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NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P2

SEPTEMBER 2025

**PREPARATORY EXAMINATION
MARKING GUIDELINE**

MARKS: 200

TIME: 3 hours

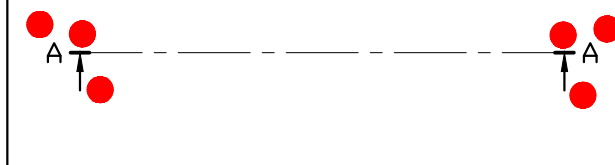
This marking guideline consists of 7 pages.

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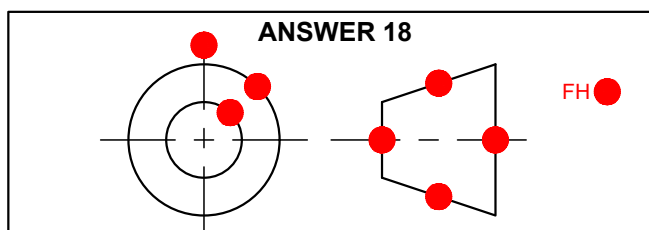
QUESTION 1: ANALYTICAL (MECHANICAL)

ANSWERS		
1	2025/01/06	1
2	BRASS	1
3	NO: 1 OF 3	1
4	M COMBS	1
5	NOT TO SCALE	1
6	151 mm	1
7	FILLET	1
8	SECTIONAL FRONT VIEW	2
9	SECTION OF COMPONENTS TOO THIN OR SMALL FOR HATCHING MAY BE FILLED IN SOLID / THE COMPONENT IS MADE OF RUBBER.	1
10	60°	1
11	TO ALLOW FOR FLOW OF LIQUIDS THROUGH THE PUMP.	2
12	D = 208,5 mm , E = 46 mm , F = 0,7 x 8 = 5,6 mm G = 1,5 x 8 = 12 mm	4
13	HALF SECTION	1
14	INTERRUPTED VIEW / S-BREAK	1
15	7	1
16	155 + 0,27 = 155,27 mm	2
17	SEE BELOW	3
18	SEE BELOW	4
TOTAL		29

ANSWER 17



ANSWER 18

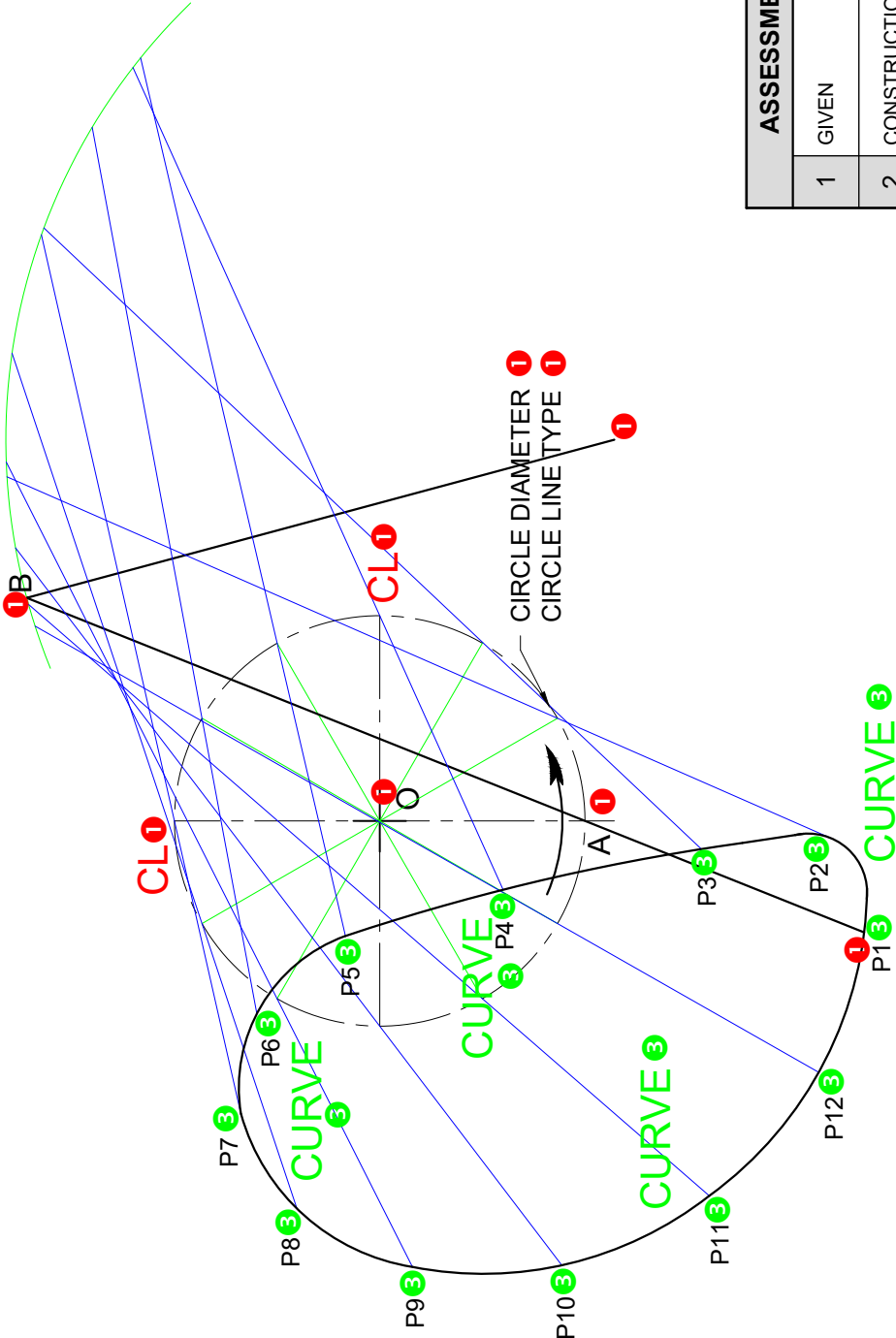


QUESTION 2.1: LOCI (MECHANISM)

1. GIVEN
- POINT A ROTATION AROUND O

• ARROW
- TOTAL

2



2. CONSTRUCTION OF DIAGRAM
- CIRCLE DIVISIONS

• CONSTRUCTIONS ARC BC

• CONSTRUCTION OF AB

• EXTENDED TO P
- TOTAL

5

ASSESSMENT CRITERIA	
1	GIVEN
2	CONSTRUCTION OF DIAGRAM
3	CONSTRUCTION OF LOCI
TOTAL	

3

QUESTION 2.2: LOCI (CAM)

1. CAM CONSTRUCTION
- ALIGNMENT WITH MIN. DISTANCE

• PLOT DIRECTION CLOCKWISE

• DIRECTION INDICATED

• PROJECTION FROM GRAPH

• CIRCLE DIVISION

• ARC PROJECTION

1

1

1

1

1

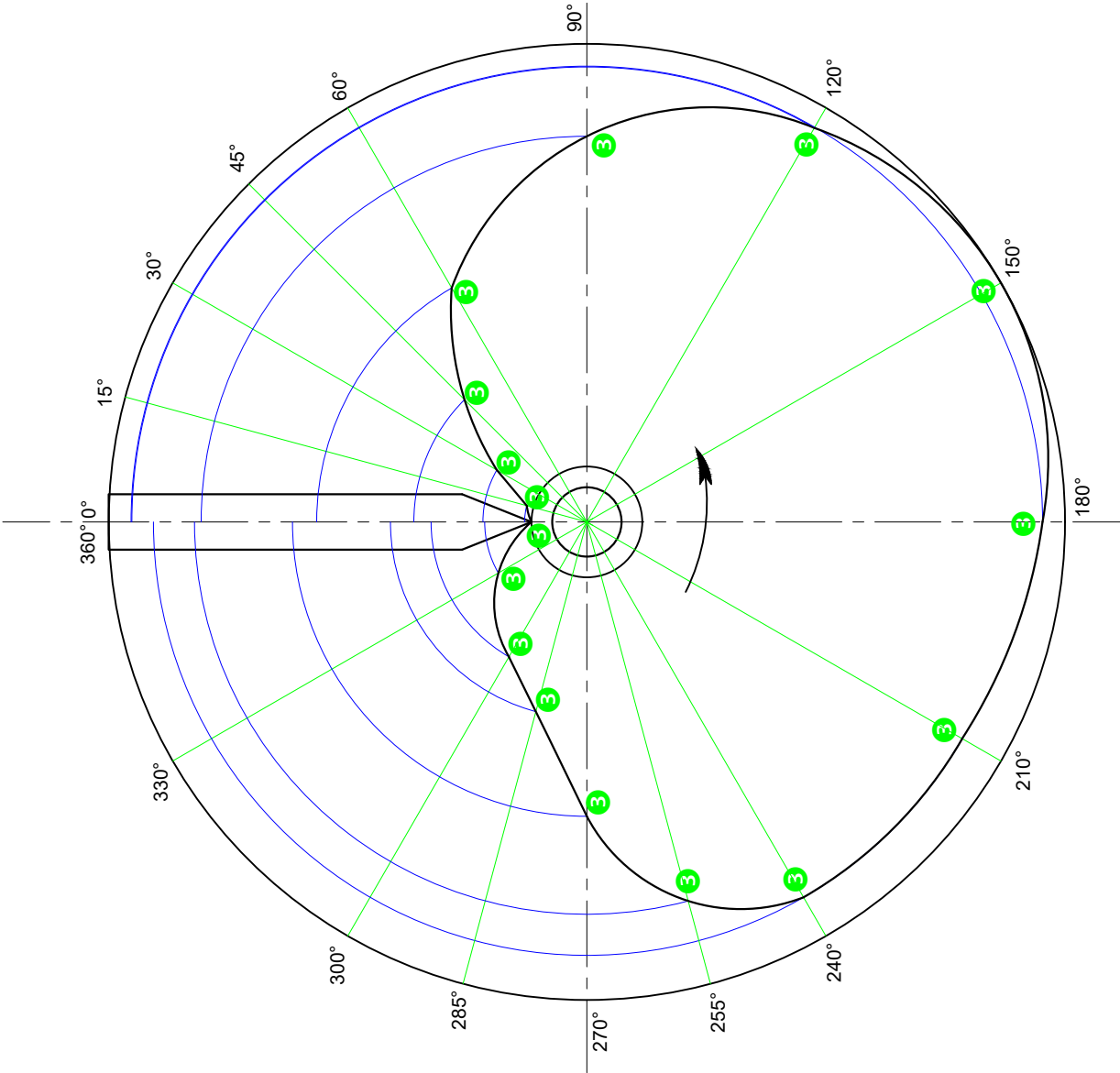
1
- TOTAL6

2. CURVE QUALITY
- THROUGH WEDGE FOLLOWER POINTS

• CURVE QUALITY

2

2
- TOTAL4

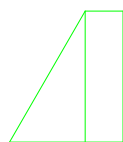


ASSESSMENT CRITERIA	
1	CAM CONSTRUCTION
2	CURVE QUALITY
3	CAM PROFILE
TOTAL	

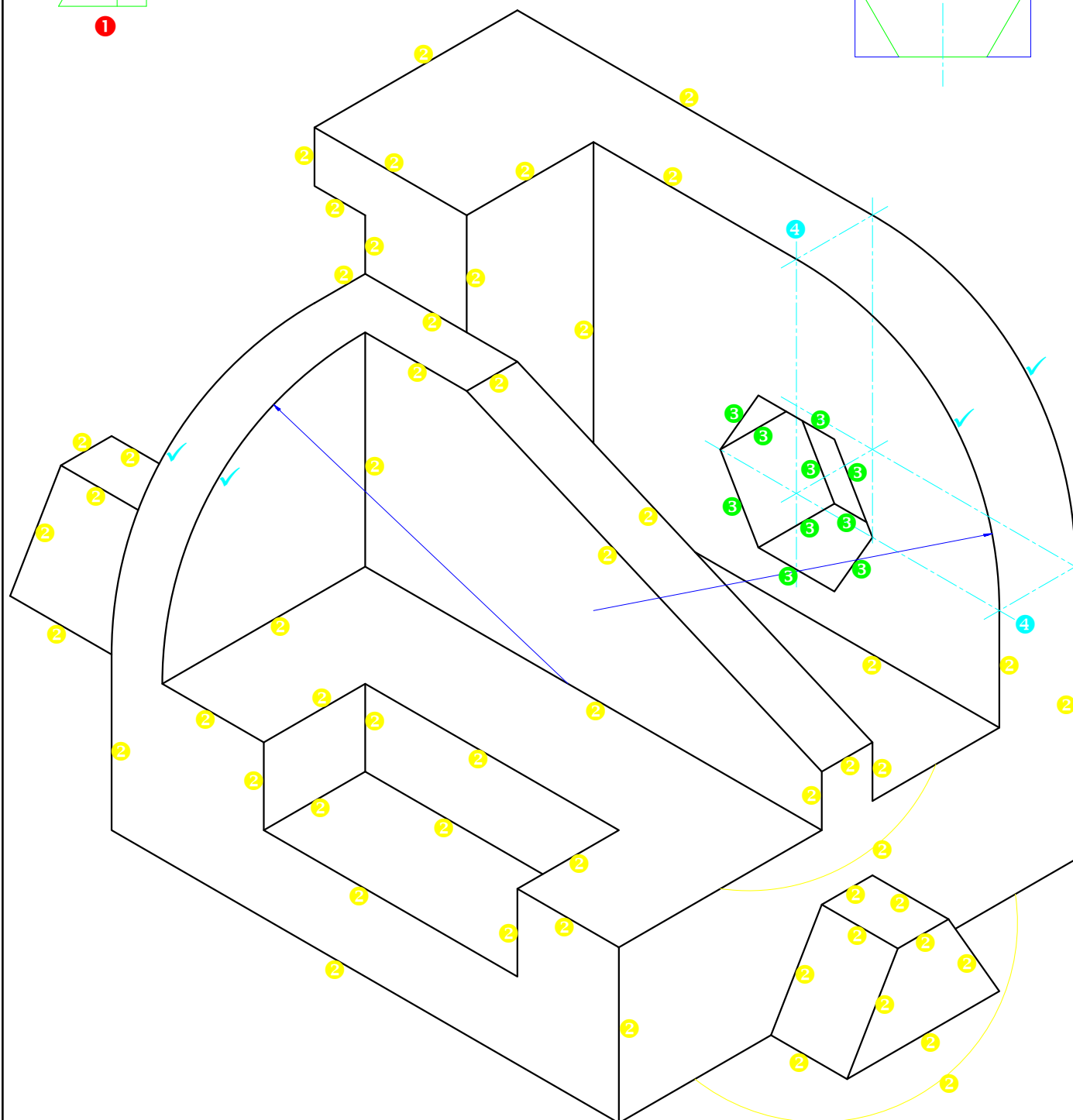
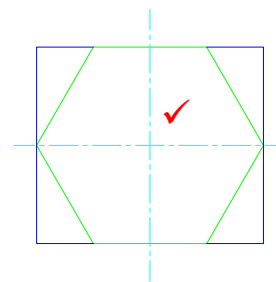
6
4
8
18

4

QUESTION 3: ISOMETRIC



1



ASSESSMENT CRITERIA

1	CONSTR' + PLACEMENT	2 $\frac{1}{2}$
2	ISO'- + NON ISO' LINES	27 $\frac{1}{2}$
3	HEXAGON	5
4	HALF CIRCLE + CL'S	5
TOTAL		40

5

QUESTION 4: MECHANICAL ASSEMBLY

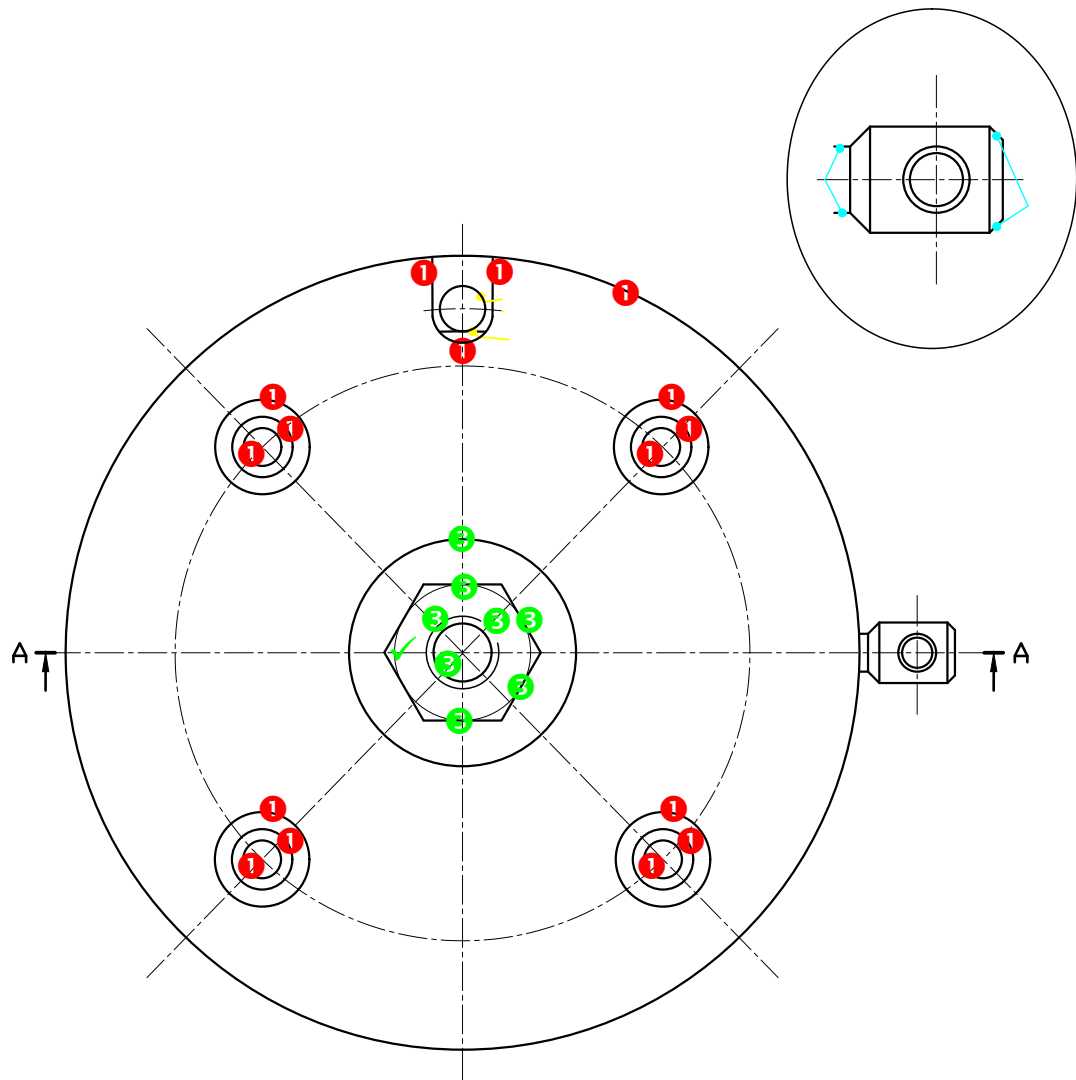
PENALTIES

1	WRONG SCALE	-2
2	PARTS NOT ASSEMBLED (-1 PER PART)	-8
3	WRONG HATCHING	-2
TOTAL PENALTIES (-)		

ASSESSMENT CRITERIA

GENERAL

1	CENTRE LINES: SANS COMPLIANCE = 1 CHAINLINE + (1 - 4 LYNE) = 1 OR CHAINLINE + (5 - 10 LYNE) = 2	3
2	ASSEMBLY	9
SUB-TOTAL		12

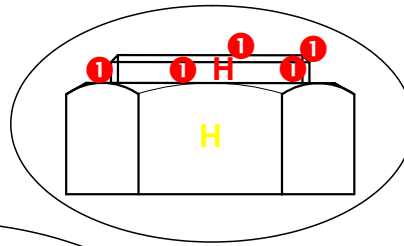


TOP VIEW

1	DRILL PLATE + BUSH	8
2	BASE + FLANGED COUPLING PLATE	1
3	WASHER + NUT	5
4	CLAMPING SCREW	5
5	SECTION A-A	3
SUB-TOTAL		22

6

QUESTION 4: MECHANICAL ASSEMBLY



SECTIONAL FRONT VIEW		
1	EXPANDER BOLT	$10\frac{1}{2}$
2	NUT+ WASHER	$6\frac{1}{2}$
3	DRILL PLATE	$4\frac{1}{2}$
4	FLANGED COUPLING PLATE	$5\frac{1}{2}$
5	COLLET	6
6	HARDENED SLEEVE	$5\frac{1}{2}$
7	BASE	$7\frac{1}{2}$
8	CLAMPING SCREW	$11\frac{1}{2}$
SUB-TOTAL		$57\frac{1}{2}$

