



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

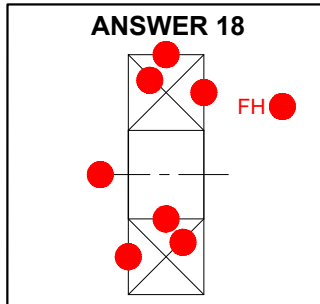
This marking guideline consists of 7 pages.

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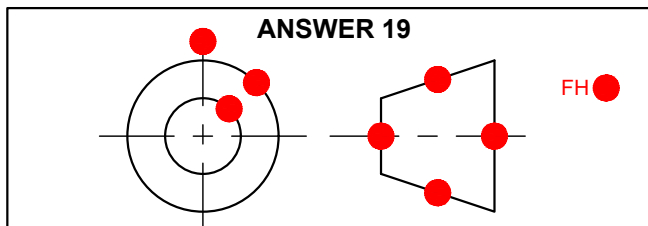
QUESTION 1: ANALYTICAL (MECHANICAL)

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	$25 - 0.05 = \text{R}24.95$	2
17	ROUGHNESS VALUE	1
18	SEE BELOW	4
19	SEE BELOW	4
TOTAL		29

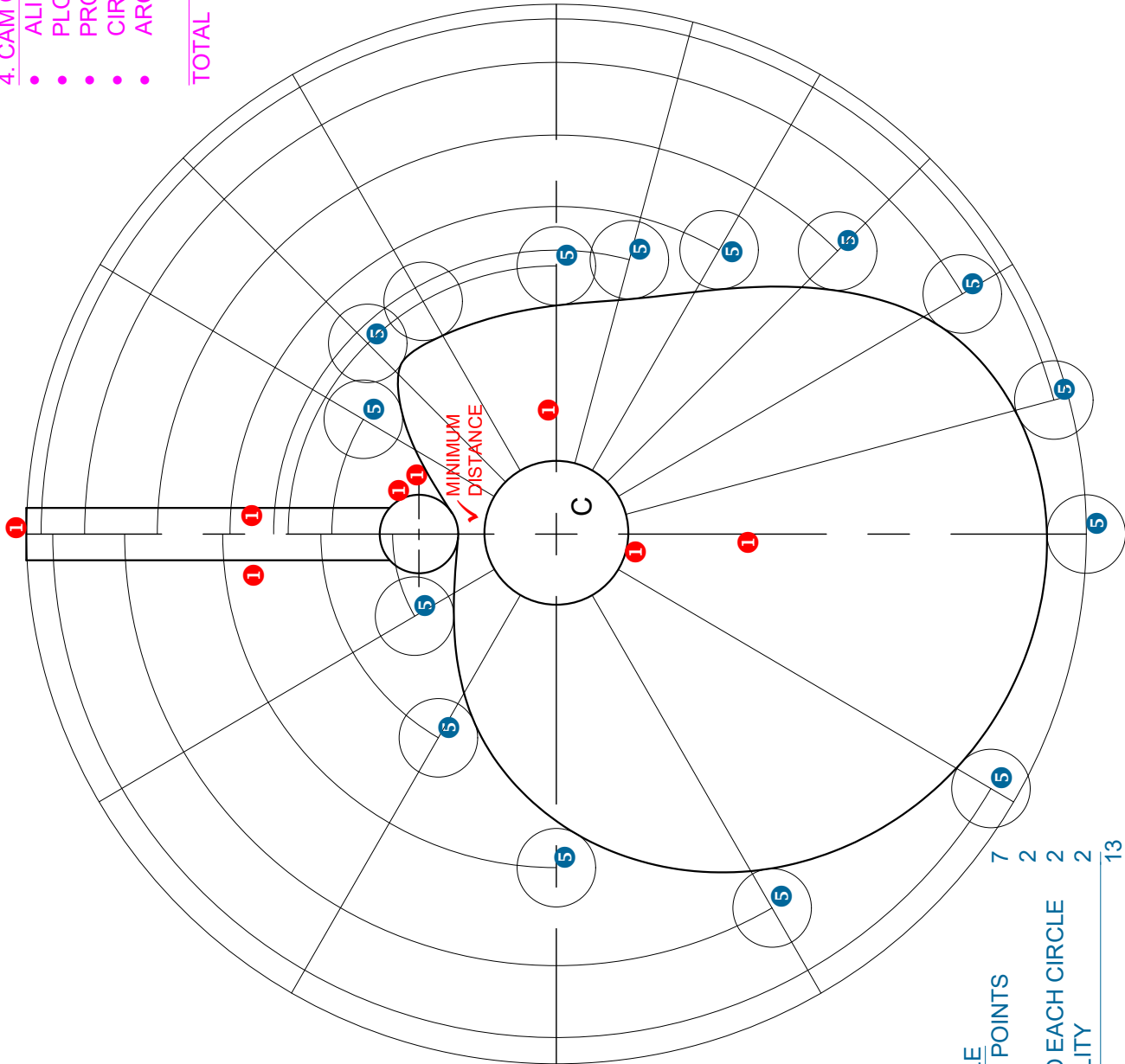
ANSWER 18



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

3

QUESTION 2: LOCI (CAM)

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

0.5
0.5

UNIFORM ACCELERATION + RETARDATION

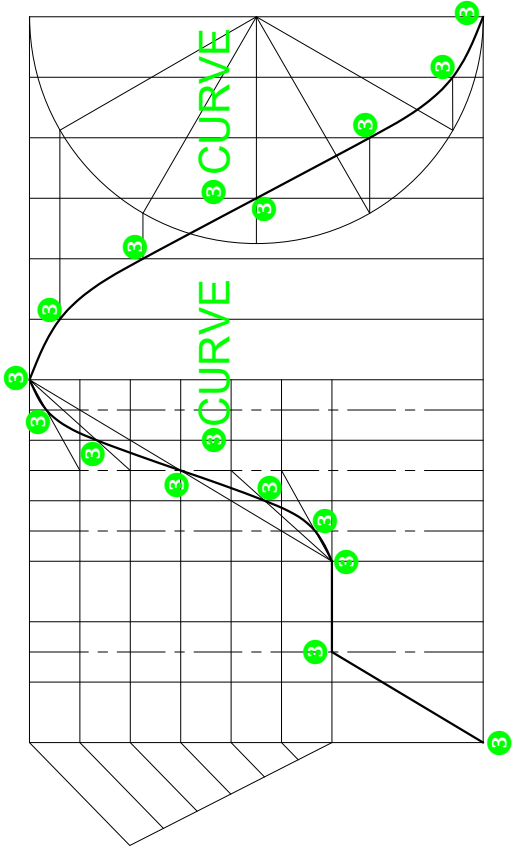
- HEIGHT 40 mm
- LINE DIVISION (40 mm) 6 EQUAL PARTS
- FIRST HALF CONSTRUCTION
- SECOND HALF CONSTRUCTION
- 15° SUBDIVISIONS

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

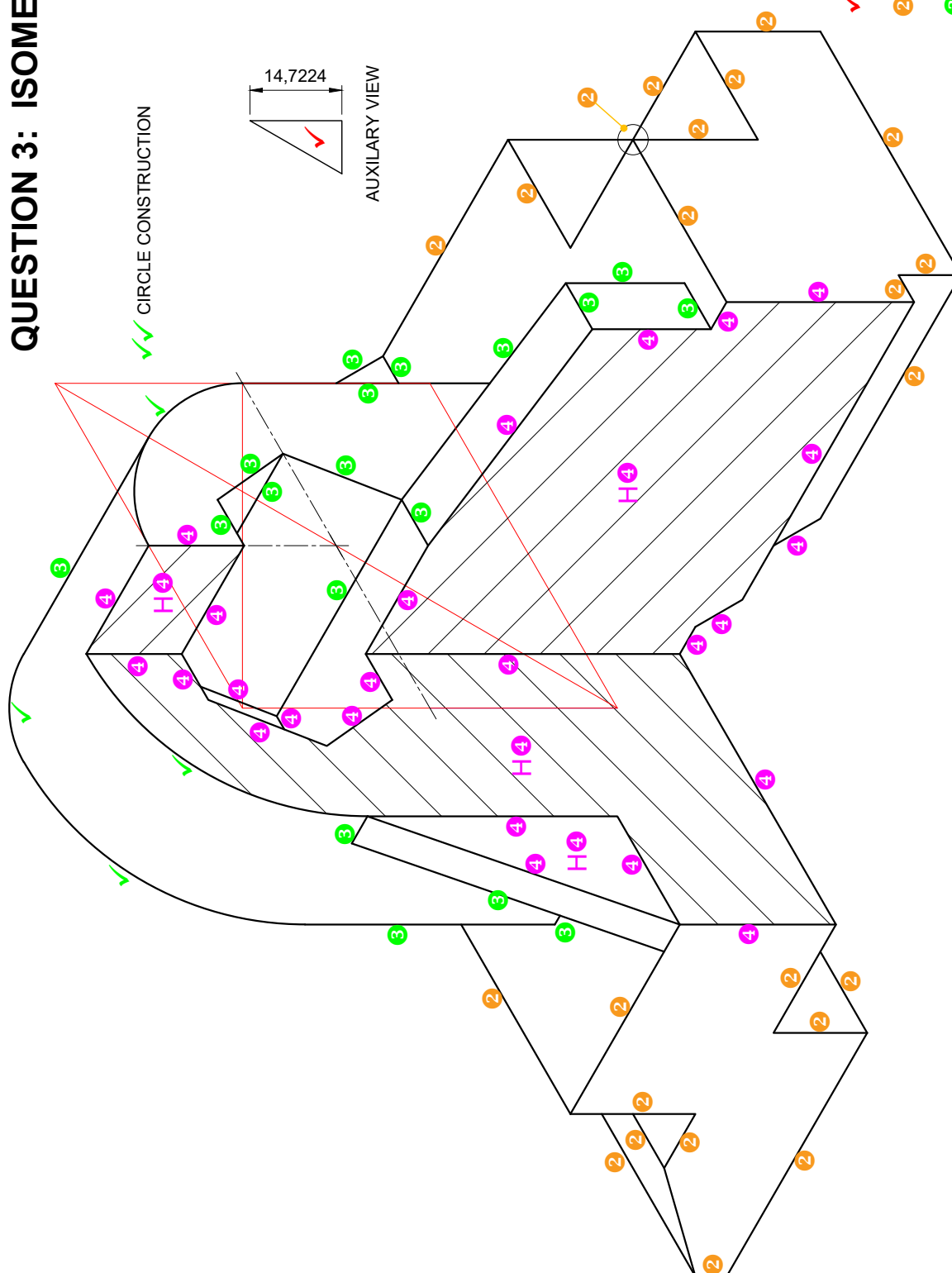
ASSESSMENT CRITERIA	
1	GIVEN + MINIMUM DISTANCE + CENTRE LINES
2	GRAPH CONSTRUCTION
3	DISPLACEMENT GRAPH
4	CAM CONSTRUCTION
5	CAM + CURVE QUALITY
TOTAL	

✓ 1
✓ 2
✓ 3
✓ 4
5

4	
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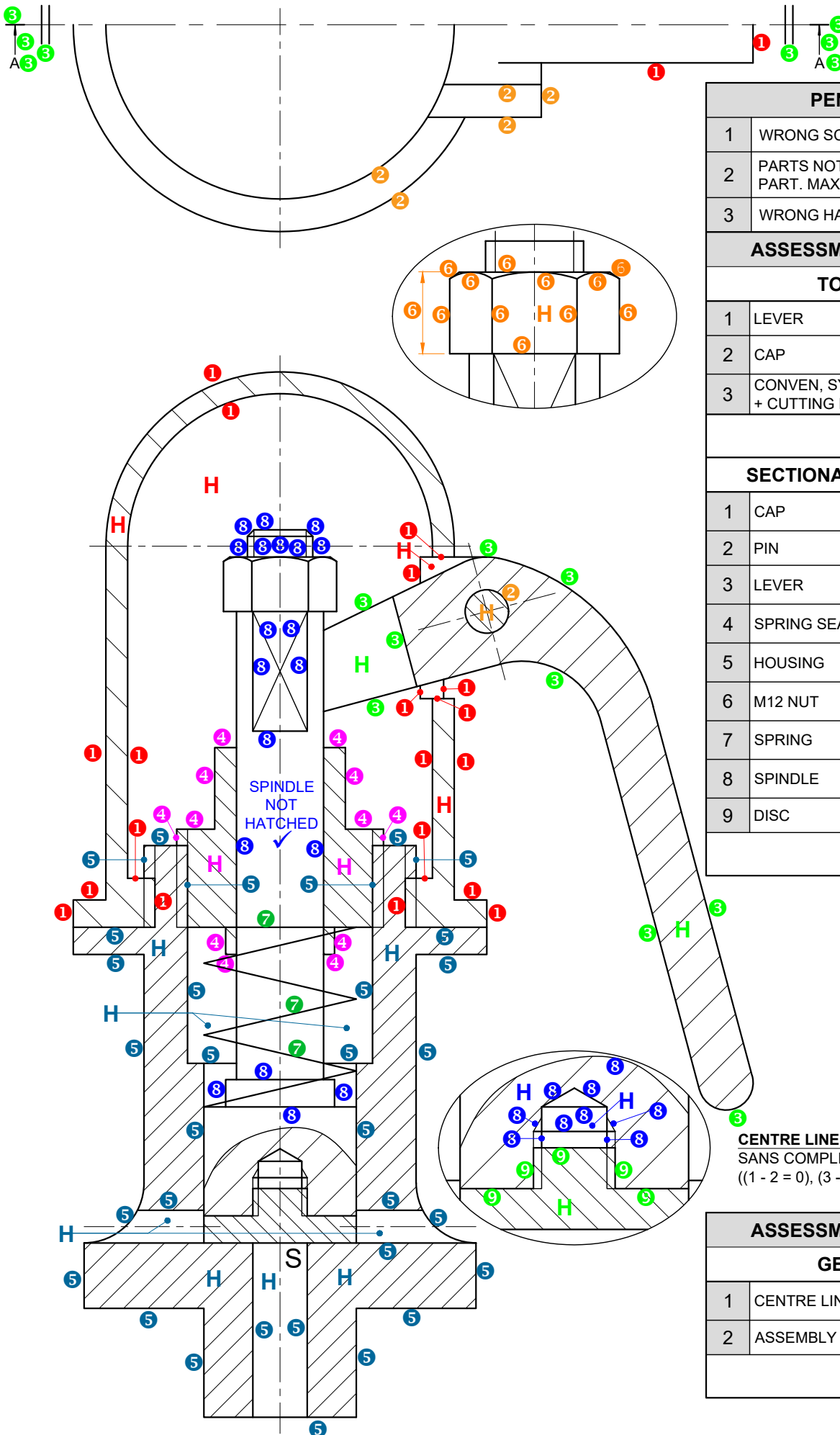
Please turn over

QUESTION 3: ISOMETRIC



ASSESSMENT CRITERIA		
1	CONSTR' + PLACEMENT	2
2	BASE	11½
3	TOWER + HEXAGON + CIRCLE	15
4	SECTION A-A	14½
TOTAL		43

QUESTION 4: MECHANICAL ASSEMBLY



PENALTIES

1	WRONG SCALE -2
2	PARTS NOT ASSEMBLED. -1 PER PART. MAX. -8.
3	WRONG HATCHING -2

ASSESSMENT CRITERIA

TOP VIEW

1	LEVER	1
2	CAP	2 $\frac{1}{2}$
3	CONVEN, SYMMETRY LINES + CUTTING PLANE	4

SUB-TOTAL 7 $\frac{1}{2}$

SECTIONAL FRONT VIEW

1	CAP	11 $\frac{1}{2}$
2	PIN	1
3	LEVER	5 $\frac{1}{2}$
4	SPRING SEAT	7
5	HOUSING	19 $\frac{1}{2}$
6	M12 NUT	6 $\frac{1}{2}$
7	SPRING	1 $\frac{1}{2}$
8	SPINDLE	16
9	DISC	3

SUB-TOTAL 71 $\frac{1}{2}$

CENTRE LINES

SANS COMPLIANT (LINE TYPE)	1
((1 - 2 = 0), (3 - 5 = 1), (6 - 8 = 2))	2
	3

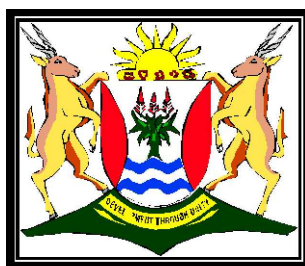
ASSESSMENT CRITERIA

GENERAL

1	CENTRE LINES	3
2	ASSEMBLY	8

SUB-TOTAL 11

7



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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		