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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P2

NOVEMBER 2021

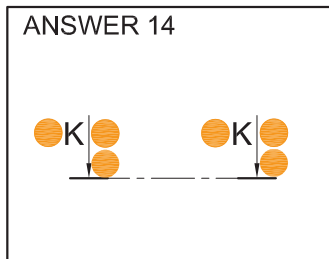
MARKING GUIDELINES

MARKS: 100

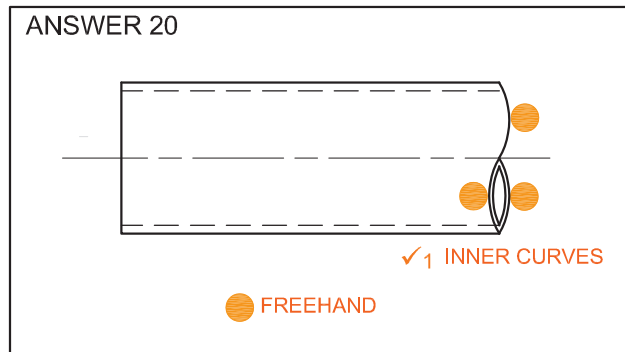
These marking guidelines consist of 6 pages.

ANSWERS		
1	CHECKING THE DRAWING	1
2	FILE NAME	1
3	CUT BOLT MANUFACTURERS	1
4	3	1
5	LEFT VIEW	1
6	2000	1
7	6	1
8	FLAT SURFACE / SQUARE ON A SHAFT / NOT ROUND	1
9	REVOLVED SECTION	1
10	A: $20 / \varnothing 20 = \frac{1}{2}$ B: 25 C: AF12 / $\varnothing 12$	3
11	24° / 25° / 26°	1
12	135	1
13	1,2	1
14	<i>See below</i>	3
15	4	1
16	LAY/DIRECTION OF MACHINING/ PERPENDICULAR/ 90°	1
17	CIVIL HATCHING	1
18	7,79	1
19	P	1
	H	1
	G	1
	K	1
	L	1
20	<i>See below</i>	3
TOTAL		30

ANSWER 14



ANSWER 20



ASSESSMENT CRITERIA		
1	GIVEN + MINIMUM DISTANCE + CL	5
2	GRAPH CONSTRUCTION	6
3	PLOTTING GRAPH + GRAPH CURVES	8 $\frac{1}{2}$
4	CAM CONSTRUCTION	5
5	CAM + CURVE QUALITY	13 $\frac{1}{2}$
TOTAL		38

- ## 2 GRAPH CONSTRUCTION

- LENGTH (96 mm)
- 12 EQUAL DIVISIONS

SIMPLE HARMONIC MOTION

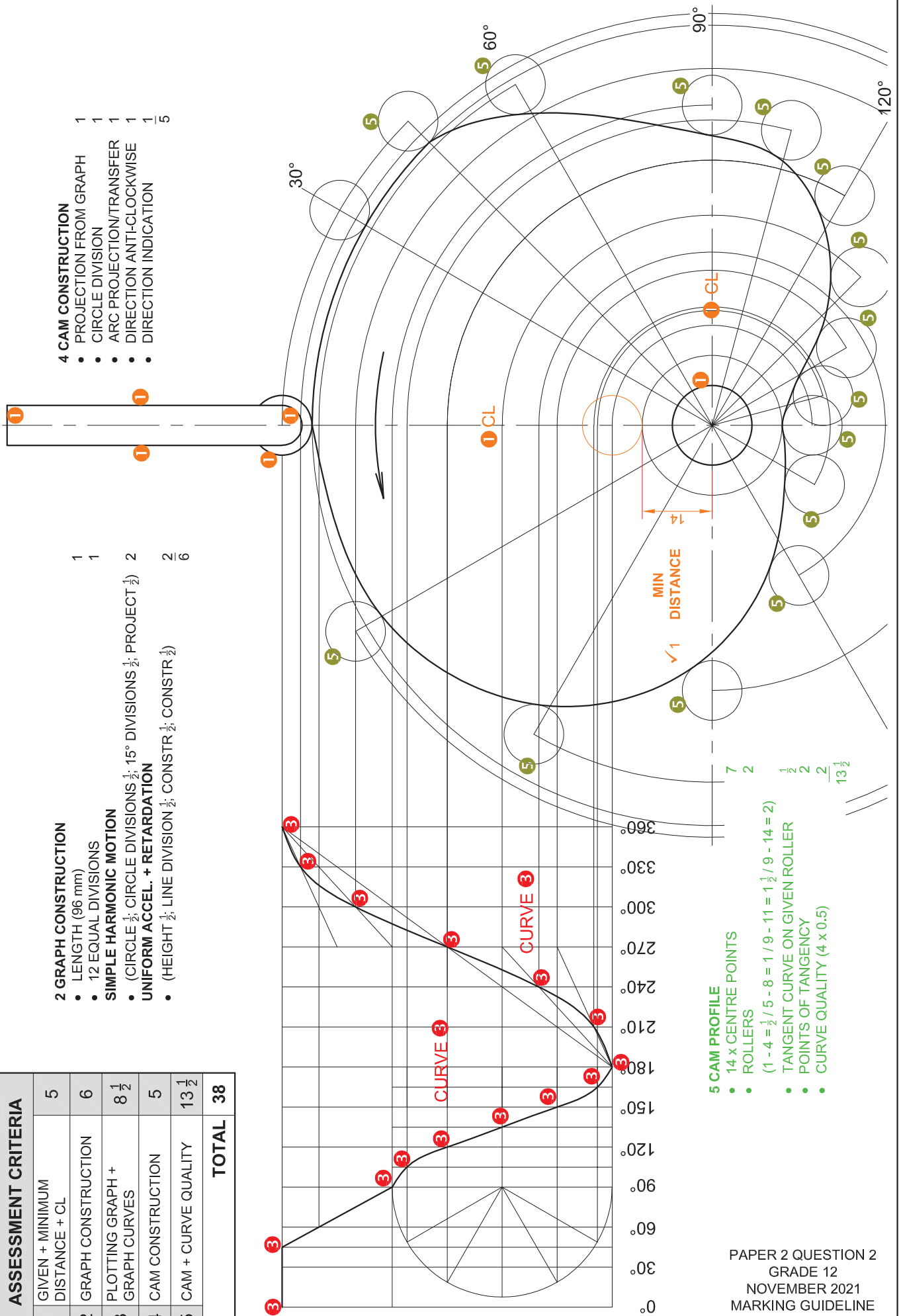
- (CIRCLE $\frac{1}{2}$; CIRCLE DIVISIONS $\frac{1}{2}$; 15° DIVISIONS $\frac{1}{2}$; PROJECT $\frac{1}{2}$)
UNIFORM ACCEL. + RETARDATION

- ## UNIFORM ACCEL. + RETARDATION

- (HEIGHT $\frac{1}{2}$; LINE DIVISION $\frac{1}{2}$; CONSTR $\frac{1}{2}$; CONSTR $\frac{1}{2}$)

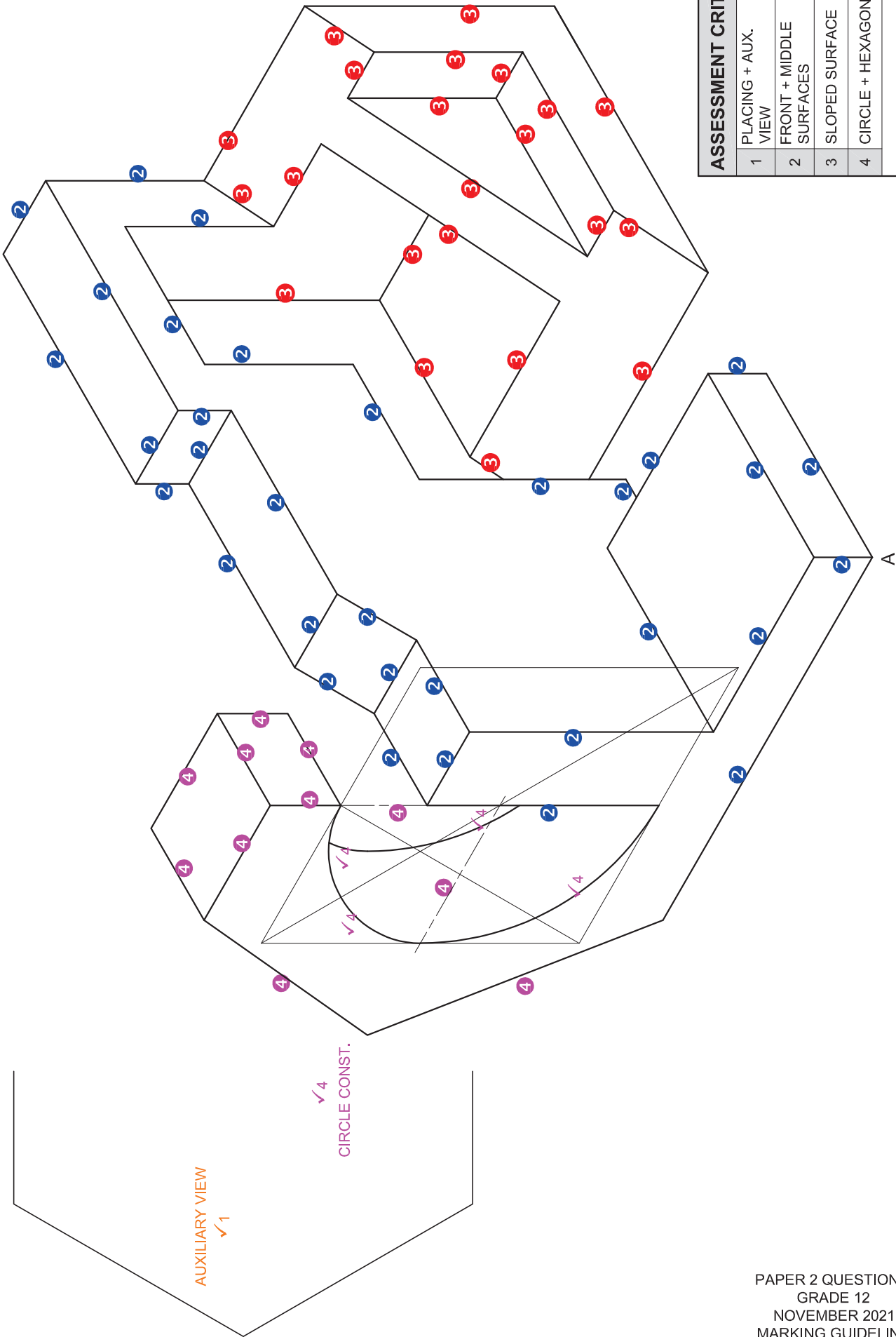
- ## 4 CAM CONSTRUCTION

- PROJECTION FROM GRAPH 1
- CIRCLE DIVISION 1
- ARC PROJECTION/TRANSFER 1
- DIRECTION ANTI-CLOCKWISE 1
- DIRECTION INDICATION 1



PAPER 2 QUESTION 2
GRADE 12
NOVEMBER 2021
MARKING GUIDELINE

ASSESSMENT CRITERIA			
1	PLACING + AUX. VIEW	2	
2	FRONT + MIDDLE SURFACES	16 $\frac{1}{2}$	
3	SLOPED SURFACE	11	
4	CIRCLE + HEXAGON	10 $\frac{1}{2}$	
TOTAL		40	

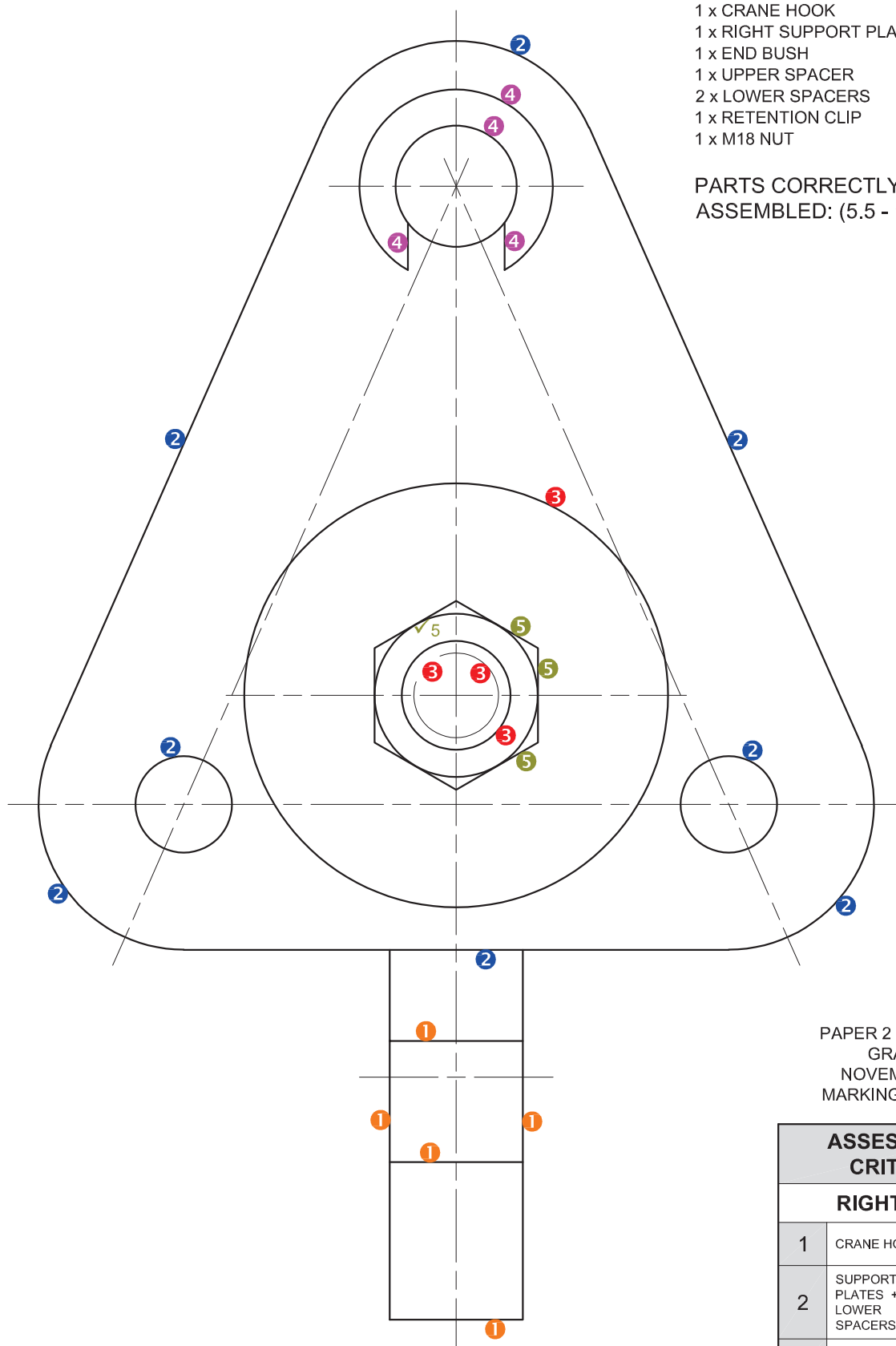


PAPER 2 QUESTION 3
GRADE 12
NOVEMBER 2021
MARKING GUIDELINE

2. ASSEMBLY if ONLY RIGHT VIEW DRAWN

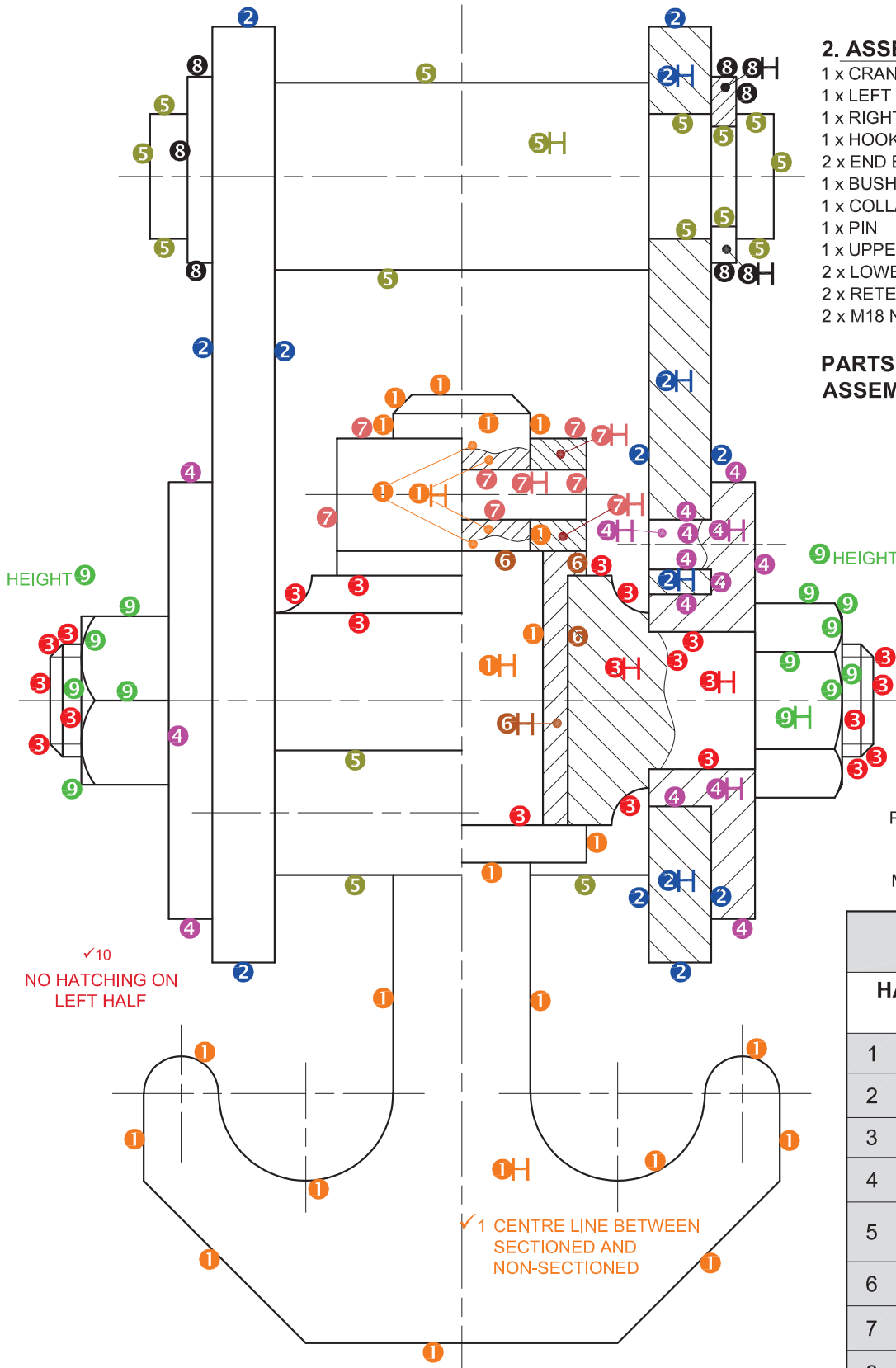
1 x CRANE HOOK	1
1 x RIGHT SUPPORT PLATE	1
1 x END BUSH	0.5
1 x UPPER SPACER	1
2 x LOWER SPACERS	1
1 x RETENTION CLIP	0.5
1 x M18 NUT	0.5
	<u>5.5</u>

PARTS CORRECTLY
ASSEMBLED: (5.5 - 1 = 4.5)



PAPER 2 QUESTION 4
GRADE 12
NOVEMBER 2021
MARKING GUIDELINE

ASSESSMENT CRITERIA		
RIGHT VIEW		
1	CRANE HOOK	2 $\frac{1}{2}$
2	SUPPORT PLATES + LOWER SPACERS	4
3	HOOK ANCHOR + END BUSH	2
4	RETENTION CLIP + UPPER SPACER	2
5	M18 NUT	2 $\frac{1}{2}$
SUBTOTAL		13

**2. ASSEMBLY**

1 x CRANE HOOK	1
1 x LEFT SUPPORT PLATE	1
1 x RIGHT SUPPORT PLATE	1
1 x HOOK ANCHOR	1
2 x END BUSH	1
1 x BUSH	1
1 x COLLAR	1
1 x PIN	1
1 x UPPER SPACER	1
2 x LOWER SPACERS	1
2 x RETENTION CLIPS	1
2 x M18 NUTS	1
	<u>12</u>

**PARTS CORRECTLY
ASSEMBLED: (12 - 1 = 11)**

PAPER 1 QUESTION 4
GRADE 12
NOVEMBER 2021
MARKING GUIDELINE

ASSESSMENT CRITERIA		
HALF SECTIONAL FRONT VIEW		
1	CRANE HOOK	13
2	SUPPORT PLATES	7
3	HOOK ANCHOR	11
4	END BUSHES	7 $\frac{1}{2}$
5	UPPER + LOWER SPACERS	8
6	BUSH	2
7	COLLAR + PIN	4 $\frac{1}{2}$
8	RETENTION CLIPS	4
9	M18 NUTS	7
10	NO HATCHING LEFT HALF	1
SUBTOTAL		65
GENERAL		
1	CENTRE LINES	3
2	ASSEMBLY	11

1	CRANE HOOK	13
2	SUPPORT PLATES	7
3	HOOK ANCHOR	11
4	END BUSHES	7 $\frac{1}{2}$
5	UPPER + LOWER SPACERS	8
6	BUSH	2
7	COLLAR + PIN	4 $\frac{1}{2}$
8	RETENTION CLIPS	4
9	M18 NUTS	7
10	NO HATCHING LEFT HALF	1

SUBTOTAL 65

GENERAL

1	CENTRE LINES	3
2	ASSEMBLY	11

1. CENTRE LINE MARK ALLOCATION

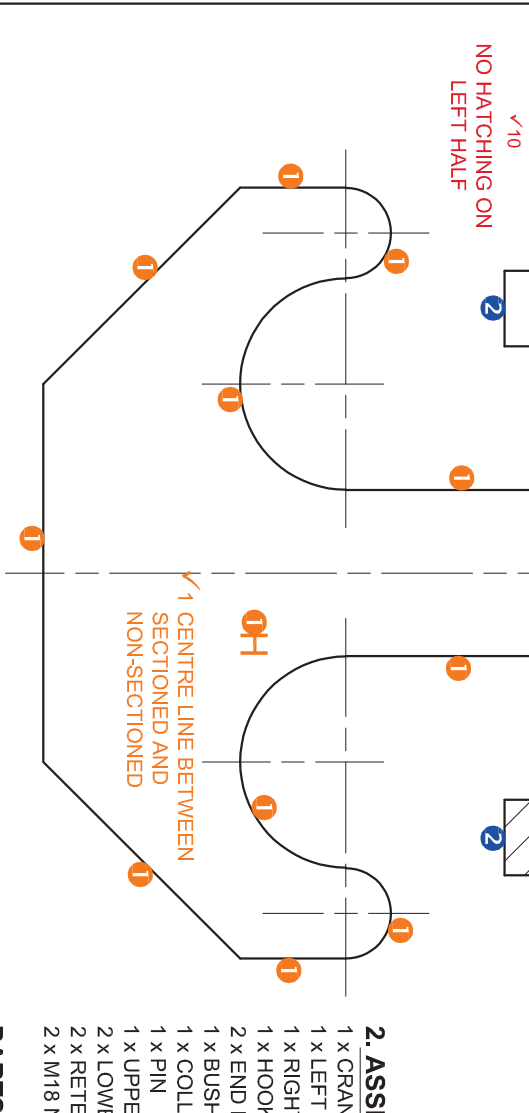
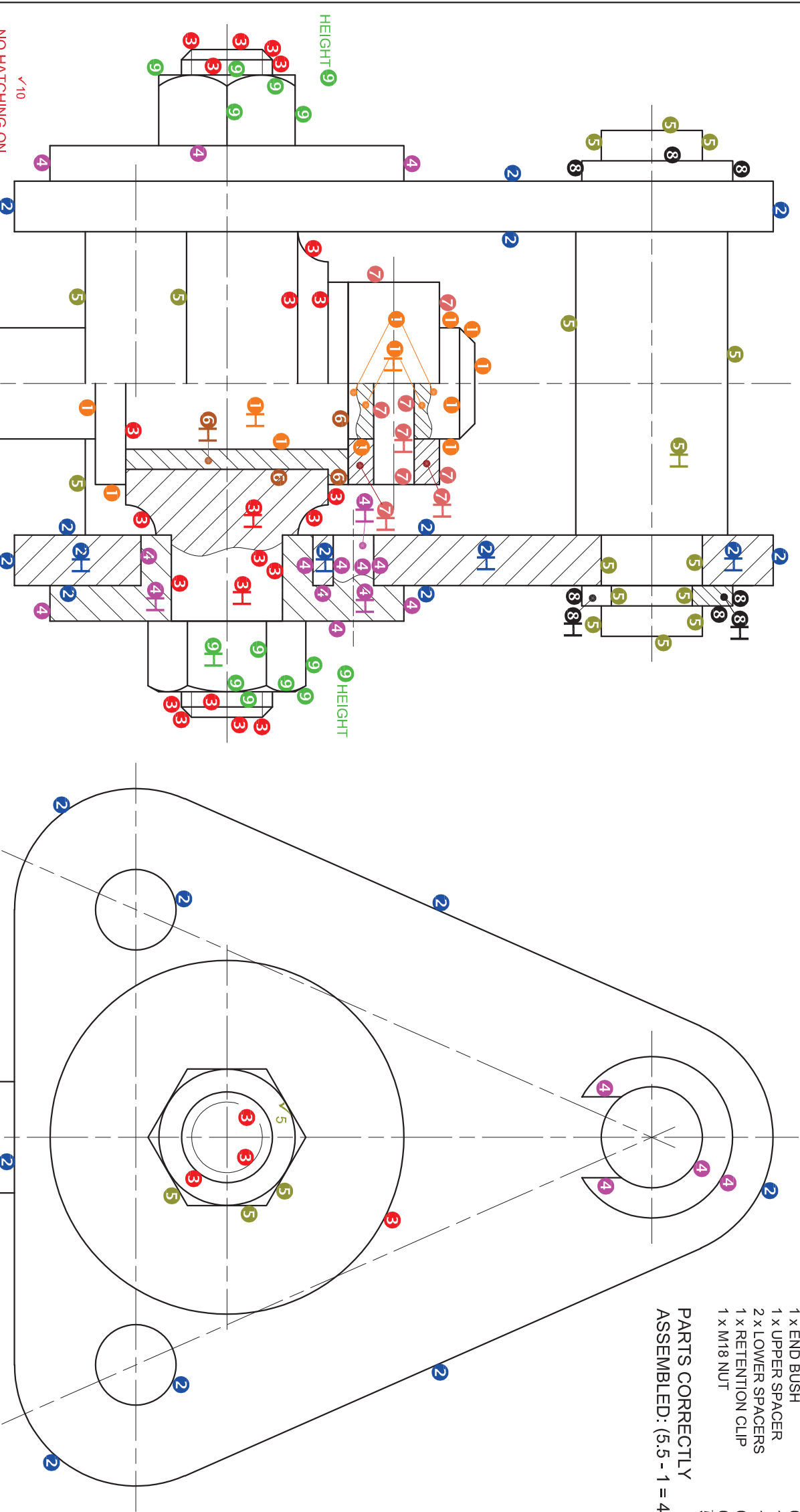
SANS COMPLIANT (CHAIN LINE) 1
 $(1 - 4 = 0 / 5 - 12 = 1 / 13 - 16 = 2)$ $\frac{2}{3}$

FOR OFFICIAL USE ONLY	
INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
TOTAL PENALTIES (-)	

2. ASSEMBLY if ONLY
RIGHT VIEW DRAWN

1 x CRANE HOOK	1
1 x RIGHT SUPPORT PLATE	1
1 x END BUSH	0.5
1 x UPPER SPACER	1
2 x LOWER SPACERS	0.5
1 x RETENTION CLIP	0.5
1 x M18 NUT	5.5

PARTS CORRECTLY
ASSEMBLED: (5.5 - 1 = 4.5)



2. ASSEMBLY

1 x CRANE HOOK	1
1 x LEFT SUPPORT PLATE	1
1 x RIGHT SUPPORT PLATE	1
1 x HOOK ANCHOR	1
2 x END BUSH	1
1 x BUSH	1
1 x COLLAR	1
1 x PIN	1
1 x UPPER SPACER	1
2 x LOWER SPACERS	1
2 x RETENTION CLIPS	1
2 x M18 NUTS	1

PARTS CORRECTLY
ASSEMBLED: (12 - 1 = 11)

1. CENTRE LINE MARK ALLOCATION
SANS COMPLIANT (CHAIN LINE)

1	1
(1 - 4 = 0 / 5 - 12 = 1 / 13 - 16 = 2)	2
	3

ASSESSMENT CRITERIA				
RIGHT VIEW				
	POSSIBLE	OBTAINED	SIGN	MODERATED
1	CRANE HOOK	2 $\frac{1}{2}$		
2	SUPPORT PLATES + LOWER SPACERS	4		
3	HOOK ANCHOR + END BUSH	2		
4	RETENTION CLIP + UPPER SPACER	2		
5	M18 NUT	2 $\frac{1}{2}$		
SUBTOTAL		13		
HALF SECTIONAL FRONT VIEW				
1	CRANE HOOK	13		
2	SUPPORT PLATES	7		
3	HOOK ANCHOR	11		
4	END BUSHES	7 $\frac{1}{2}$		
5	UPPER + LOWER SPACERS	8		
6	BUSH	2		
7	COLLAR + PIN	4 $\frac{1}{2}$		
8	RETENTION CLIPS	4		
9	M18 NUTS	7		
10	NO HATCHING LEFT HALF	1		
SUBTOTAL		65		
GENERAL				
1	CENTRE LINES	3		
2	ASSEMBLY	11		
SUBTOTAL		14		
TOTAL		92		
PENALTIES (-)				
GRAND TOTAL				
EXAMINATION NUMBER				
EXAMINATION NUMBER				
6				