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GRADE 12

SEPTEMBER 2023

ENGINEERING GRAPHICS AND DESIGN P2

SEPTEMBER 2023

**PREPARATORY EXAMINATION
MARKING GUIDELINE**

MARKS: 200

TIME: 3 hours

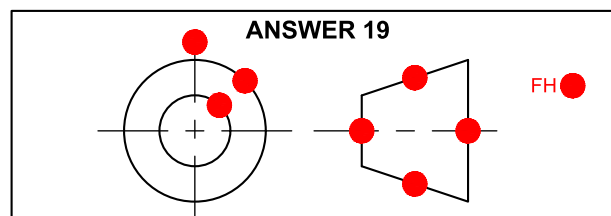
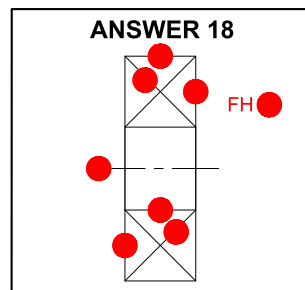
This marking guideline consists of 7 pages.

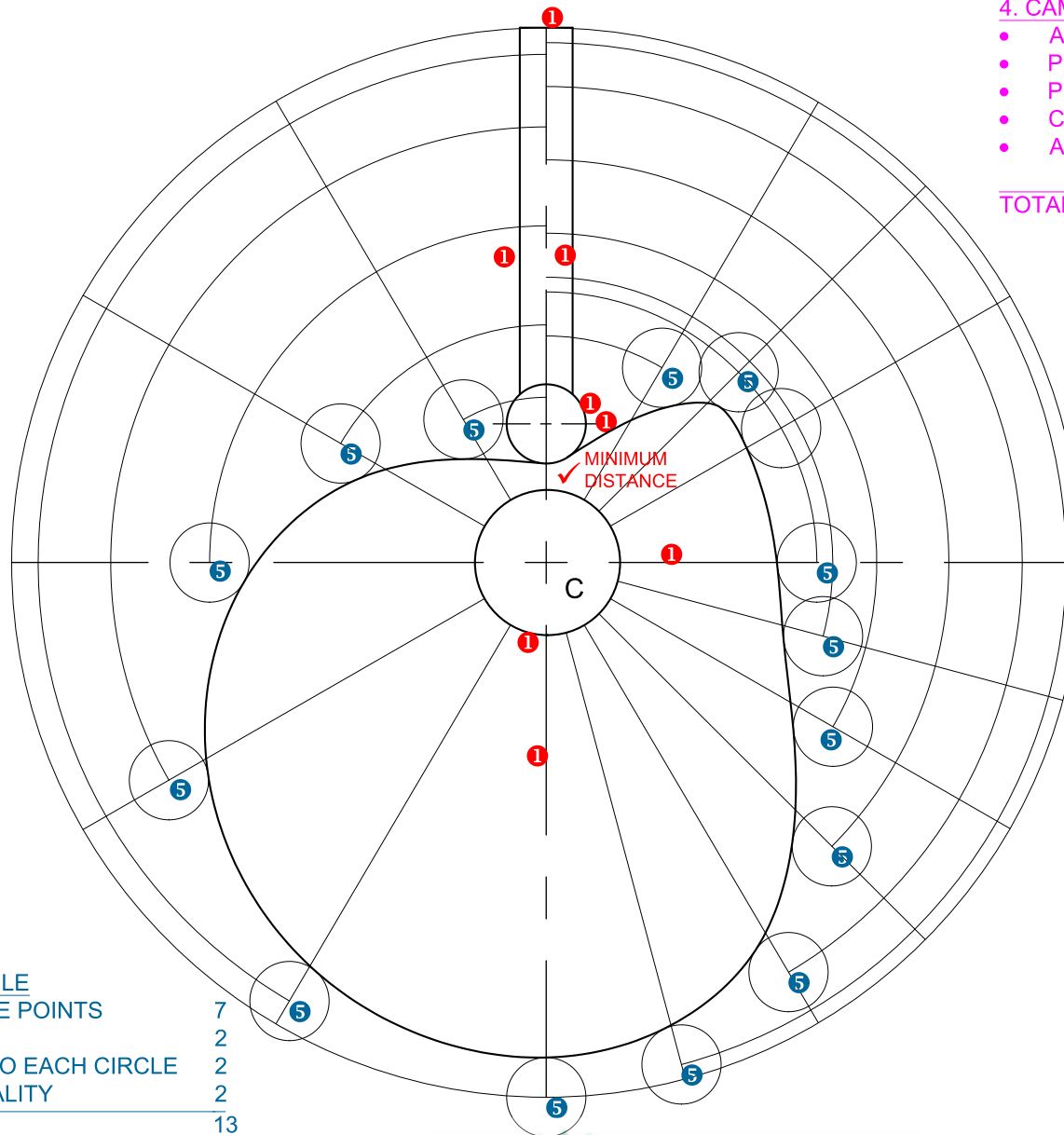
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QUESTION 1: ANALYTICAL (MECHANICAL)

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	$A = 50$, $B = 40$, $C = \varnothing 30$	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



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

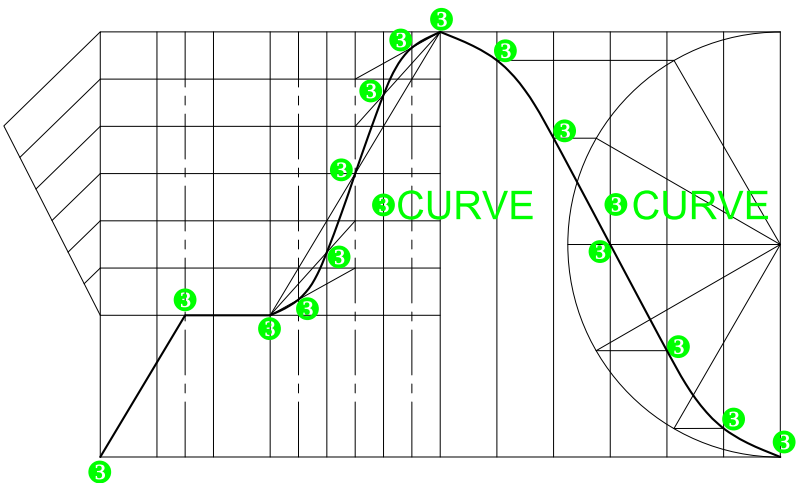
- 14 x CENTRE POINTS 7
 - ROLLERS 2
 - TANGENT TO EACH CIRCLE 2
 - CURVE QUALITY 2
- TOTAL** 13

ASSESSMENT CRITERIA

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

3

QUESTION 2: LOCI (CAM)



DISPLACEMENT GRAPH ✓
SCALE 30° = 8 mm

2. GRAPH CONSTRUCTION

- BASE LENGTH 96 mm 0.5
- 12 DIVISIONS @ 8 mm 0.5

UNIFORM ACCELERATION + RETARDATION

- HEIGHT 40 mm 0.5
- LINE DIVISION (40 mm) 6 EQUAL PARTS 1
- FIRST HALF CONSTRUCTION 0.5
- SECOND HALF CONSTRUCTION 0.5
- 15° SUBDIVISIONS 0.5

SIMPLE HARMONIC MOTION

- SEMI CIRCLE 0.5
- CIRCLE DIVISION 0.5
- PROJECTION 0.5
- TOTAL 5 1/2**

ASSESSMENT CRITERIA

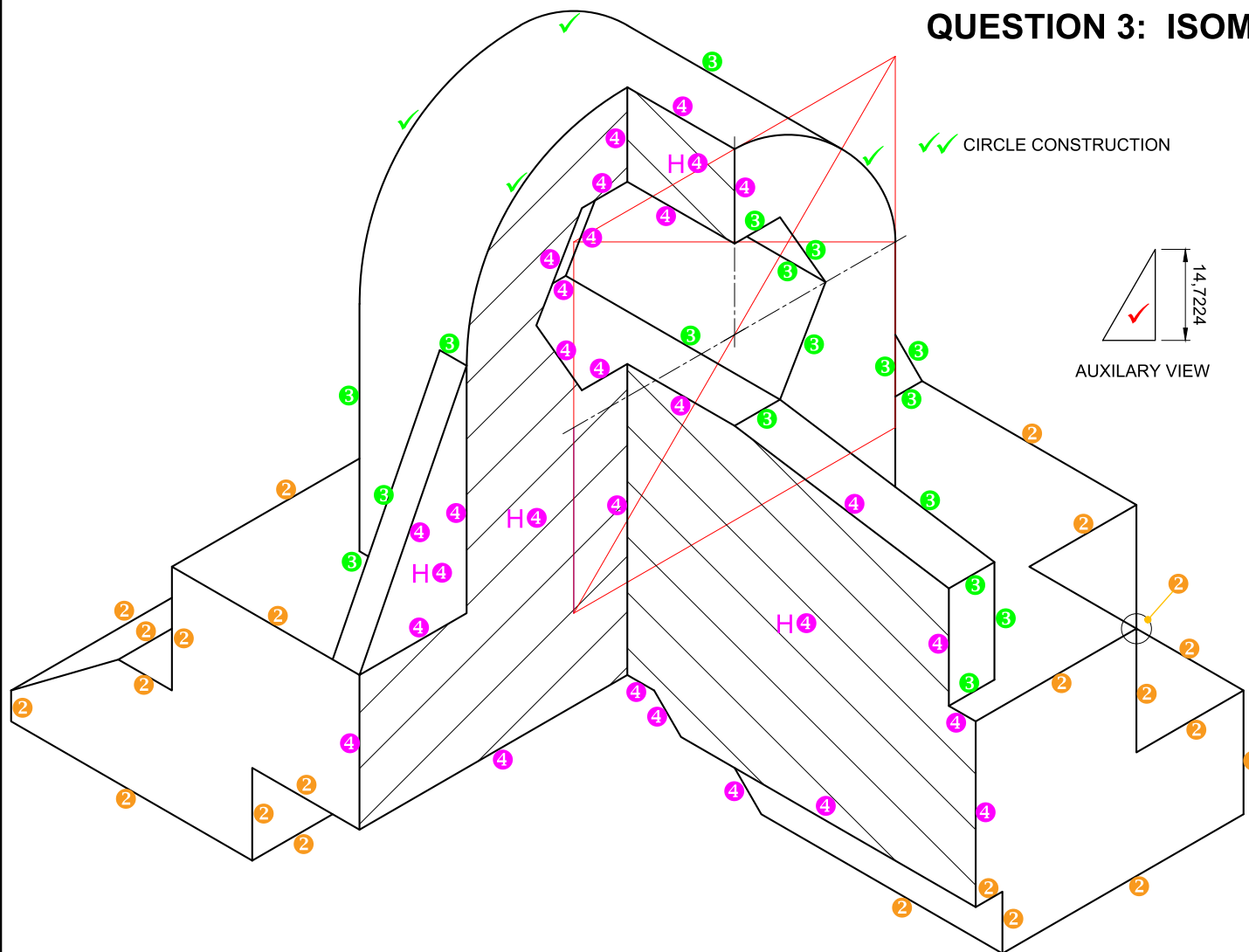
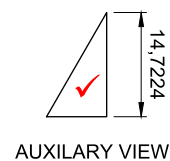
✓ 1	1	GIVEN + MINIMUM DISTANCE + CENTRE LINES	5
✓ 2	2	GRAPH CONSTRUCTION	5 1/2
✓ 3	3	DISPLACEMENT GRAPH	9 1/2
✓ 4	4	CAM CONSTRUCTION	5
5	5	CAM + CURVE QUALITY	13
TOTAL			38

4



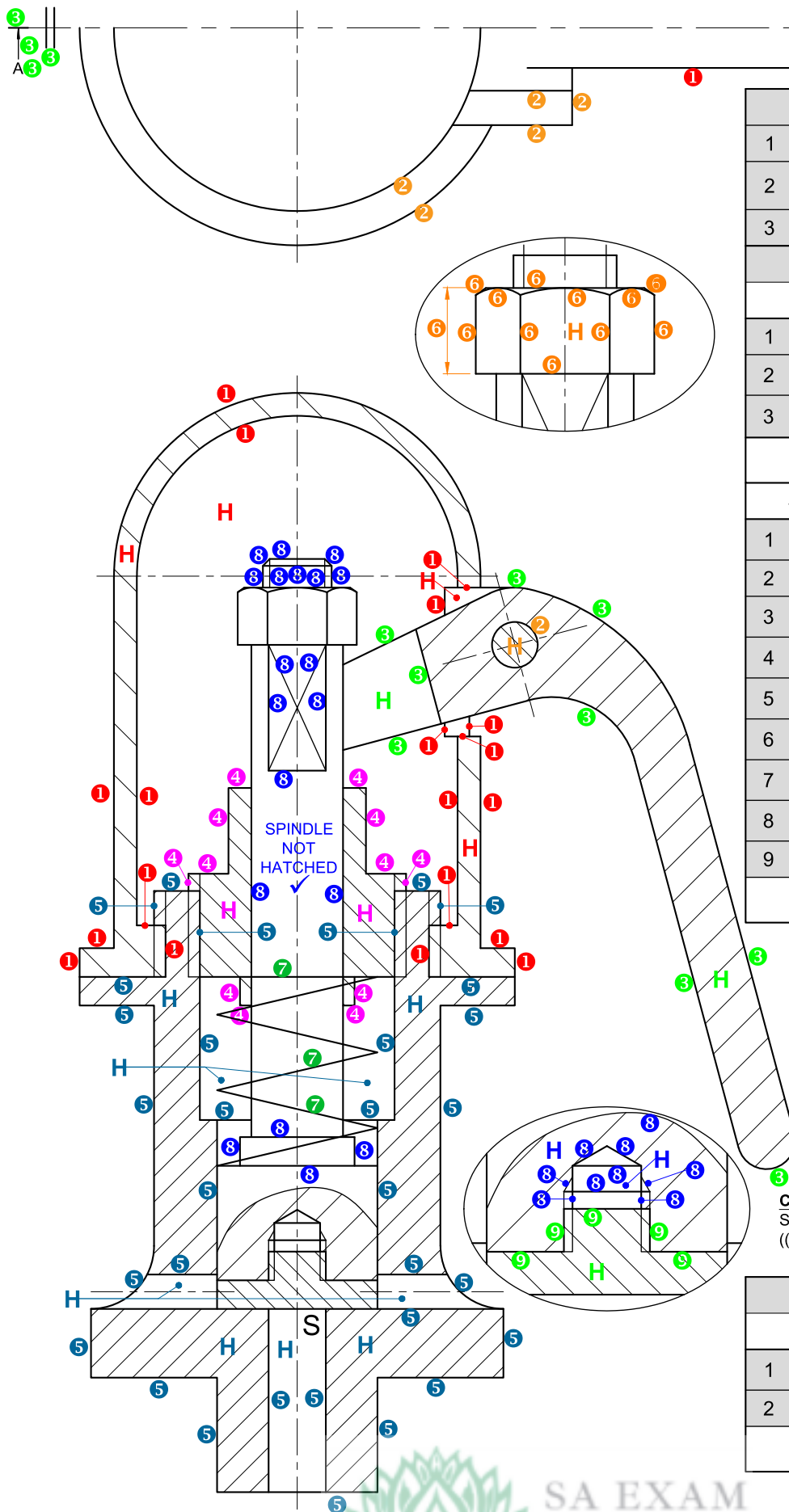
QUESTION 3: ISOMETRIC

✓✓ CIRCLE CONSTRUCTION

**ASSESSMENT CRITERIA**

✓	1	CONSTR' + PLACEMENT	2
2	2	BASE	11½
3	3	TOWER + HEXAGON + CIRCLE	15
4	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	2½
3	CONVEN, SYMMETRY LINES + CUTTING PLANE	4

SUB-TOTAL 7½

SECTIONAL FRONT VIEW

1	CAP	11½
2	PIN	1
3	LEVER	5½
4	SPRING SEAT	7
5	HOUSING	19½
6	M12 NUT	6½
7	SPRING	1½
8	SPINDLE	16
9	DISC	3

SUB-TOTAL 71½

CENTRE LINES

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

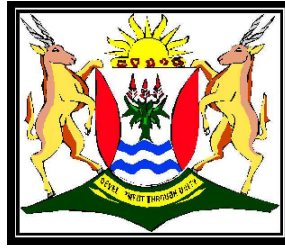
1
2
3

ASSESSMENT CRITERIA

GENERAL

1	CENTRE LINES	3
2	ASSEMBLY	8
SUB-TOTAL		11

7



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

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**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		

