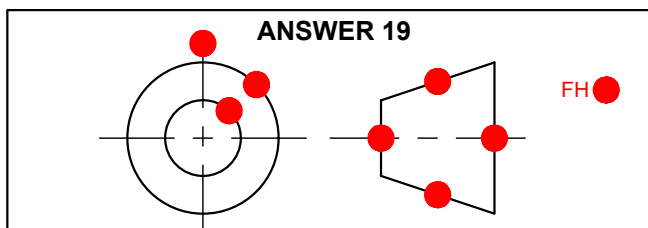
## QUESTION 1: ANALYTICAL (MECHANICAL)

ANSWERS		
1	RELYENGINEERING	1
2	2023/01/20	1
3	MILD STEEL	1
4	400	1
5	COUNTERBORE	1
6	REVOLVED SECTION	1
7	FRONT VIEW	2
8	244	1
9	RXH-2023-182.dwg	1
10	KNURLING	1
11	$0.1 \times 5 = 0.5$	1
12	$A = 50$ , $B = 40$ , $C = \text{Ø}30$	3
13	TO SHOW FINE DETAIL	1
14	4	1
15	$169 - 25 = 145$	1
16	$25 - 0.05 = R24.95$	2
17	ROUGHNESS VALUE	1
18	SEE BELOW	4
19	SEE BELOW	4
TOTAL		29

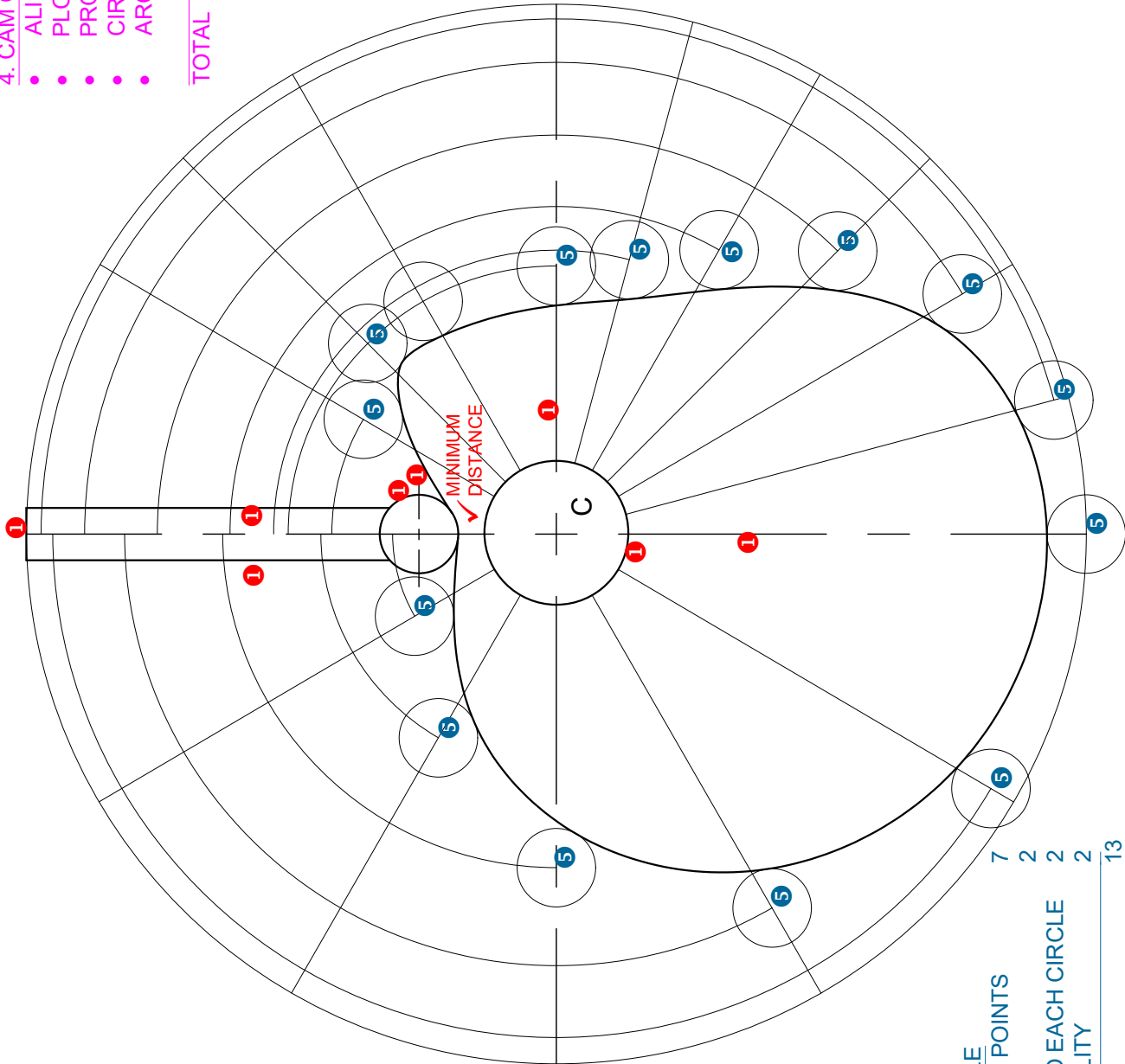
ANSWER 18



ANSWER 19



QUESTION 2: LOCI (CAM)



4. CAM CONSTRUCTION
- ALIGNMENT WITH MIN DISTANCE 1
  - PLOT DIRECTION CLOCKWISE 1
  - PROJECTION FROM GRAPH 1
  - CIRCLE DIVISION 1
  - ARC PROJECTION 1
- TOTAL 5

5. CURVE PROFILE
- 14 x CENTRE POINTS 7
  - ROLLERS 2
  - TANGENT TO EACH CIRCLE 2
  - CURVE QUALITY 2
- TOTAL 13

ASSESSMENT CRITERIA	
1	GIVEN + MINIMUM DISTANCE + CENTRE LINES 5
2	GRAPH CONSTRUCTION 5½
3	DISPLACEMENT GRAPH 9½
4	CAM CONSTRUCTION 5
5	CAM + CURVE QUALITY 13
TOTAL 38	

- ✓ 1  
✓ 2  
✓ 3  
✓ 4  
5

- TOTAL 13

QUESTION 2: LOCI (CAM)

2. GRAPH CONSTRUCTION
- BASE LENGTH 96 mm
  - 12 DIVISIONS @ 8 mm

0.5  
0.5

UNIFORM ACCELERATION + RETARDATION

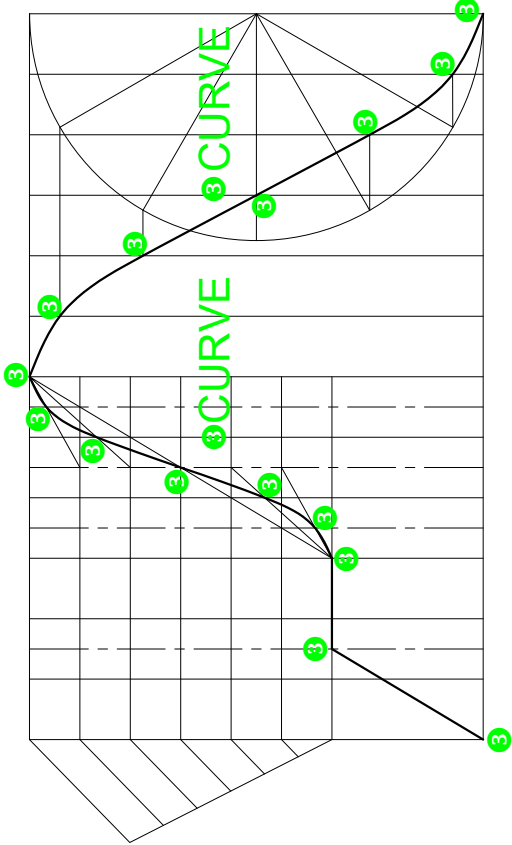
- HEIGHT 40 mm
- LINE DIVISION (40 mm) 6 EQUAL PARTS
- FIRST HALF CONSTRUCTION
- SECOND HALF CONSTRUCTION
- 15° SUBDIVISIONS

0.5  
1  
0.5  
0.5  
0.5

SIMPLE HARMONIC MOTION

- SEMI CIRCLE
  - CIRCLE DIVISION
  - PROJECTION
- TOTAL

0.5  
0.5  
0.5  
5 1/2



DISPLACEMENT GRAPH ✓  
SCALE 30° = 8 mm

ASSESSMENT CRITERIA	
1	GIVEN + MINIMUM DISTANCE + CENTRE LINES
2	GRAPH CONSTRUCTION
3	DISPLACEMENT GRAPH
4	CAM CONSTRUCTION
5	CAM + CURVE QUALITY
TOTAL	

✓ 1  
✓ 2  
✓ 3  
✓ 4  
5

TOTAL	
38	

4

QUESTION 3: ISOMETRIC

✓✓ CIRCLE CONSTRUCTION

14,7224

AUXILIARY VIEW

✓

5

ASSESSMENT CRITERIA	
1	CONSTR' + PLACEMENT
2	BASE
3	TOWER + HEXAGON + CIRCLE
4	SECTION A-A
TOTAL	

✓

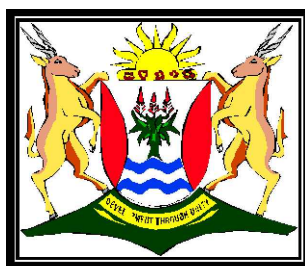
2

3

4

43





**ISEBE LEMFUNDO LEMPUMA KOLONI  
EASTERN CAPE EDUCATION DEPARTMENT  
OOS-KAAP ONDERWYSDEPARTEMENT**

**GRADE 12**

**ENGINEERING GRAPHICS AND DESIGN  
PAPER 2  
SEPTEMBER 2023  
PREPATORY EXAMINATION  
MARKING GUIDELINES**

WEIGHTING OF QUESTIONS					
QUESTION	LOW	MIDDLE	HIGH	TOTAL	% OF PAPER
1	11.0	9.0	9.0	29.0	14.5
	37.9	31.0	31.0		
2	10.0	19.0	9.0	38.0	19.0
	26.3	50.0	23.7		
3	12.0	16.5	14.5	43.0	21.5
	27.9	38.4	33.7		
4	27.0	33.0	30.0	90.0	45.0
	30.0	36.7	33.3		
TOTAL	60.0	77.5	62.5	200.0	
	30.5	39.0	30.4		