

# SA-STUDENT

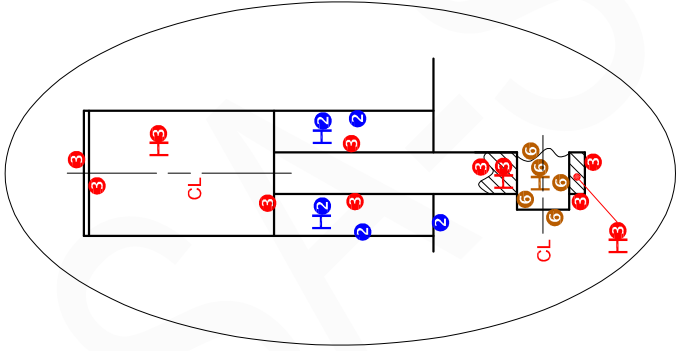
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<https://sa-student.com/>

If it's your job to eat a frog, it's best to do it first thing in the morning. And If it's your job to eat two frogs, it's best to eat the biggest one first.

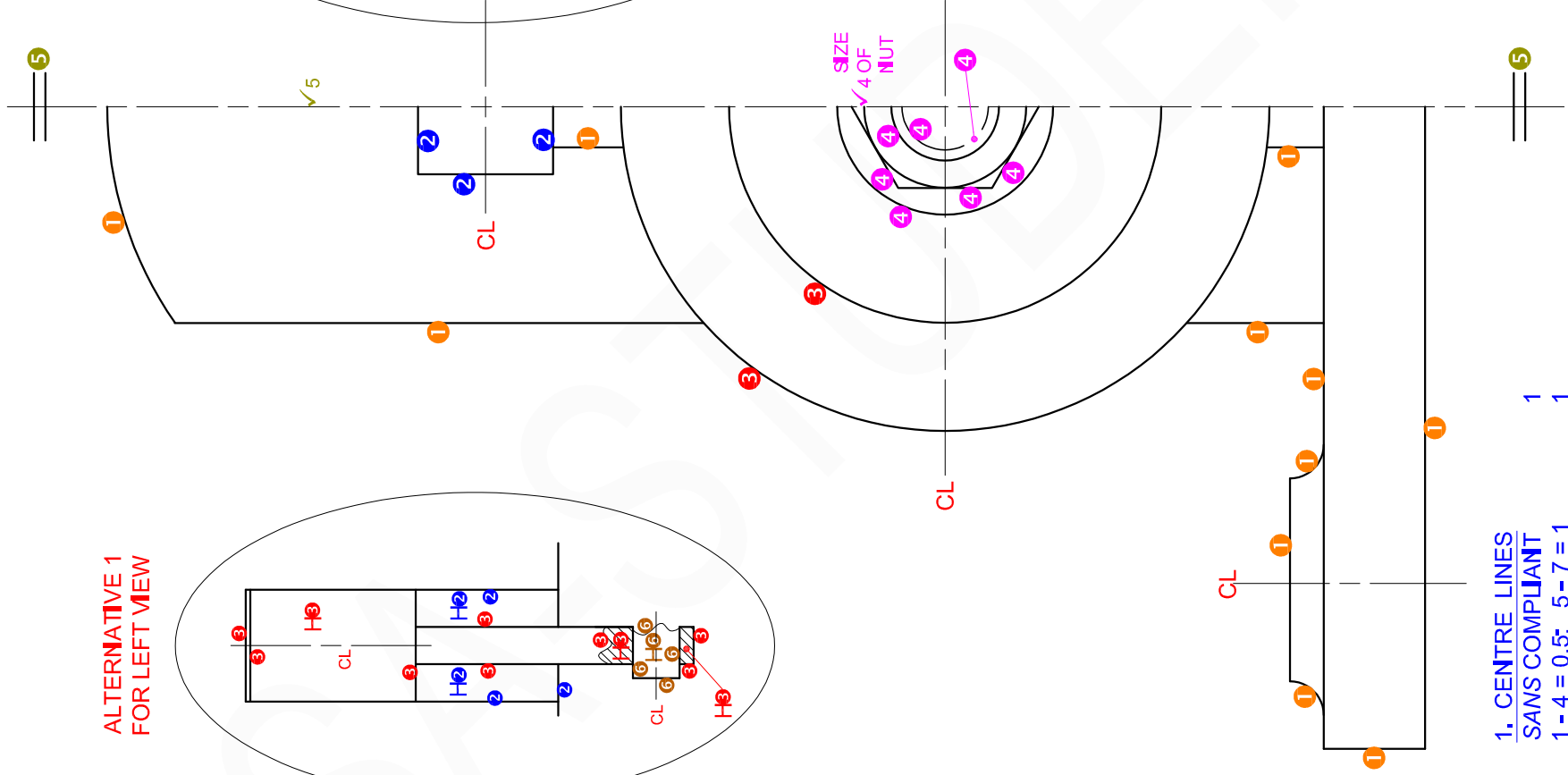
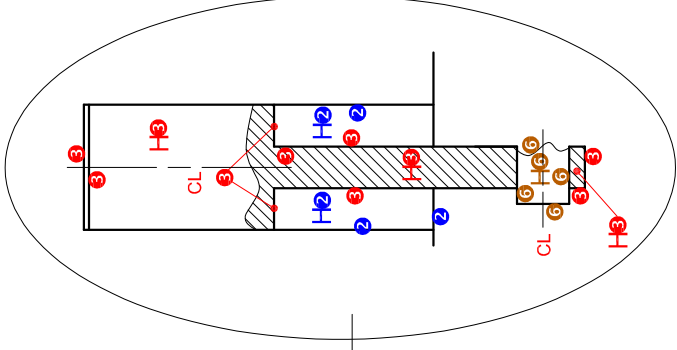
Mark Twain



ALTERNATIVE 1  
FOR LEFT VIEW



ALTERNATIVE 2  
FOR LEFT VIEW



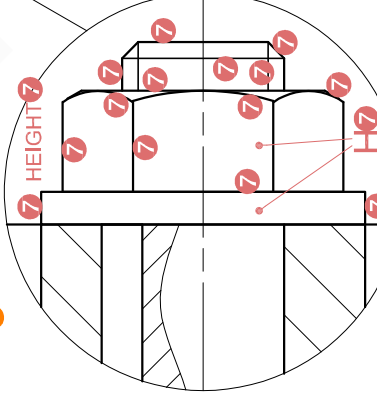
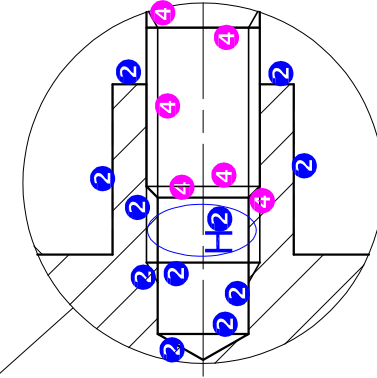
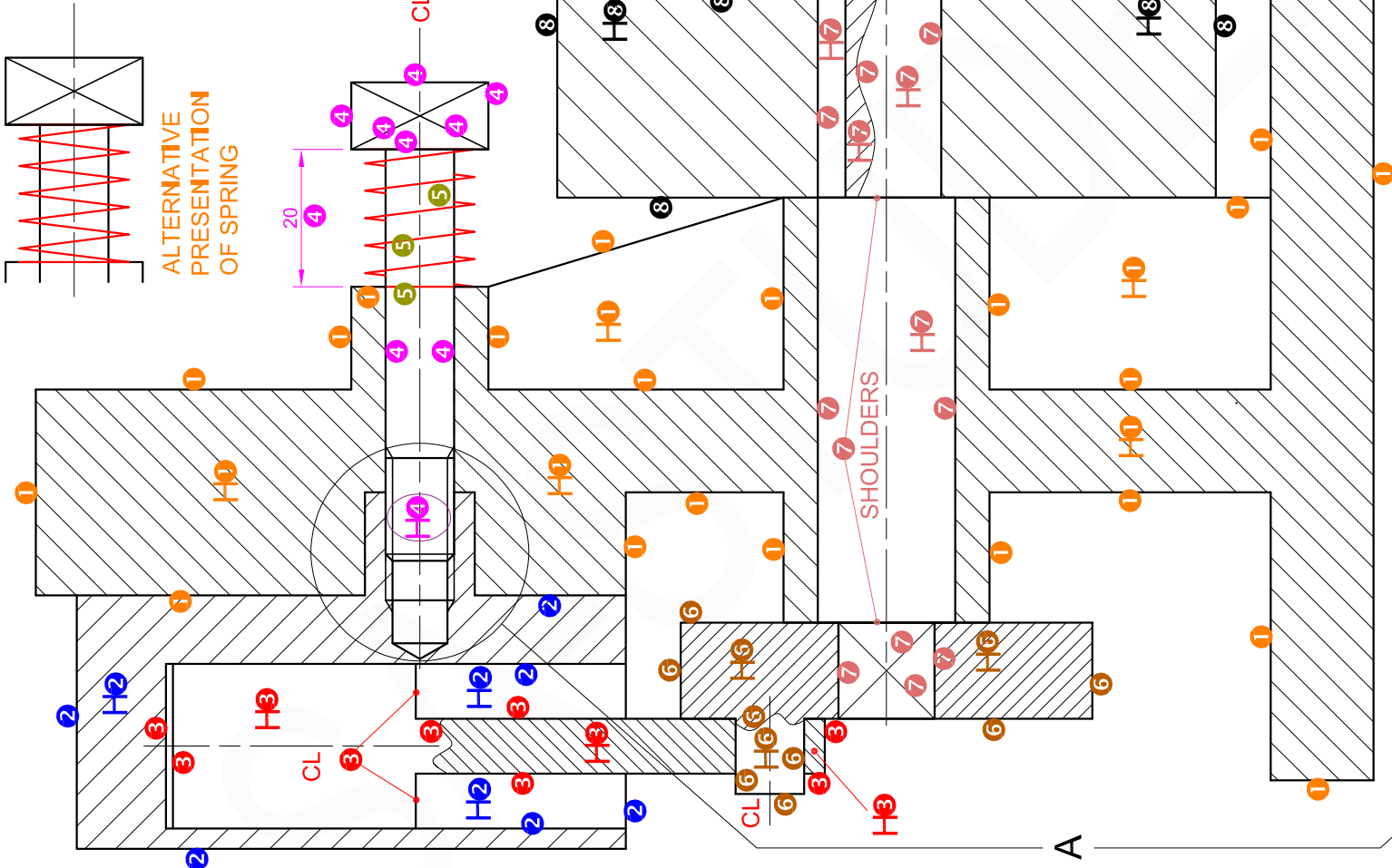
1. CENTRE LINES  
SANS COMPLIANT  
1 - 4 = 0,5; 5 - 7 = 1

1  
1 1/2

2. ASSEMBLY  
1 MARK FOR EVERY COMPONENT  
CORRECTLY ASSEMBLED (11 PARTS - 1) = 10

ASSESSMENT CRITERIA	
FRONT VIEW	
1	BASE 5 1/2
2	TENSION SCREW 1 1/2
3	FLY WHEEL 1
4	NUT + WASHER 4 1/2
5	INDICATION OF SYMMETRY 2
<b>SUBTOTAL 14 1/2</b>	
GENERAL	
1	CENTRE LINES 2
2	ASSEMBLY 10
<b>SUBTOTAL 12</b>	

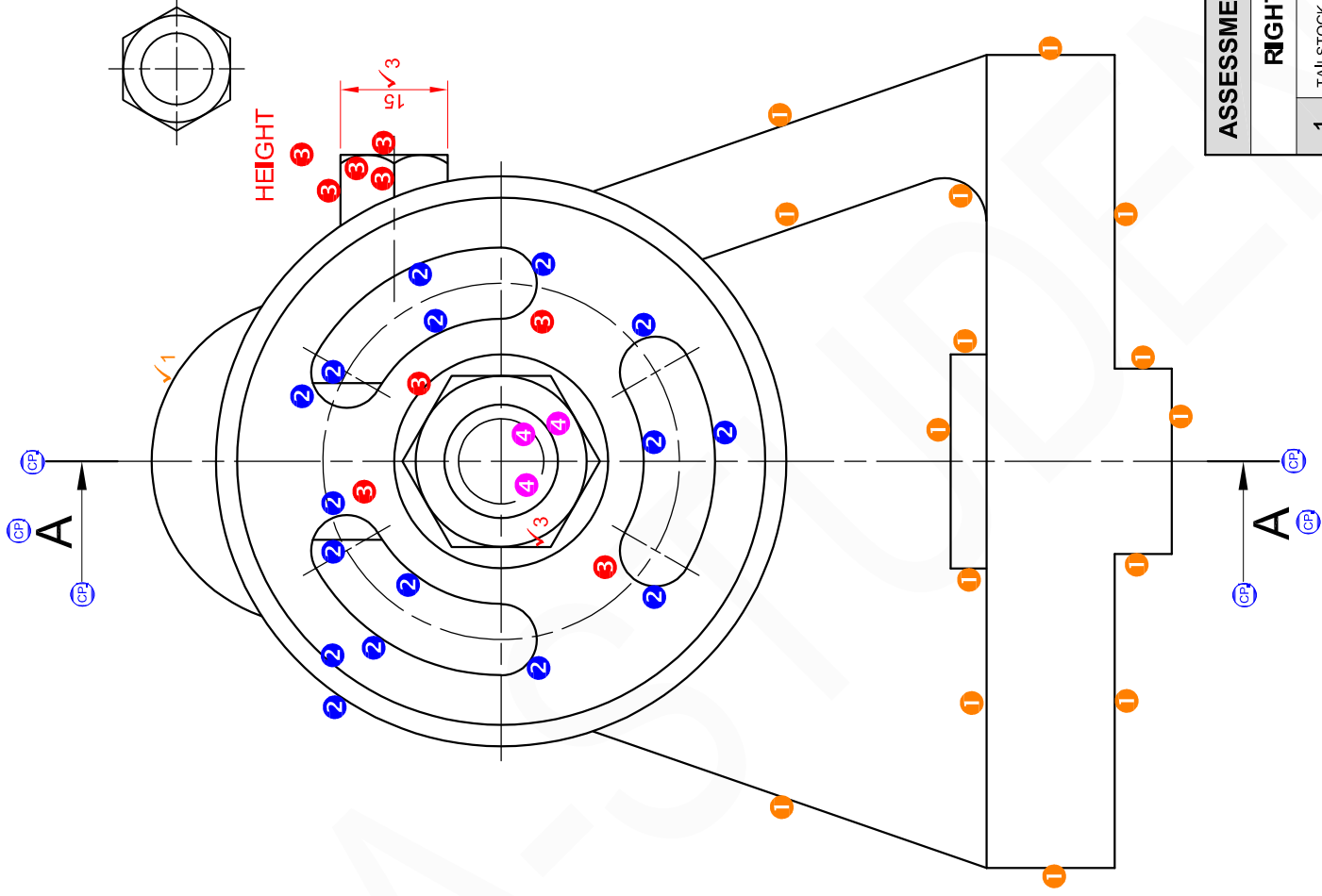
ASSESSMENT CRITERIA		SECTIONAL LEFT VIEW
1	BASE	13½
2	CYLINDER	10
3	PISTON	5½
4	TENSION SCREW	8
5	SPRING	1½
6	CRANK	5½
7	SHAFT + KEY + WASHER + NUT	15½
8	FLY WHEEL	7
<b>SUBTOTAL</b>		<b>66½</b>



PAPER 2 QUESTION 4  
 GRADE 12  
 NOVEMBER 2022  
 MARKING GUIDELINE

DETAIL A

DETAIL B

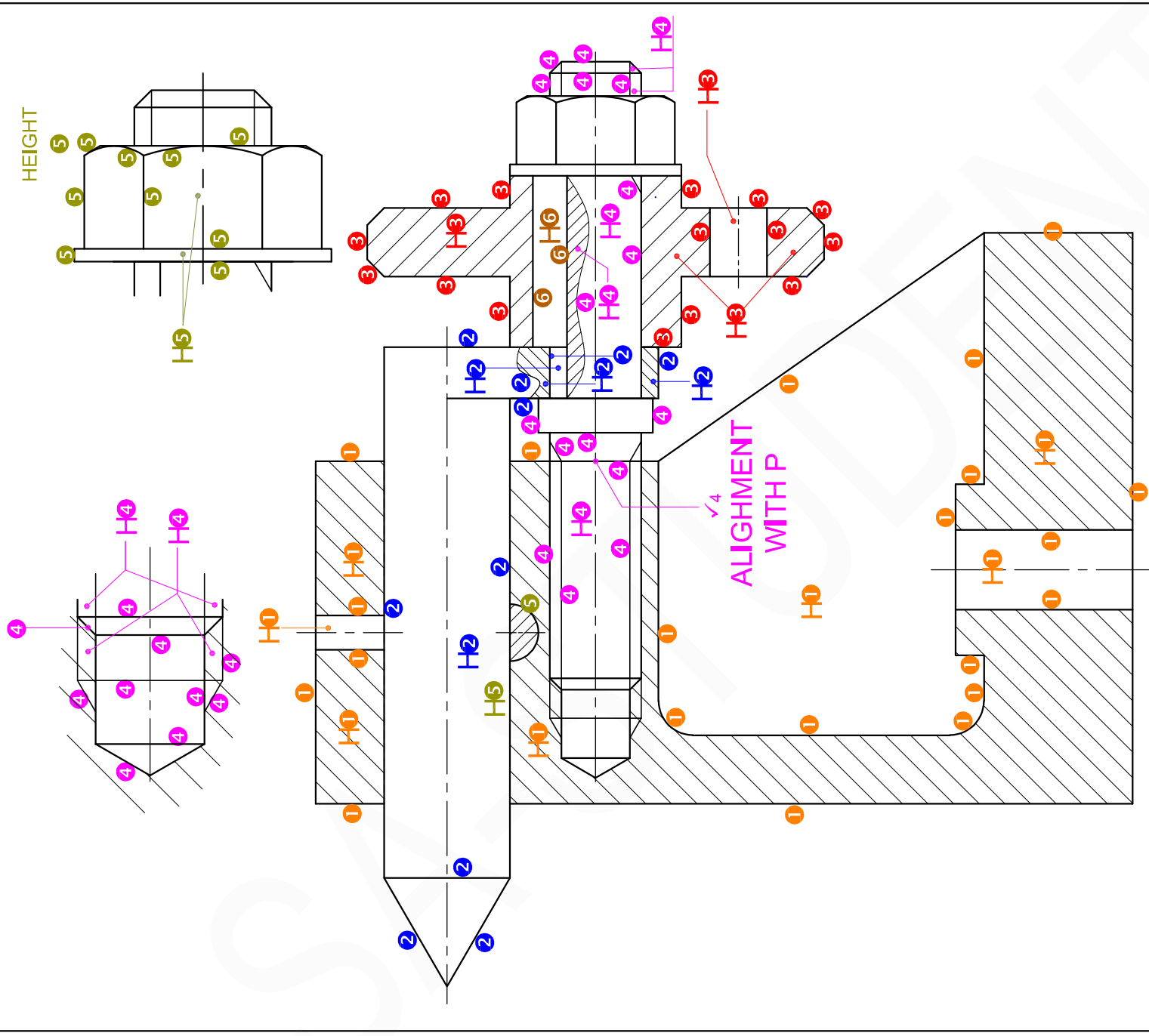


3. ASSEMBLY (ALTERNATIVE IF ONLY THE RIGHT VIEW WAS DRAWN)  
 1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED (7 PARTS - 1) = 6

ASSESSMENT CRITERIA	
RIGHT VIEW	
1	TALLSTOCK 8 ½
2	ADJUSTING WHEEL + DEAD CENTRE 8
3	M16 NUT + WASHER + LOCKING NUT 6 ½
4	ADJUSTING STUD 1 ½
<b>SUBTOTAL 24 ½</b>	
GENERAL	
2	CUTTING PLANE 3

PAPER 2 QUESTION 4  
 GRADE 12  
 2022

MARKING GUIDELINES



3. ASSEMBLY  
 1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED (8 PARTS - 1) = 7

1. CENTRE LINE MARK ALLOCATION  
 SANS COMPLIANT (LINE TYPE) 1  
 CENTRE LINES 3  
 (1 to 4 = 1 / 5 to 11 = 2 / 12 to 14 = 3)  
 TOTAL 4

ASSESSMENT CRITERIA	
GENERAL	
1	CENTRE LINES 4
3	ASSEMBLY 7
<b>SUBTOTAL 14</b>	

PAPER 2 QUESTION 4  
 GRADE 12  
 2022

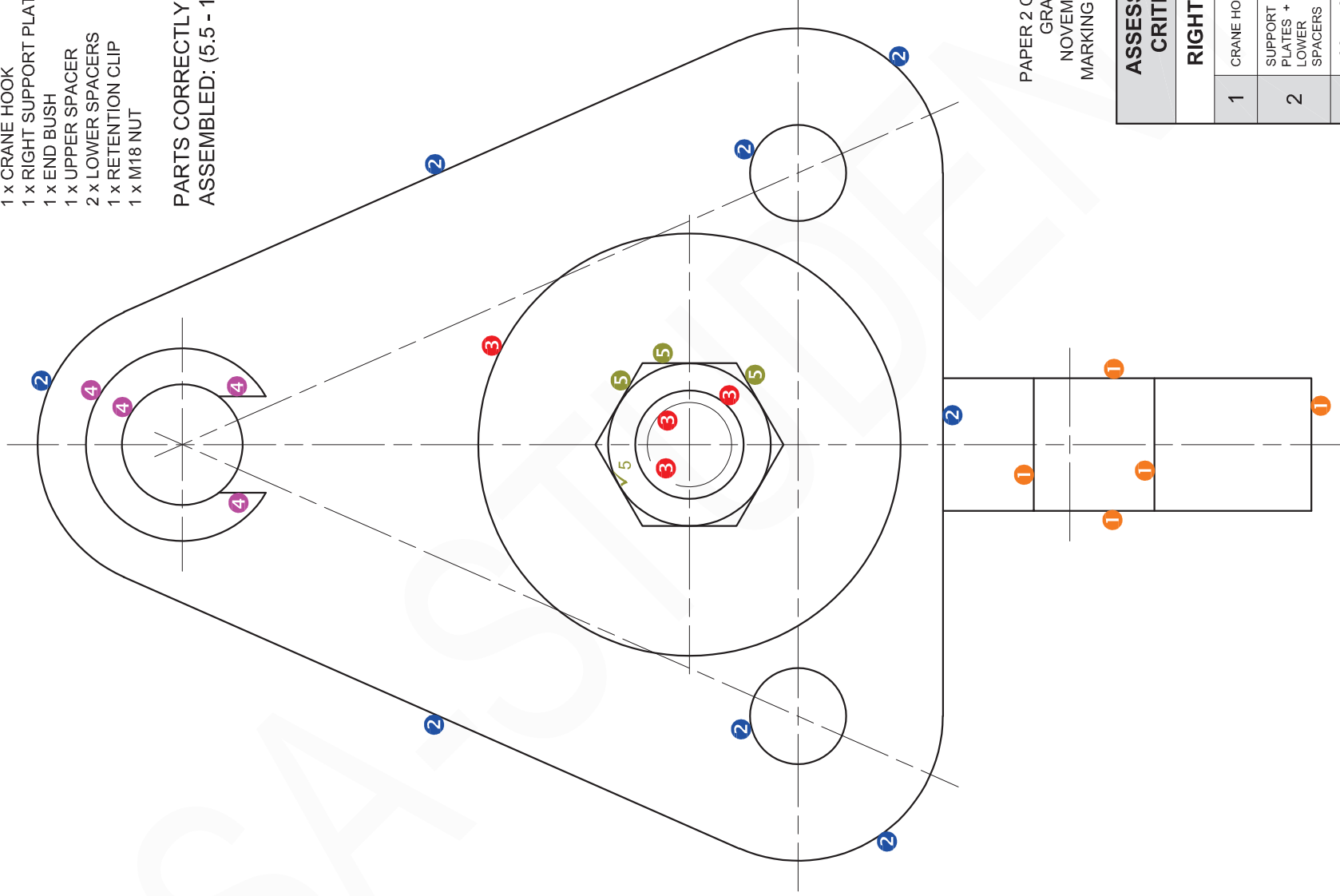
MARKING GUIDELINES

ASSESSMENT CRITERIA	
SECTIONAL FRONT VIEW	
1	TAILSTOCK 14
2	DEAD CENTRE 7
3	ADJUSTING WHEEL 9
4	ADJUSTING STUD 16 1/2
5	M16 NUT + WASHER + M10 LOCKING BOLT 6 1/2
6	KEY 1 1/2
<b>SUBTOTAL 54 1/2</b>	

**2. ASSEMBLY if ONLY  
RIGHT VIEW DRAWN**

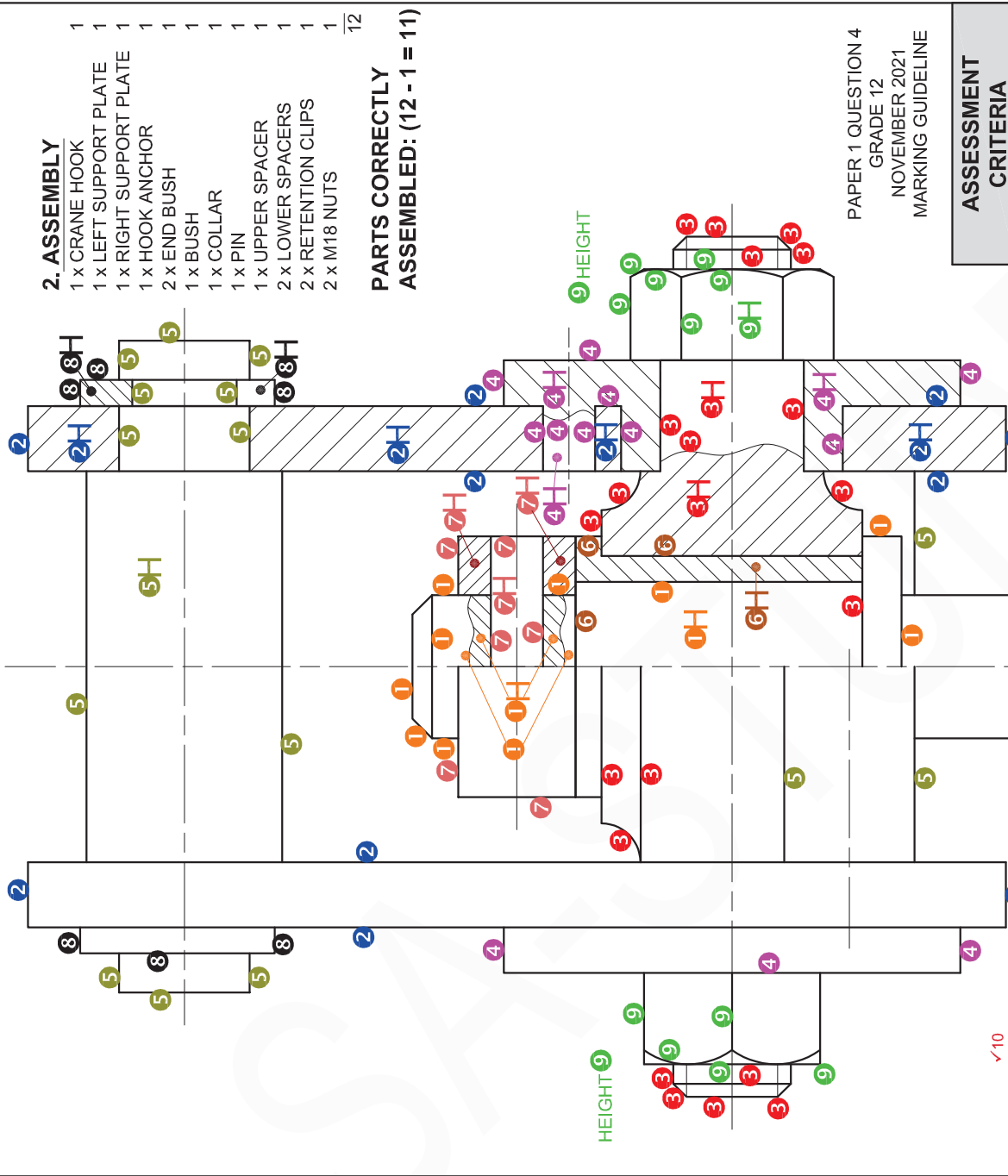
- 1 x CRANE HOOK 1
- 1 x RIGHT SUPPORT PLATE 1
- 1 x END BUSH 0.5
- 1 x UPPER SPACER 1
- 2 x LOWER SPACERS 1
- 1 x RETENTION CLIP 0.5
- 1 x M18 NUT 0.5
- 5.5

**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 ½
2	SUPPORT PLATES + LOWER SPACERS 4
3	HOOK ANCHOR + END BUSH 2
4	RETENTION CLIP + UPPER SPACER 2
5	M18 NUT 2 ½
<b>SUBTOTAL 13</b>	



**2. ASSEMBLY**

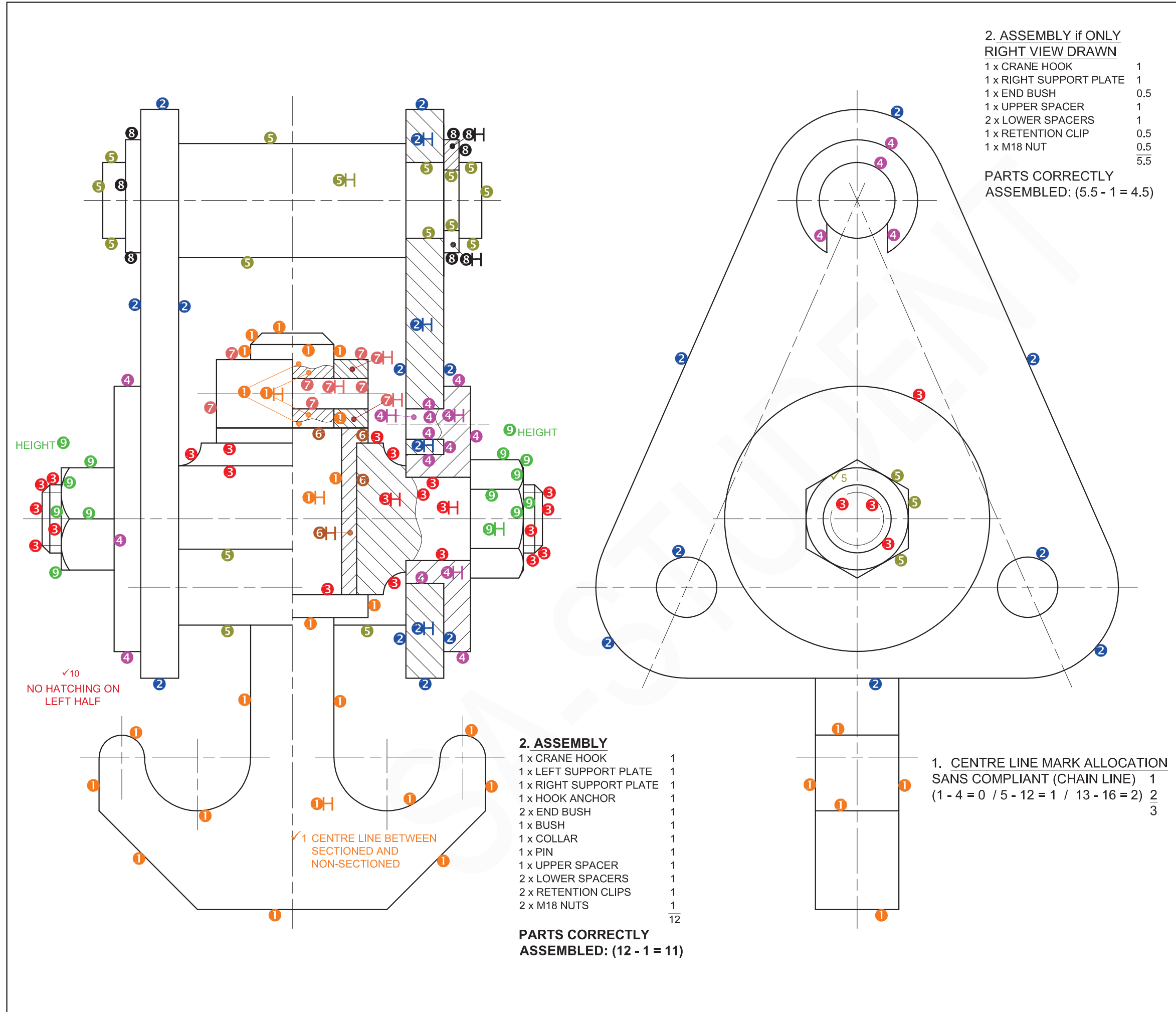
- 1 x CRANE HOOK 1
- 1 x LEFT SUPPORT PLATE 1
- 1 x RIGHT SUPPORT PLATE 1
- 1 x HOOK ANCHOR 1
- 2 x END BUSH 1
- 1 x BUSH 1
- 1 x COLLAR 1
- 1 x PIN 1
- 1 x UPPER SPACER 1
- 2 x LOWER SPACERS 1
- 2 x RETENTION CLIPS 1
- 2 x M18 NUTS 1

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

PAPER 1 QUESTION 4  
GRADE 12  
NOVEMBER 2021  
MARKING GUIDELINE

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

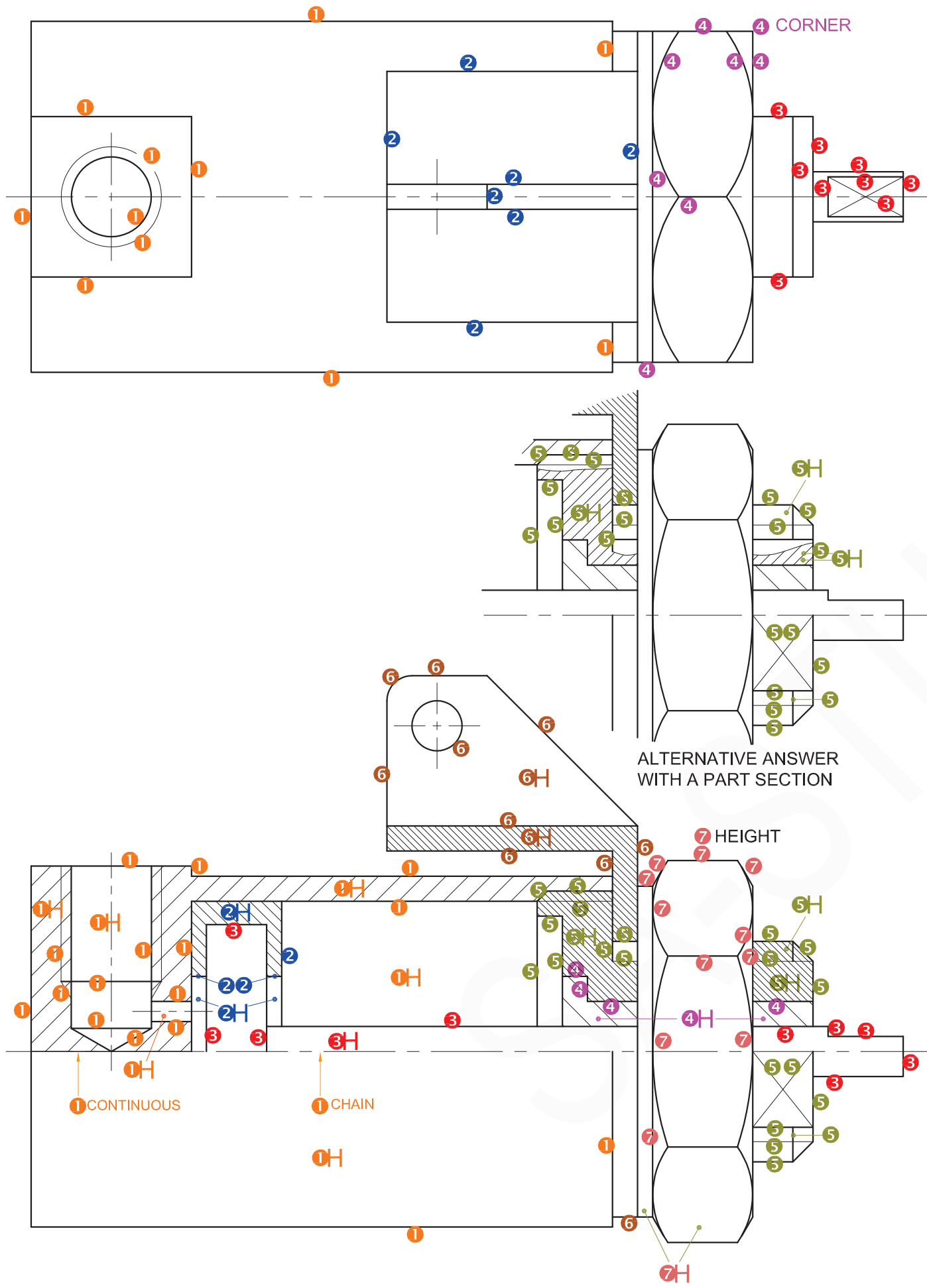
1. CENTRE LINE MARK ALLOCATION  
SANS COMPLIANT (CHAIN LINE) 1  
(1 - 4 = 0 / 5 - 12 = 1 / 13 - 16 = 2) 2  
3



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INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
TOTAL PENALTIES (-)	

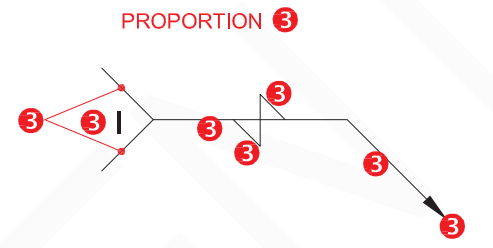
ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CRANE HOOK	2 1/2			
2	SUPPORT PLATES + LOWER SPACERS	4			
3	HOOK ANCHOR + END BUSH	2			
4	RETENTION CLIP + UPPER SPACER	2			
5	M18 NUT	2 1/2			
<b>SUBTOTAL</b>		<b>13</b>			
HALF SECTIONAL FRONT VIEW					
1	CRANE HOOK	13		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





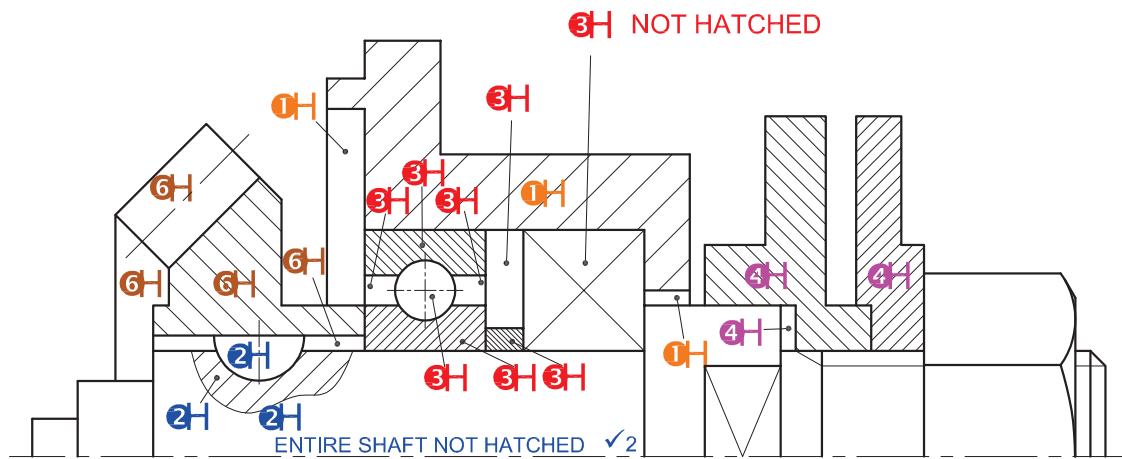
**1. CENTRE LINE MARK ALLOCATION**  
 SANS COMPLIANT (LINE TYPE) 1  
 7 CENTRE LINES (1 - 2 = 0, 3 - 5 = 1, 6 - 7 = 2) 2  
**TOTAL 3**

**2. ASSEMBLY**  
 1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED (9 PARTS - 1) = 8

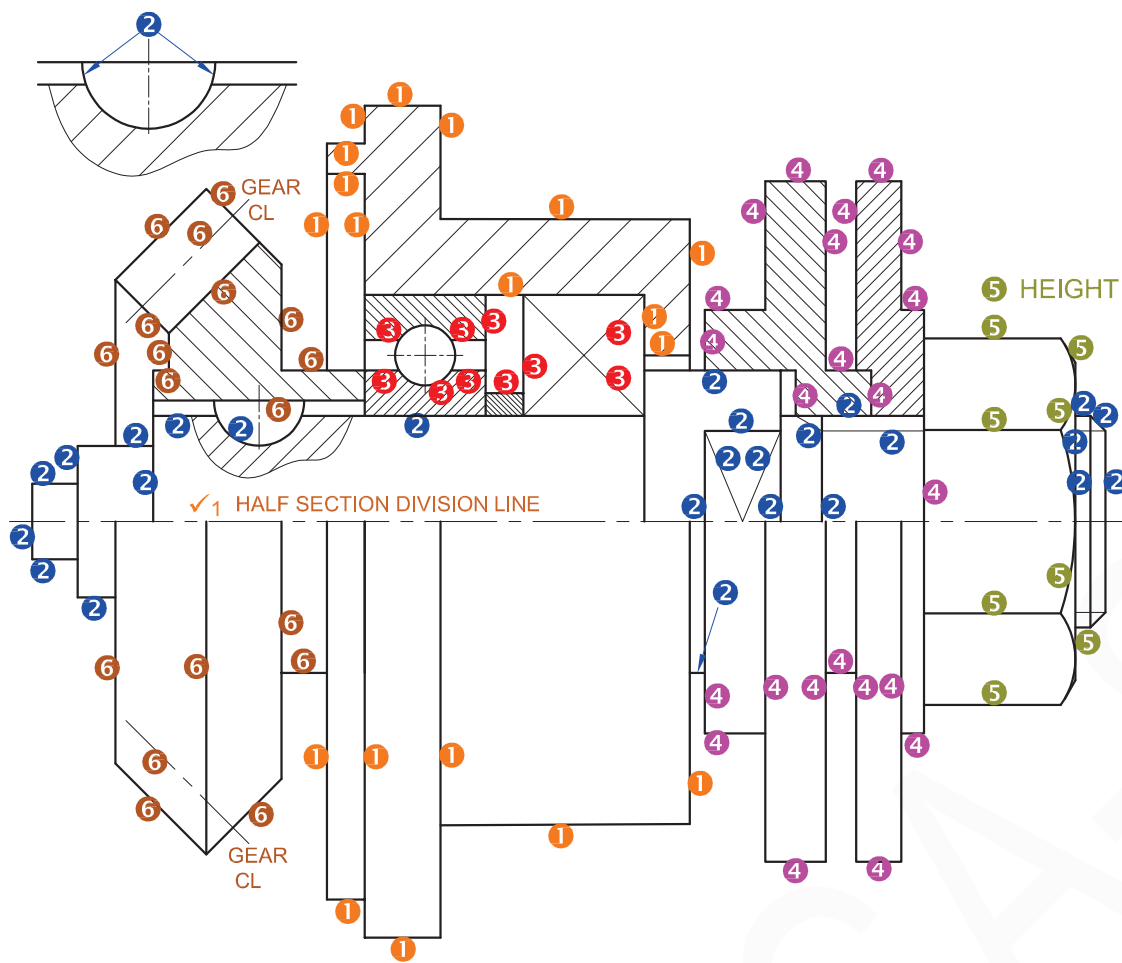


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INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL PENALTIES (-)</b>	

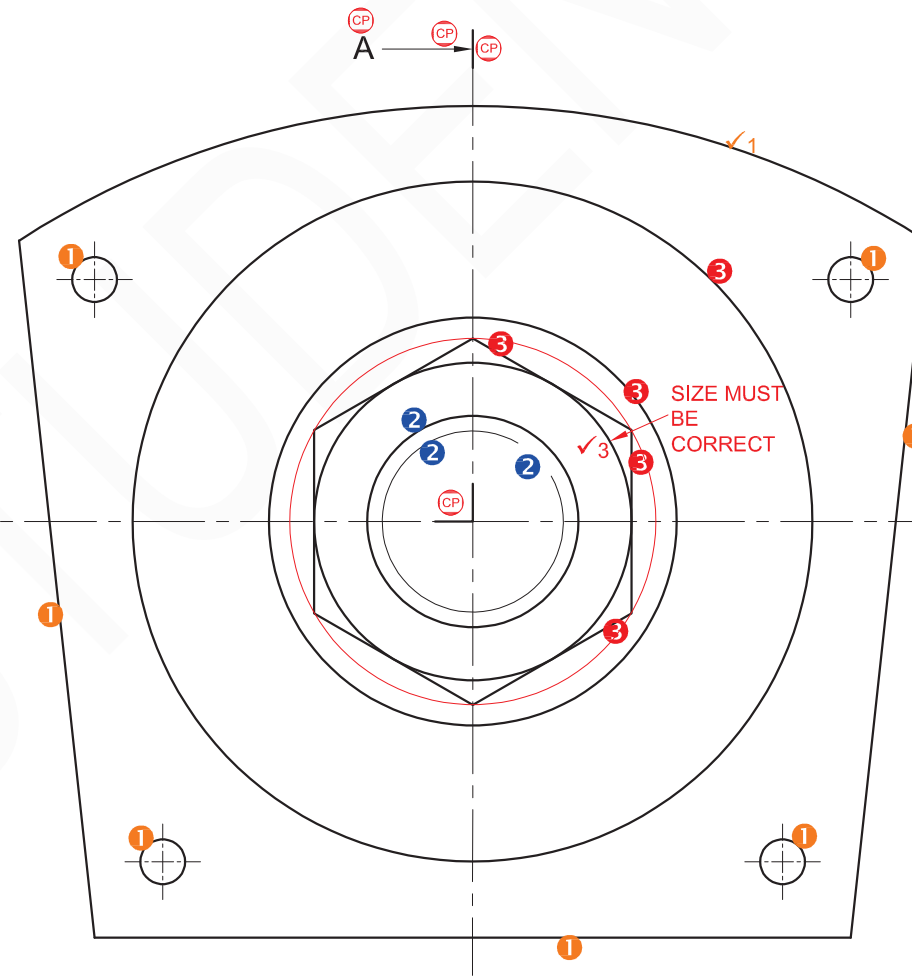
ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	SHAFT + BUSH	1 1/2			
2	CYLINDER + BRACKET + HOOK	4			
3	M44 NUT + GUIDE	6			
<b>SUBTOTAL</b>		<b>11 1/2</b>			
HALF-SECTIONAL FRONT VIEW					
1	CYLINDER	12			
2	RUBBER SEAL	2 1/2			
3	PLUNGER	5			
4	BUSH	2 1/2			
5	GUIDE	11 1/2			
6	BRACKET + HOOK	6			
7	M44 NUT + WASHER	6 1/2			
<b>SUBTOTAL</b>		<b>46</b>			
TOP VIEW					
1	CYLINDER	5 1/2			
2	BRACKET + HOOK	3 1/2			
3	GUIDE + SHAFT	4 1/2			
4	M44 NUT + WASHER	4			
<b>SUBTOTAL</b>		<b>17 1/2</b>			
GENERAL					
1	CENTRE LINES	3			
2	ASSEMBLY	8			
3	WELDING SYMBOL	4			
<b>SUBTOTAL</b>		<b>15</b>			
<b>TOTAL</b>		<b>90</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					



MARK ALLOCATION FOR HATCHING



NOT SECTIONED / HATCHED IN BOTTOM HALF ✓1

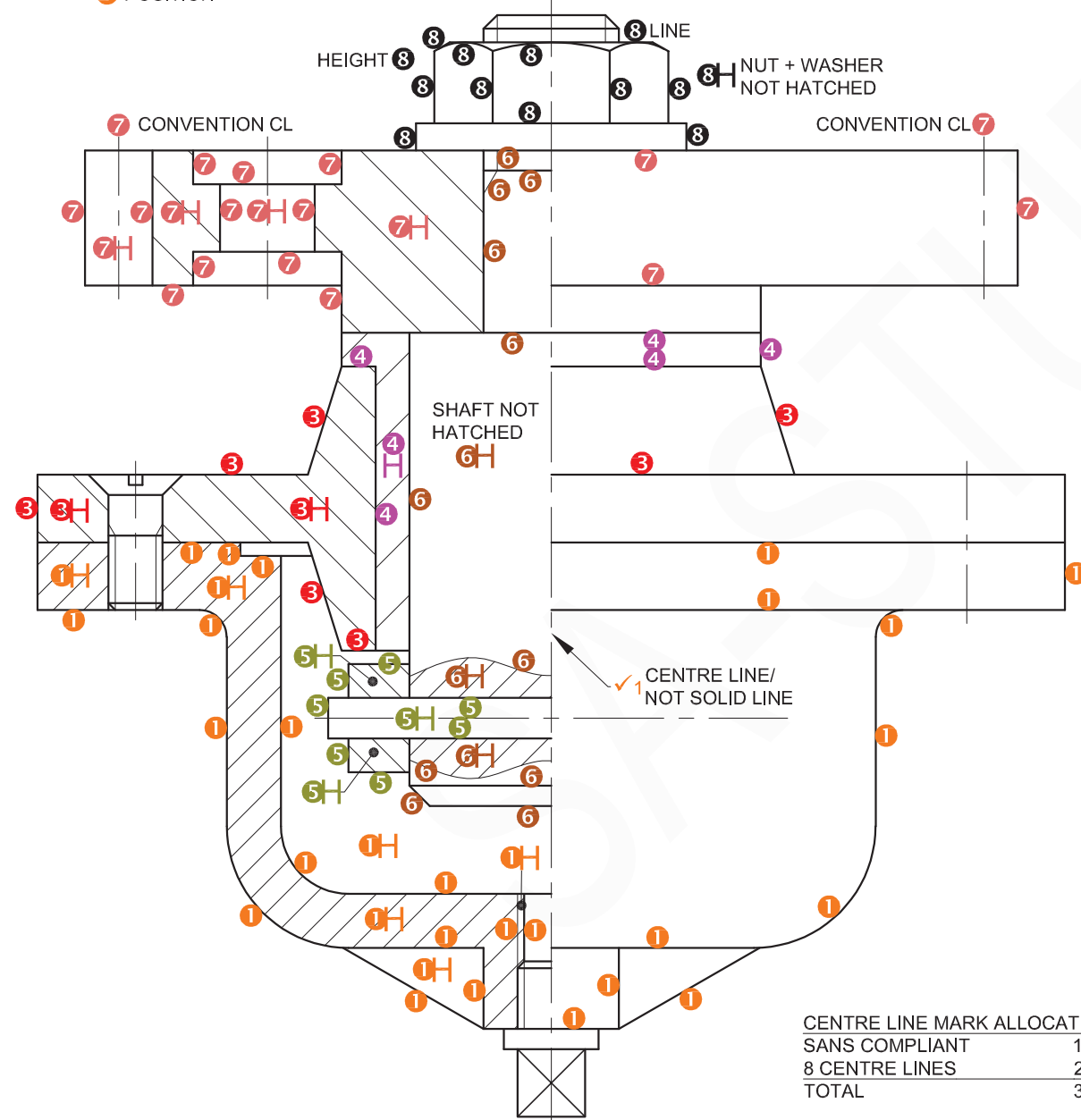
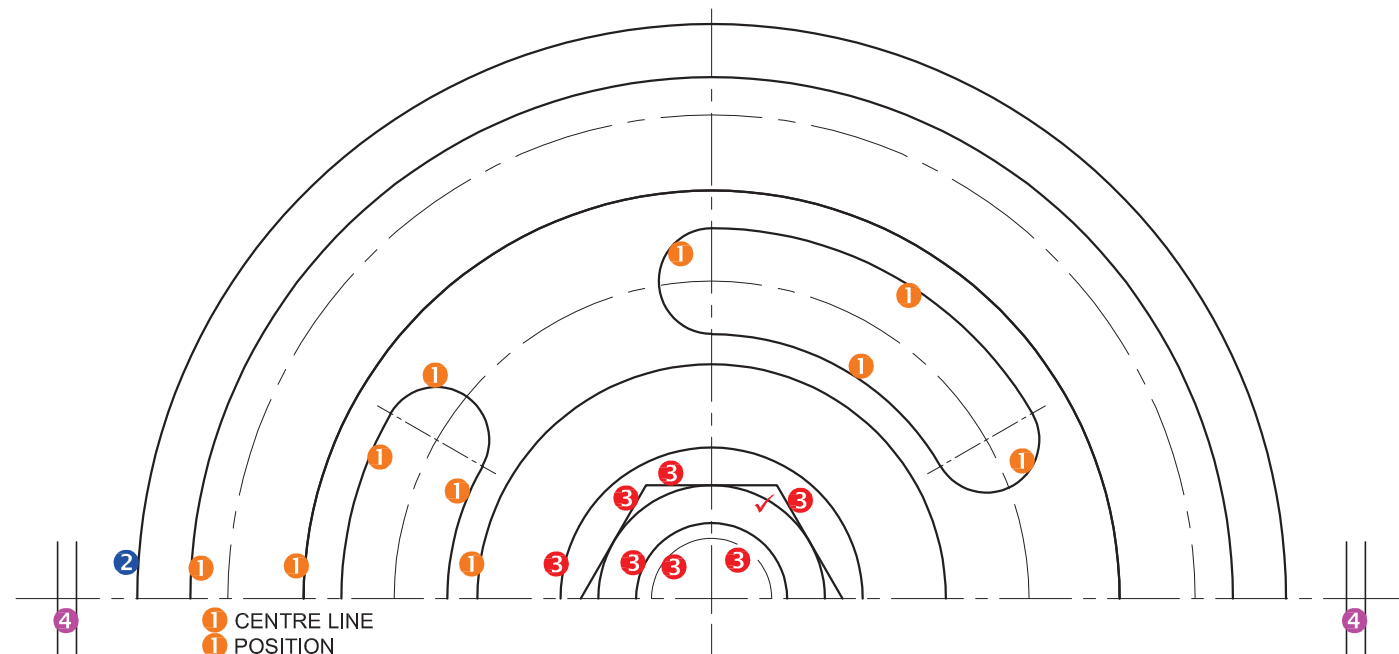


1. CENTRE LINE MARK ALLOCATION  
SANS COMPLIANT (LINE TYPE) 2  
CENTRE LINES  
(0 to 3 = 0); (4 to 9 = 1); (10 to 13 = 2) 2  
TOTAL 4

3. ASSEMBLY  
1 MARK FOR EVERY COMPONENT  
CORRECTLY ASSEMBLED  
( 10 PARTS -1) = 9

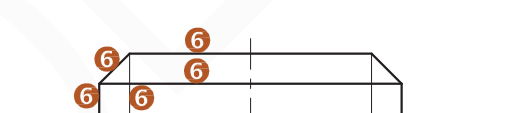
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INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL PENALTIES (-)</b>	

ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	BODY	4½			
2	SHAFT	1½			
3	M28 NUT + FLANGE	3½			
<b>SUBTOTAL</b>		<b>9½</b>			
HALF SECTIONAL FRONT VIEW					
1	BODY	13			
2	SHAFT + KEY	16			
3	BEARING + SPACER	9			
4	FLANGES	13			
5	M28 NUT	4½			
6	GEAR	11			
<b>SUBTOTAL</b>		<b>66½</b>			
GENERAL					
1	CENTRE LINES	4			
2	CUTTING PLANE A-A	4			
3	ASSEMBLY	9			
<b>SUBTOTAL</b>		<b>17</b>			
<b>TOTAL</b>		<b>93</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					



CENTRE LINE MARK ALLOCATION

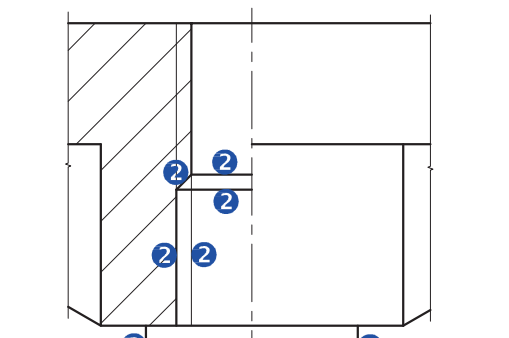
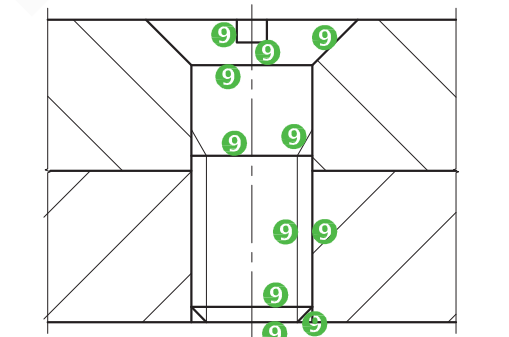
SANS COMPLIANT	1
8 CENTRE LINES	2
TOTAL	3



8 NUT + WASHER NOT HATCHED



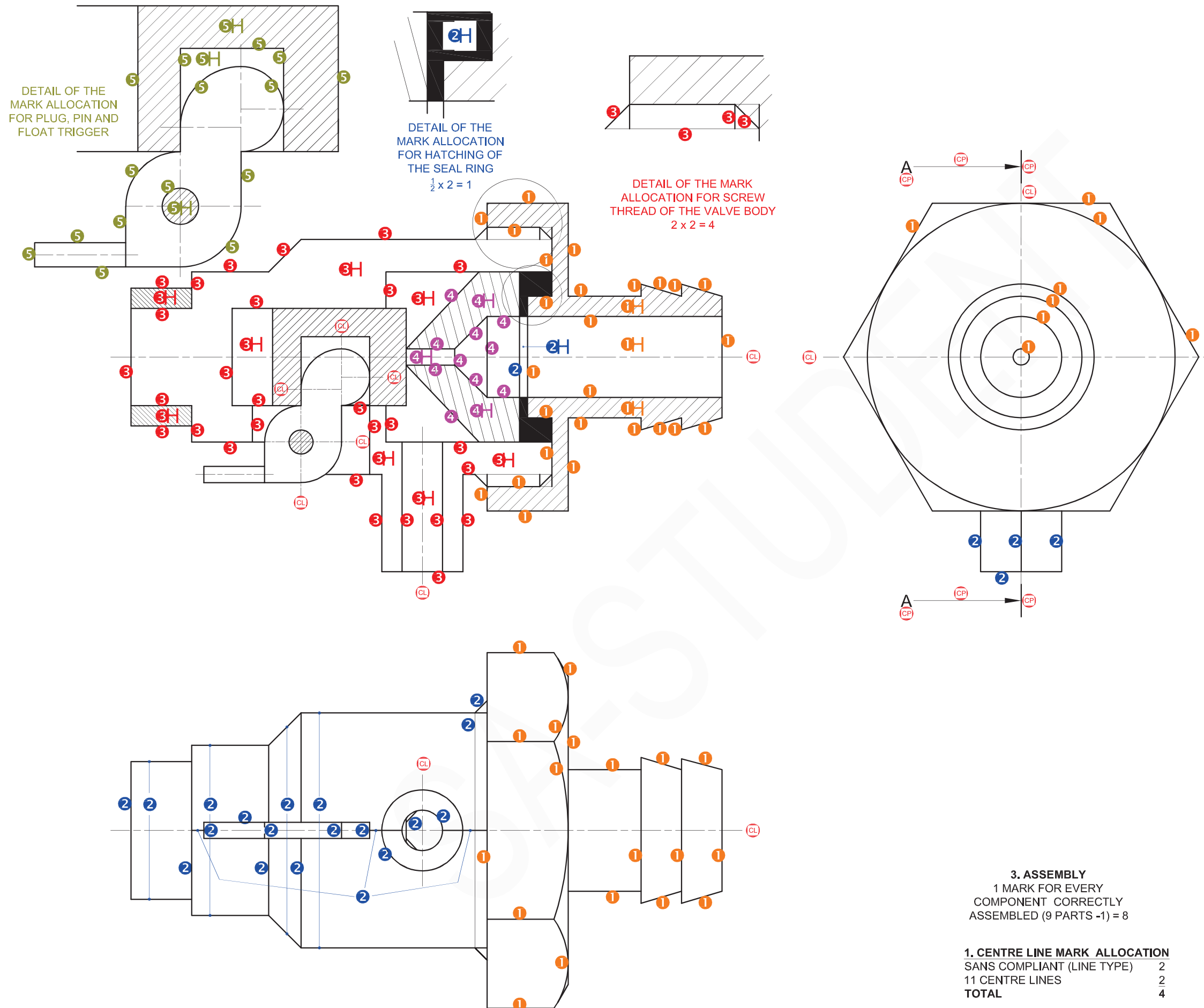
9 SCREW NOT HATCHED



2 PLUG NOT HATCHED

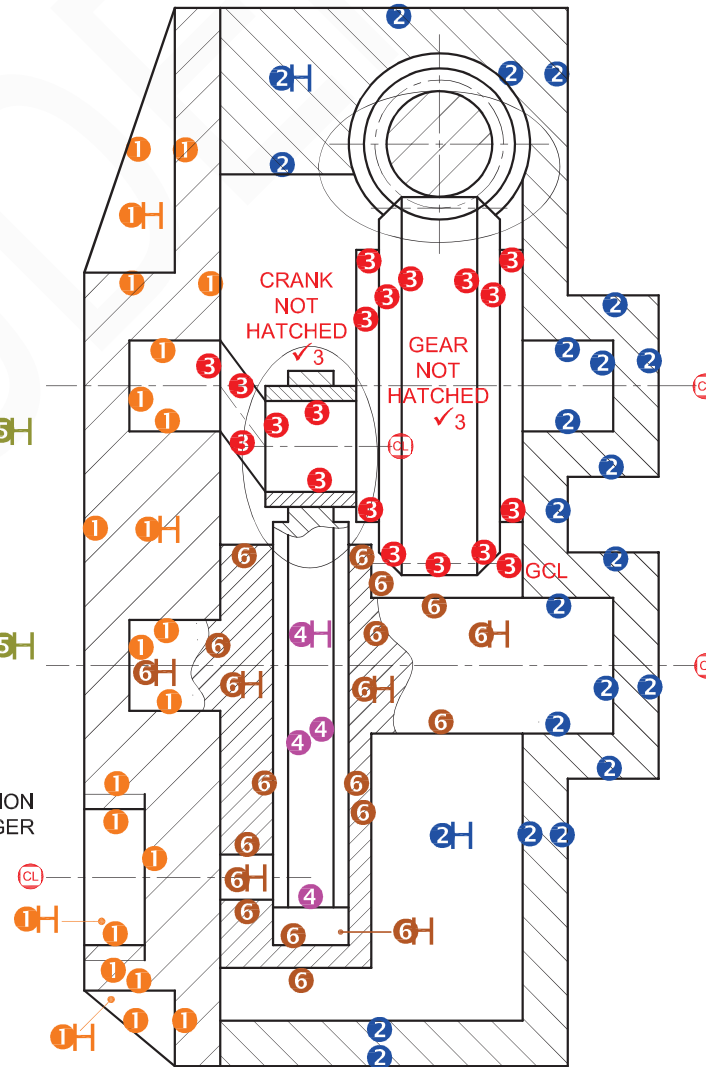
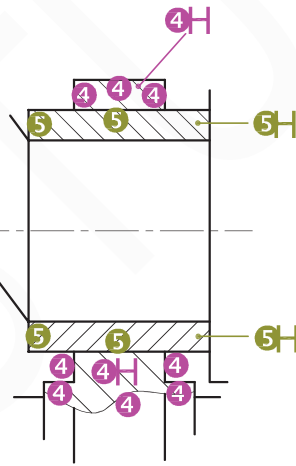
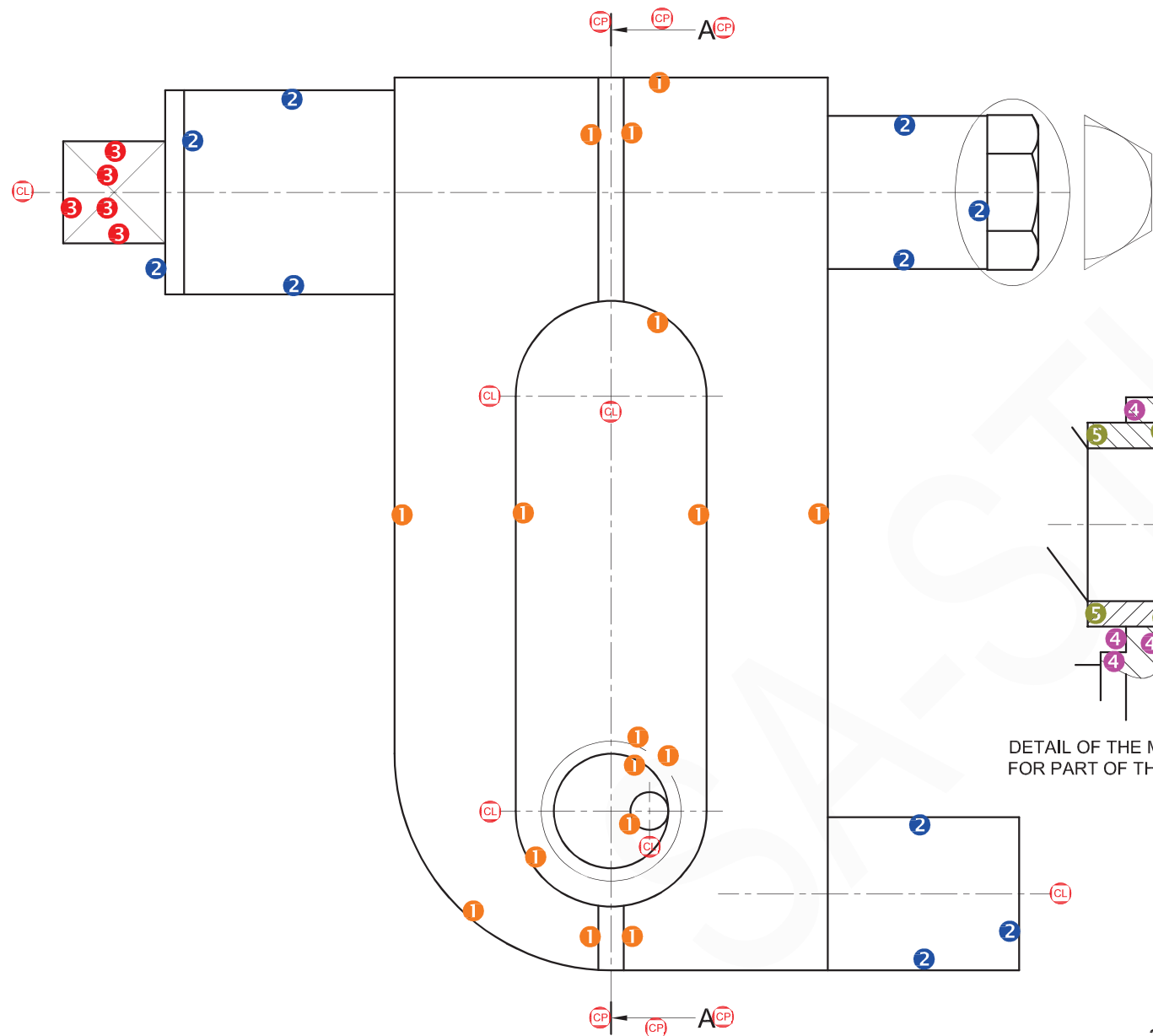
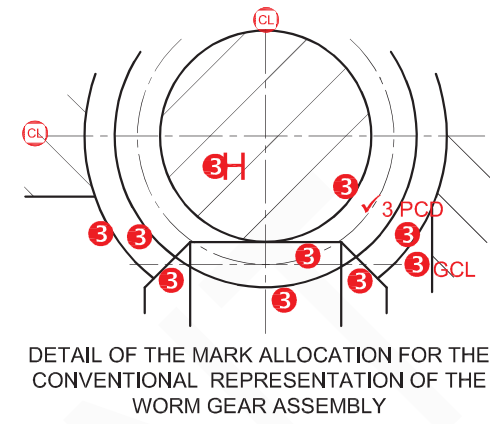
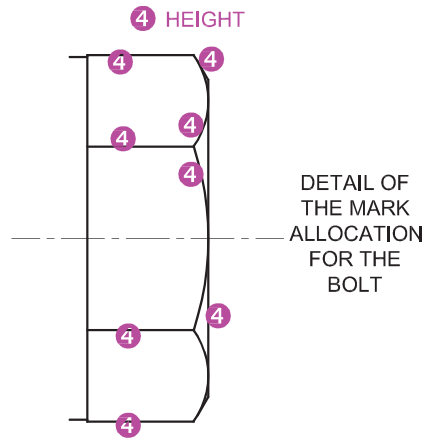
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INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
TOTAL PENALTIES (-)	

ASSESSMENT CRITERIA					
TOP VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	GEAR	6			
2	COLLAR PLATE	1/2			
3	M20 NUT + WASHER	4 1/2			
4	SYMMETRY	1			
<b>SUBTOTAL</b>		<b>12</b>			
SECTIONAL FRONT VIEW					
1	SUMP	16 1/2			
2	PLUG	7			
3	COVER PLATE	4 1/2			
4	BUSH	3			
5	COLLAR + PIN	5			
6	SHAFT	9 1/2			
7	GEAR	10			
8	M20 NUT + WASHER	6 1/2			
9	M8 SCREW	6			
<b>SUBTOTAL</b>		<b>68</b>			
GENERAL					
1	CENTRE LINES	3			
2	ASSEMBLY	10			
<b>SUBTOTAL</b>		<b>13</b>			
<b>TOTAL</b>		<b>93</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					



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INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
TOTAL PENALTIES (-)	

ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	INLET + JET	4			
2	VALVE BODY	2			
<b>SUBTOTAL</b>		<b>6</b>			
SECTIONAL FRONT VIEW					
1	INLET	14 $\frac{1}{2}$			
2	SEAL RING	2			
3	VALVE BODY + RETAINING RING	22			
4	JET	6 $\frac{1}{2}$			
5	FLOAT TRIGGER + PIN + PLUG	9			
<b>SUBTOTAL</b>		<b>54</b>			
BOTTOM VIEW					
1	INLET	9 $\frac{1}{2}$			
2	VALVE BODY + RETAINING RING + JET	9 $\frac{1}{2}$			
<b>SUBTOTAL</b>		<b>19</b>			
GENERAL					
1	CENTRE LINES	4			
2	SECTION A-A	3			
3	ASSEMBLY	8			
<b>SUBTOTAL</b>		<b>15</b>			
<b>TOTAL</b>		<b>94</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					

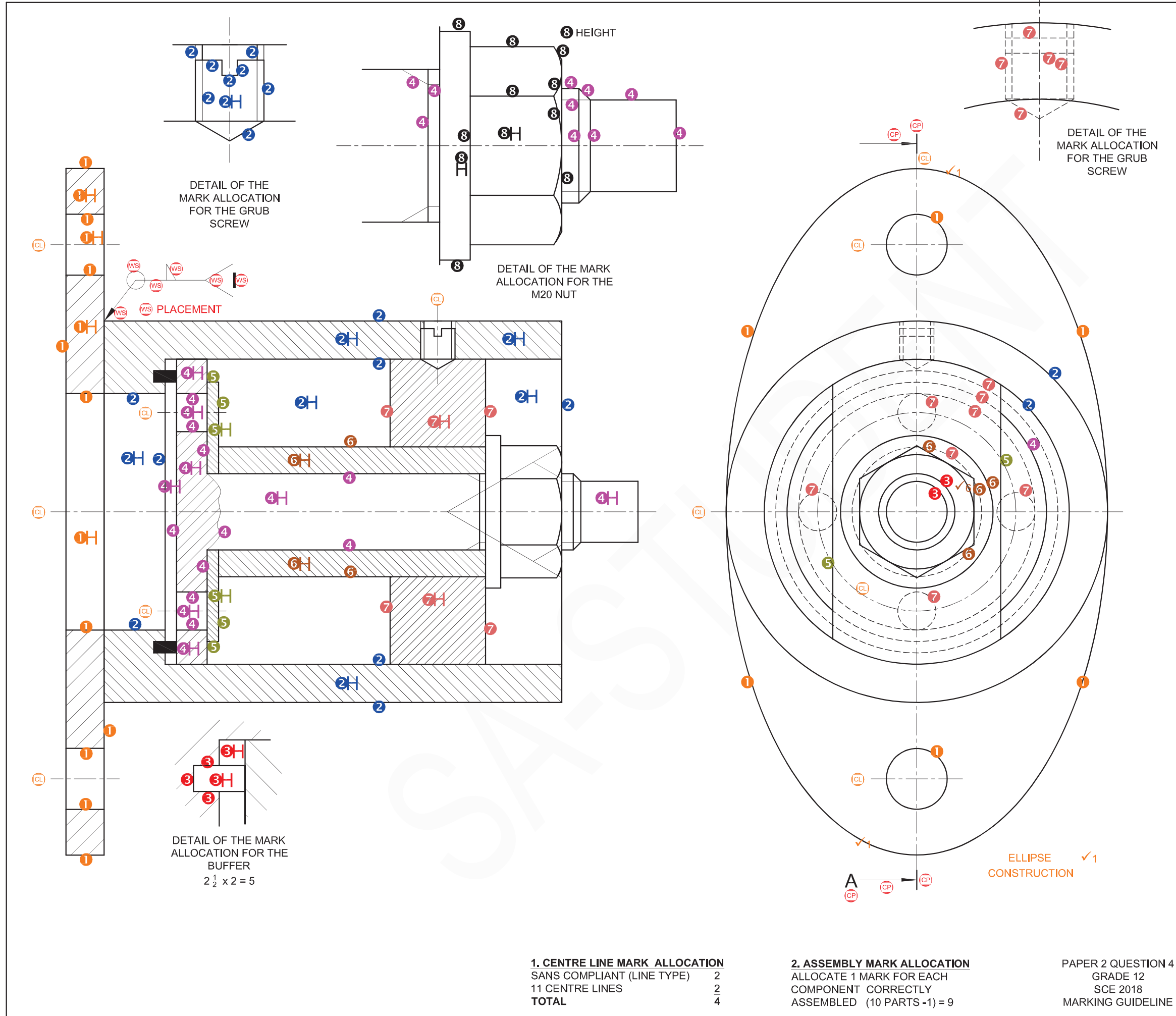


**3. ASSEMBLY**  
1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED (10 PARTS -1) = 9

**1. CENTRE LINE MARK ALLOCATION**  
SANS COMPLIANT (LINE TYPE) 2  
14 CENTRE LINES 2  
**TOTAL** 4

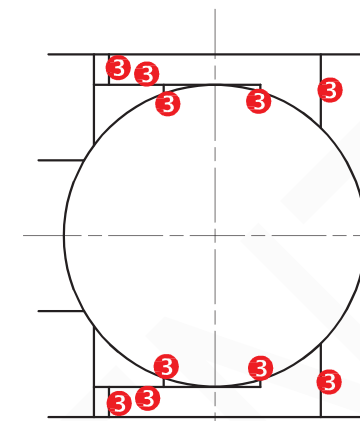
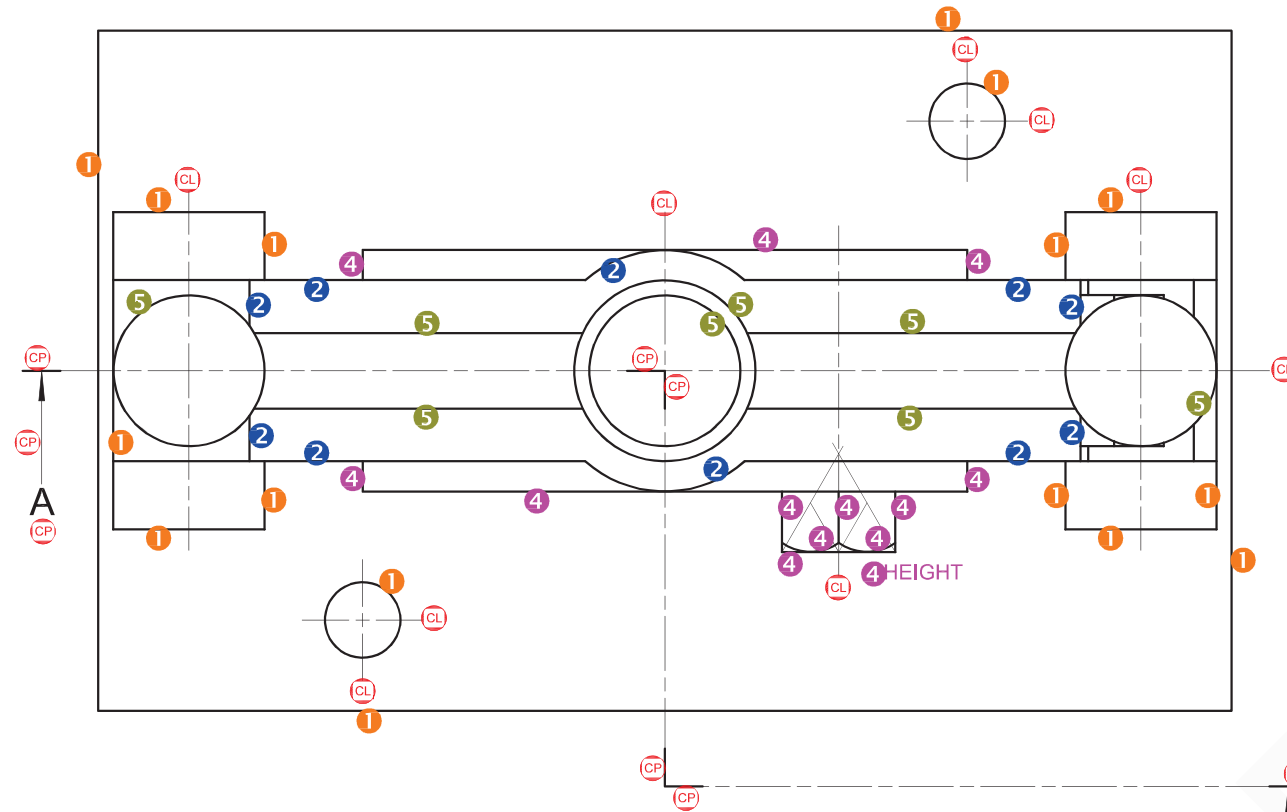
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INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL PENALTIES (-)</b>	

ASSESSMENT CRITERIA					
FRONT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	COVER PLATE	8			
2	PUMP BODY + BUSH	5			
3	WORM SHAFT	2 ½			
4	M14 RETAINING BOLT	4 ½			
<b>SUBTOTAL</b>		<b>20</b>			
SECTIONAL RIGHT VIEW					
1	COVER PLATE	11 ½			
2	PUMP BODY	11 ½			
3	CRANK GEAR + SHAFT	17			
4	PUMP PLUNGER	7			
5	SPLIT BUSH	3			
6	PUMP HOUSING	10			
<b>SUBTOTAL</b>		<b>60</b>			
GENERAL					
1	CENTRE LINES	4			
2	SECTION A-A	3			
3	ASSEMBLY	9			
<b>SUBTOTAL</b>		<b>16</b>			
<b>TOTAL</b>		<b>96</b>			
<b>PENALTIES (-)</b>					
<b>GRAND TOTAL</b>					

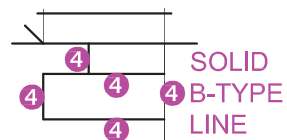
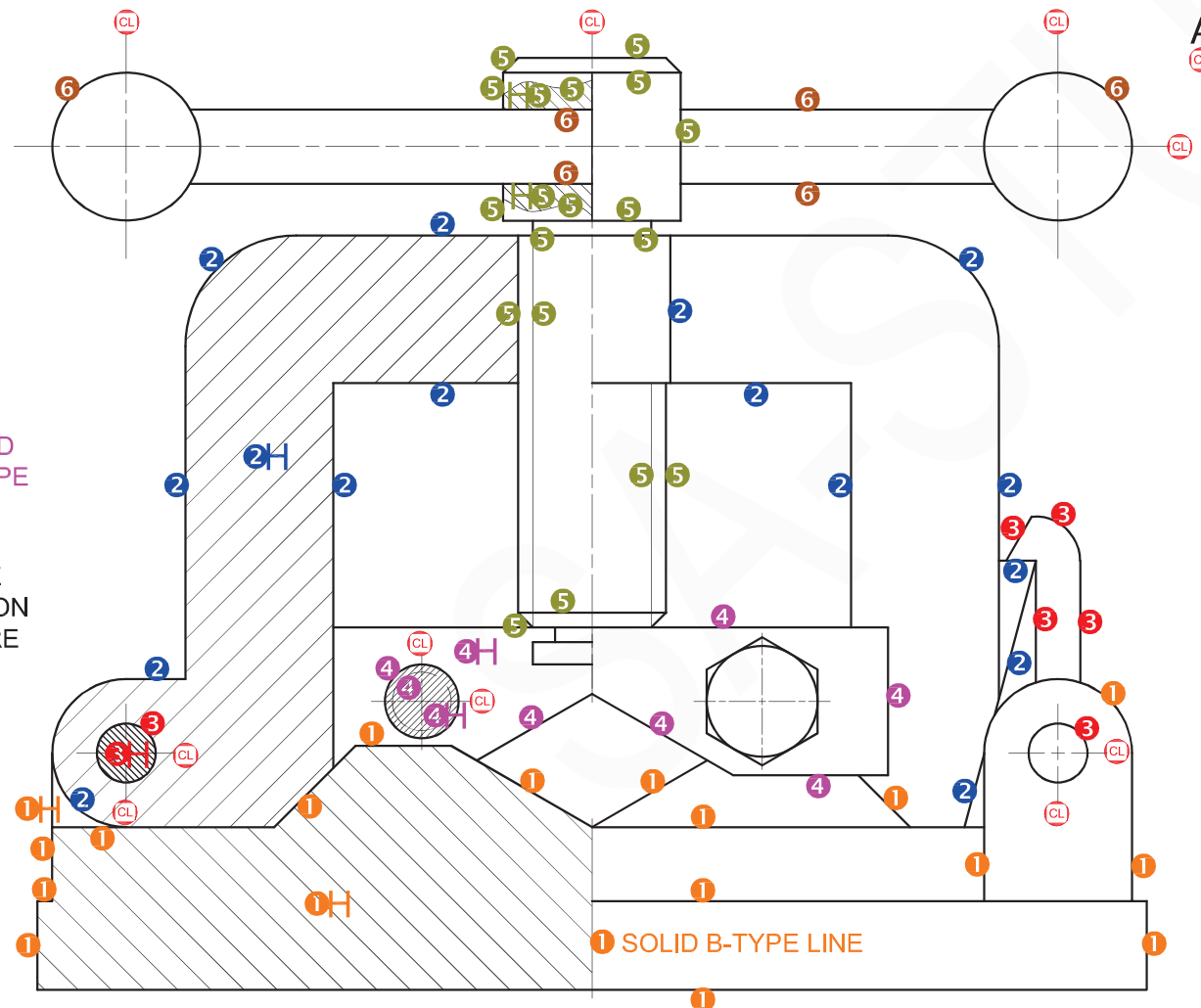


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INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL PENALTIES (-)</b>	

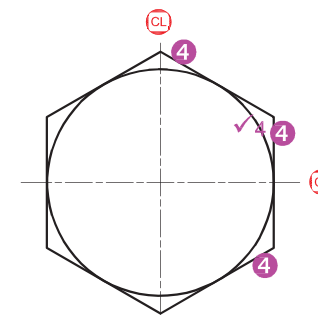
ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	BASE	6			
2	SLEEVE	1			
3	PLUNGER	1			
4	SEAL	$\frac{1}{2}$			
5	GUIDE	1			
6	NUT + WASHER	3			
7	HIDDEN DETAIL	$6\frac{1}{2}$			
<b>SUBTOTAL</b>		<b>19</b>			
SECTIONAL FRONT VIEW					
1	BASE	7			
2	SLEEVE + GRUB SCREW	$11\frac{1}{2}$			
3	BUFFER	5			
4	PLUNGER	14			
5	SEAL	3			
6	BUSH	2			
7	GUIDE	3			
8	NUT + WASHER	6			
<b>SUBTOTAL</b>		<b><math>51\frac{1}{2}</math></b>			
GENERAL					
1	CENTRE LINES	4			
2	ASSEMBLY	9			
3	CUTTING PLANE	3			
4	WELDING SYMBOL	$3\frac{1}{2}$			
<b>SUBTOTAL</b>		<b><math>19\frac{1}{2}</math></b>			
<b>TOTAL</b>		<b>90</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					



DETAIL OF THE MARK ALLOCATION FOR THE HOOK



DETAIL OF THE MARK ALLOCATION FOR THE CENTRE OF THE JAW



DETAIL OF THE MARK ALLOCATION FOR THE M10 BOLT

1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED (10 PARTS -1) = 9

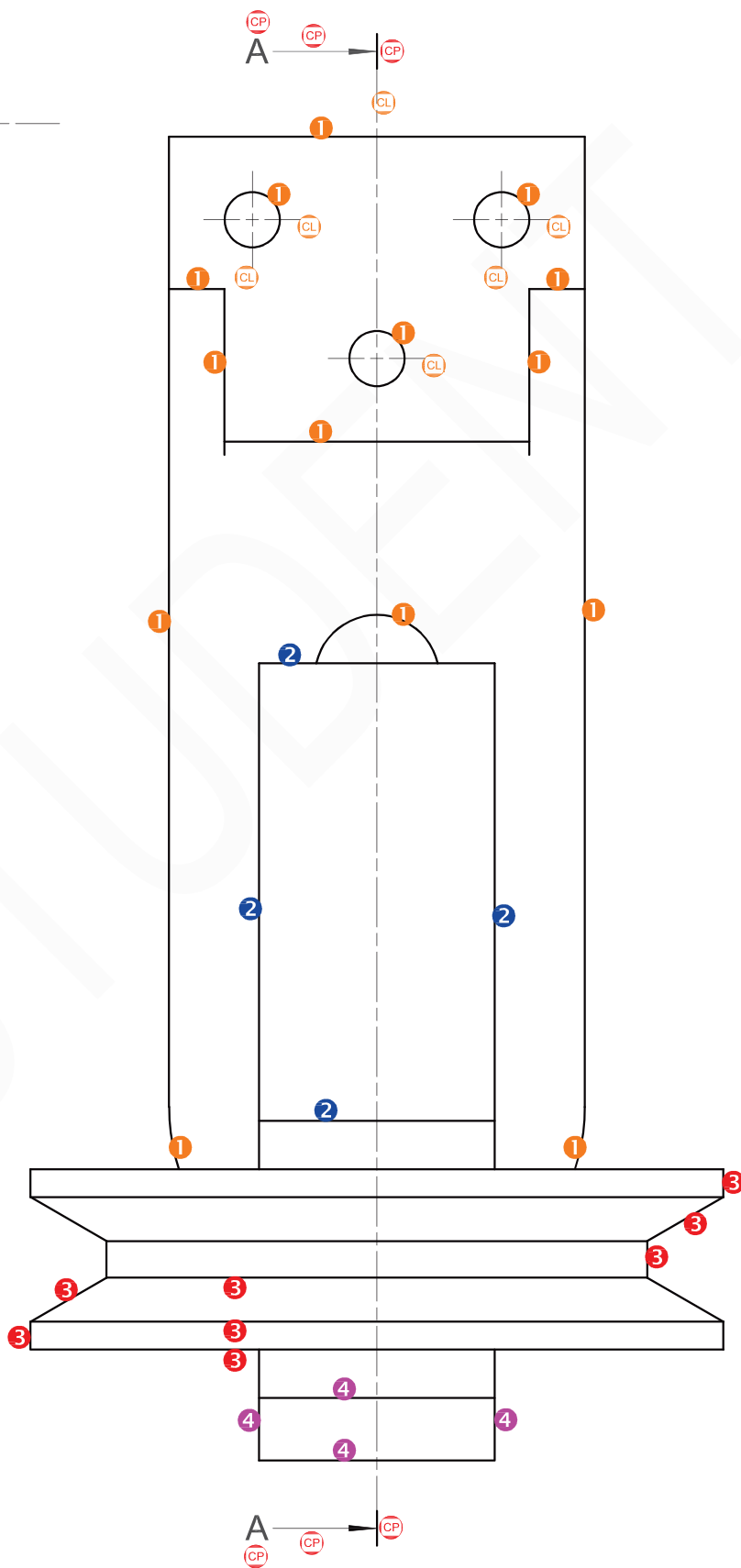
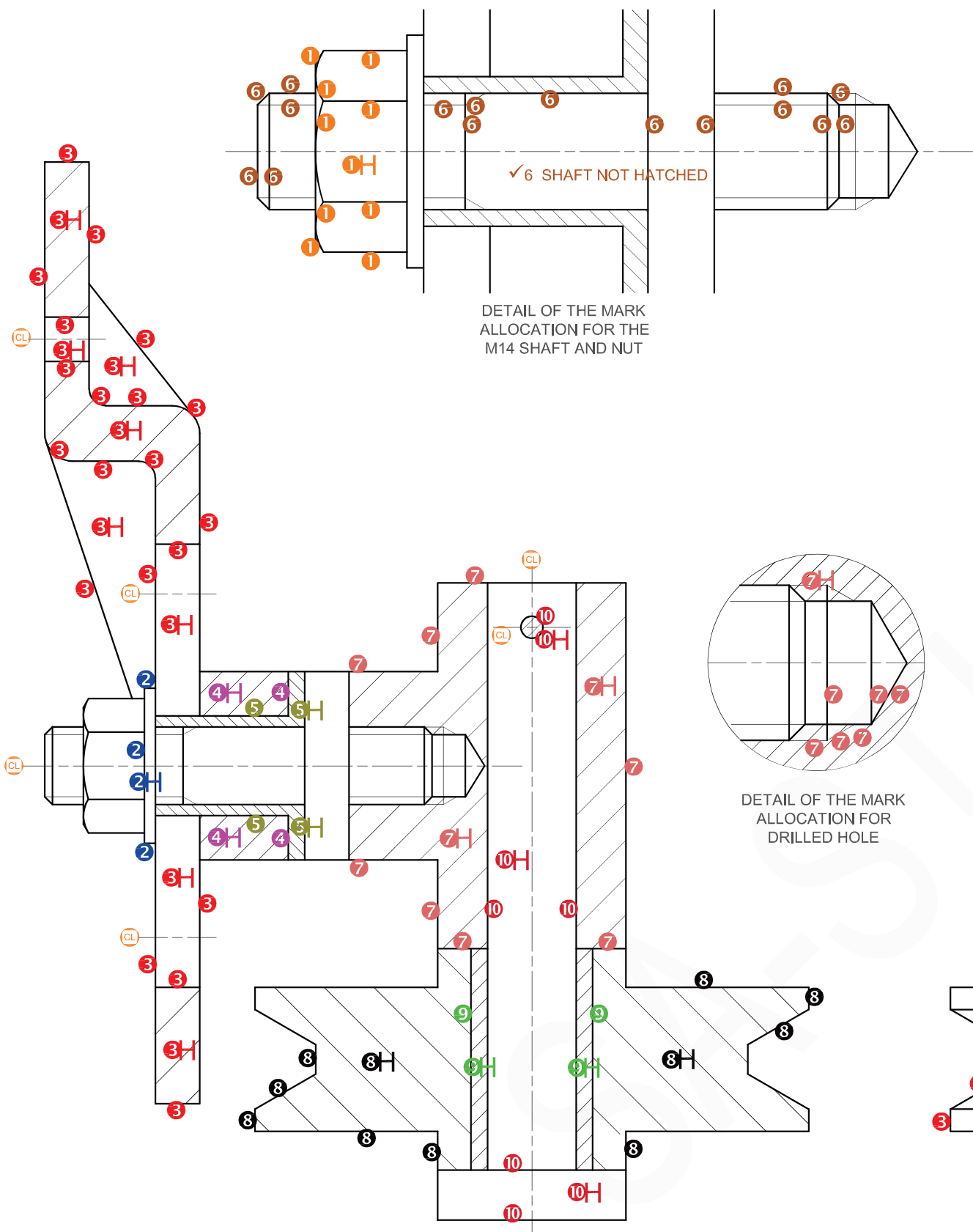
PAPER 2 QUESTION 4  
GRADE 12  
November 2017  
MARKING GUIDELINES

**FOR OFFICIAL USE ONLY**

INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT OVERALL SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL PENALTIES (-)</b>	

**ASSESSMENT CRITERIA**

		TOP VIEW			
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	BASE	8			
2	FRAME	5			
3	HOOK	5			
4	JAW + M10 BOLT	6½			
5	WORM SCREW + LEVER	4			
<b>SUBTOTAL</b>		<b>28½</b>			
		SECTIONAL FRONT VIEW			
1	BASE	9½			
2	FRAME	8			
3	PINS + HOOK	3½			
4	JAW + M10 BOLT	9½			
5	WORM SCREW	9½			
6	LEVER	3			
<b>SUBTOTAL</b>		<b>43</b>			
		GENERAL			
1	CENTRE LINES	10½			
2	ASSEMBLY	9			
3	CUTTING PLANE	5			
<b>SUBTOTAL</b>		<b>24½</b>			
<b>TOTAL</b>		<b>96</b>			
PENALTIES (-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					



FOR OFFICIAL USE ONLY			
NOT IN THIRD ANGLE			
INCORRECT OVERALL SCALE			
INCORRECT HATCHING			
PARTS NOT ASSEMBLED			
PENALTY TOTAL (-)			

ASSESSMENT CRITERIA					
RIGHT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	BRACKET	7			
2	SWIVEL ARM	2			
3	PULLEY	4			
4	M14 SHAFT	2			
<b>SUBTOTAL</b>		<b>15</b>			

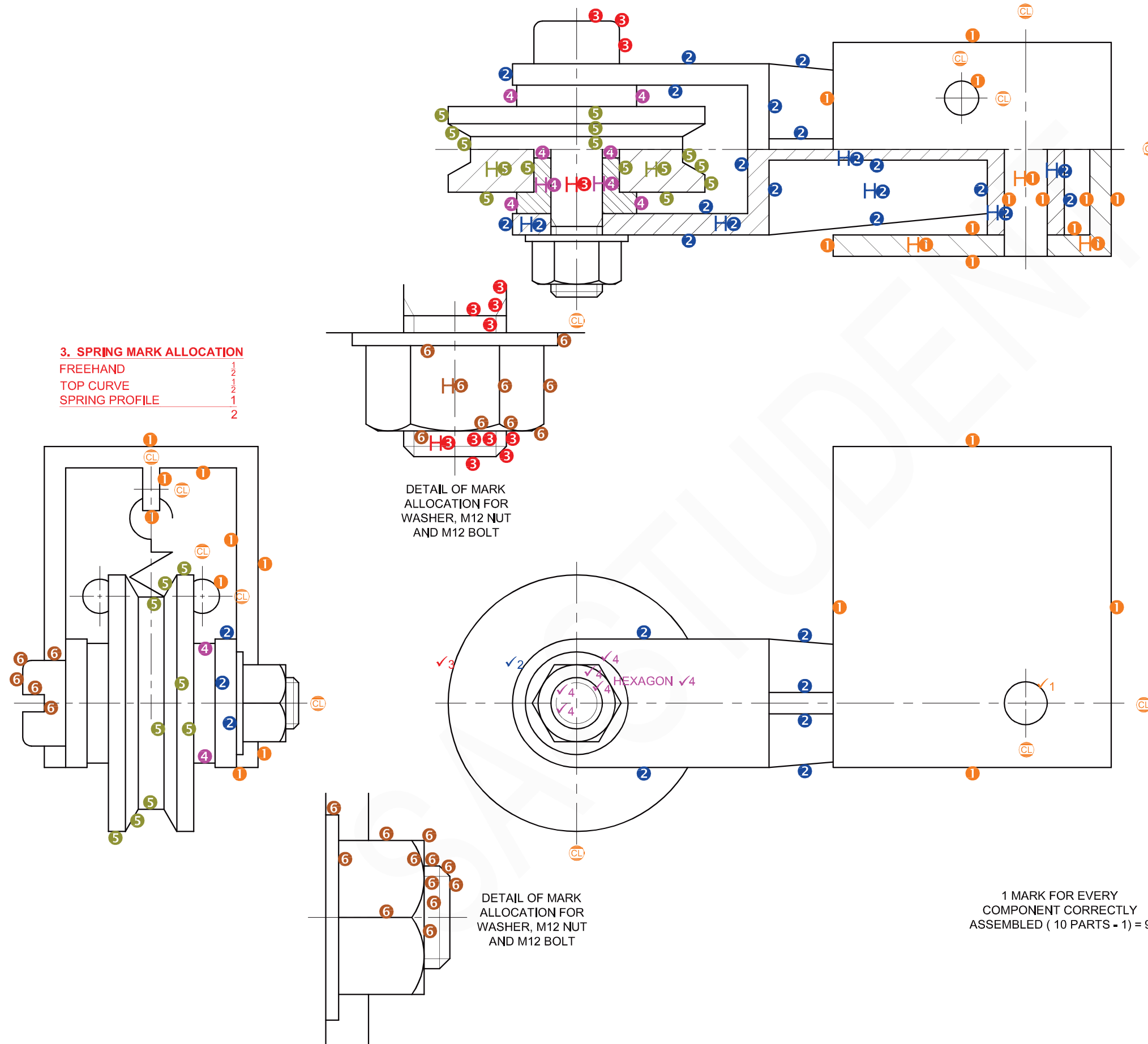
SECTIONAL FRONT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	M14 NUT	5			
2	WASHER	2			
3	BRACKET	14			
4	SPACER	2			
5	BUSH	2			
6	M14 SHAFT	9			
7	SWIVEL ARM	8½			
8	PULLEY	5½			
9	BUSH	2			
10	SHAFT + PIN	4			
<b>SUBTOTAL</b>		<b>54</b>			

GENERAL					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CENTRE LINES	6			
2	ASSEMBLY	10			
3	CUTTING PLANE	3			
<b>SUBTOTAL</b>		<b>19</b>			
<b>TOTAL</b>		<b>88</b>			

PENALTY (-)				
<b>GRAND TOTAL</b>				
EXAMINATION NUMBER				
EXAMINATION NUMBER				

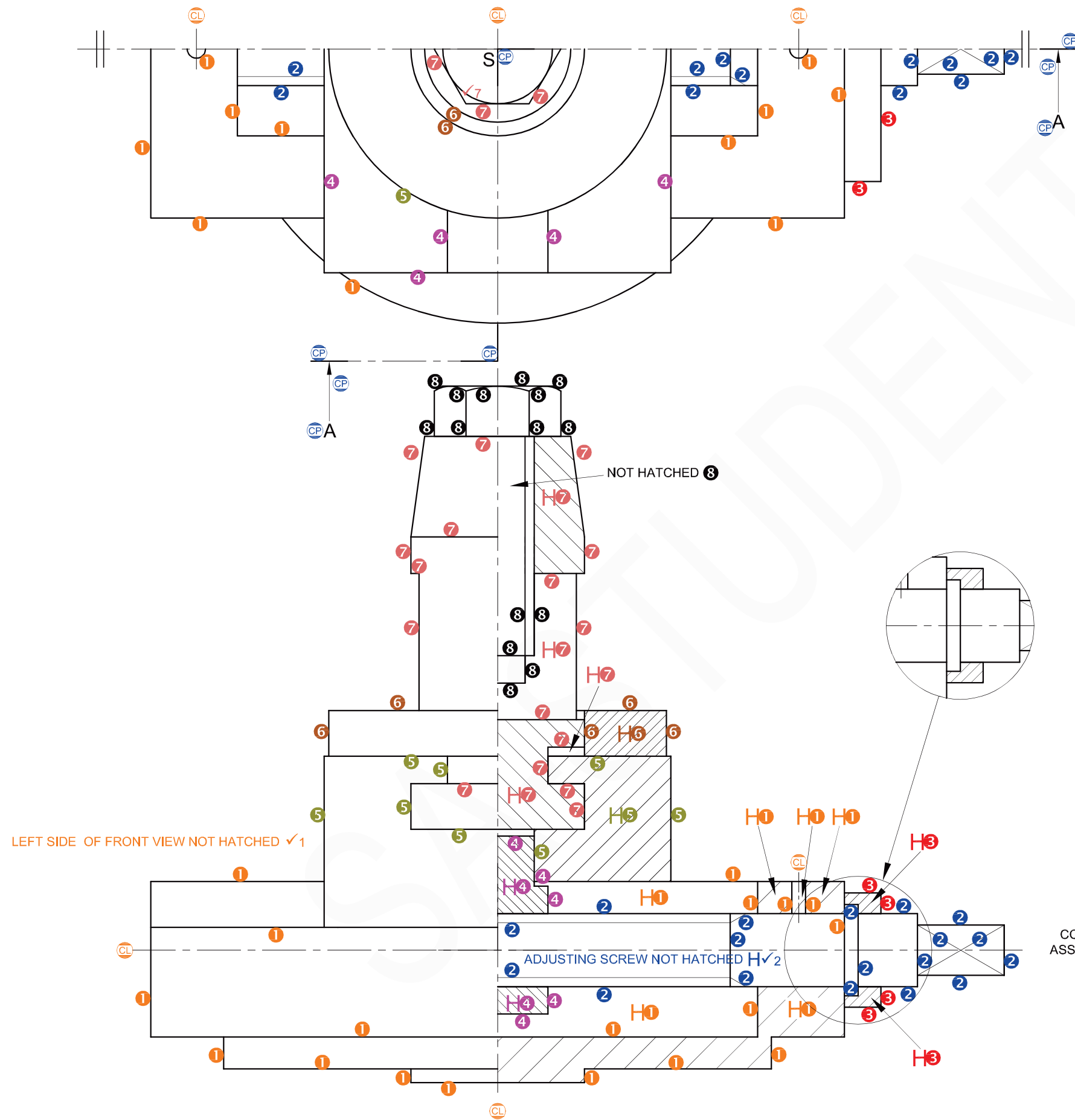
PAPER 2 QUESTION 4  
 GRADE 12  
 SCE 2017  
 MARKING GUIDELINES





FOR OFFICIAL USE ONLY	
INCORRECT ORTHOGRAPHIC PROJECTION	
INCORRECT SCALE	
INCORRECT HATCHING	
PARTS NOT ASSEMBLED	
<b>TOTAL</b>	

ASSESSMENT CRITERIA			
FRONT VIEW			
1	HOUSING + PIN	3	
2	FORK	4	
3	PULLEY	1	
4	M12 BOLT + WASHER + M12 NUT	6	
<b>SUBTOTAL</b>		<b>14</b>	
SECTIONAL TOP VIEW			
1	HOUSING + PIN	7	
2	FORK	10 1/2	
3	M12 BOLT	7	
4	BUSH	4	
5	PULLEY	7 1/2	
6	WASHER + M12 NUT	4 1/2	
<b>SUBTOTAL</b>		<b>40 1/2</b>	
LEFT VIEW			
1	HOUSING	4 1/2	
2	FORK	1 1/2	
3	SPRING	2	
4	BUSH	1	
5	PULLEY	4 1/2	
6	M12 BOLT + WASHER + M12 NUT	8 1/2	
<b>SUBTOTAL</b>		<b>22</b>	
GENERAL			
1	CENTRE LINES	6 1/2	
2	ASSEMBLY	9	
<b>SUBTOTAL</b>		<b>15 1/2</b>	
<b>TOTAL</b>		<b>92</b>	
PENALTIES (-)			
<b>GRAND TOTAL</b>			
EXAMINATION NUMBER			
EXAMINATION NUMBER			



1 MARK FOR EVERY COMPONENT CORRECTLY ASSEMBLED ( 8 PARTS - 1) = 7

PAPER 2 QUESTION 4  
GRADE 12  
November 2016  
MEMORANDUM

**FOR OFFICIAL USE ONLY**

INCORRECT SCALE			
INCORRECT HATCHING			
PARTS NOT ASSEMBLED			
<b>TOTAL</b>			

**ASSESSMENT CRITERIA**

**TOP VIEW**

		POSSIBLE	OBTAINED	SIGN	MODERATED
1	BODY	5 1/2			
2	ADJUSTING SCREW	6			
3	PLATE	1			
4	SLIDE BLOCK	2 1/2			
5	SPACER	1/2			
6	TOOL HOLDER	1			
7	M16 BOLT	2 1/2			
<b>SUBTOTAL</b>		<b>19</b>			

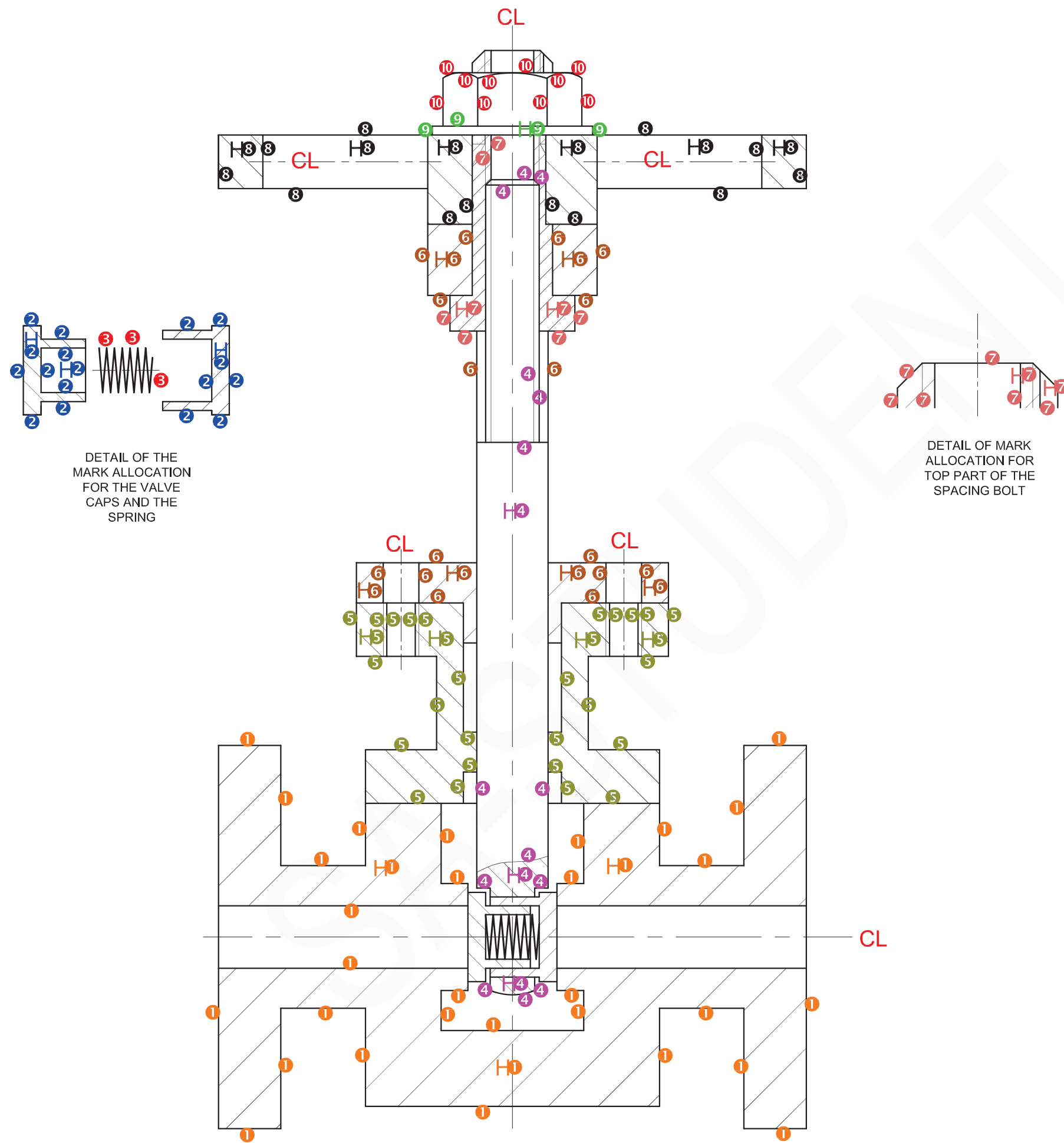
**SECTIONAL FRONT VIEW**

1	BODY	13			
2	ADJUSTING SCREW	10			
3	PLATE	3			
4	SLIDE GUIDE	3 1/2			
5	SLIDE BLOCK	4 1/2			
6	SPACER	3			
7	TOOL HOLDER	10			
8	M16 BOLT	8			
<b>SUBTOTAL</b>		<b>55</b>			

**GENERAL**

1	CENTRE LINES	3			
2	CUTTING PLANE	4			
3	ASSEMBLY	7			
<b>SUBTOTAL</b>		<b>14</b>			
<b>TOTAL</b>		<b>88</b>			

PENALTIES (-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					

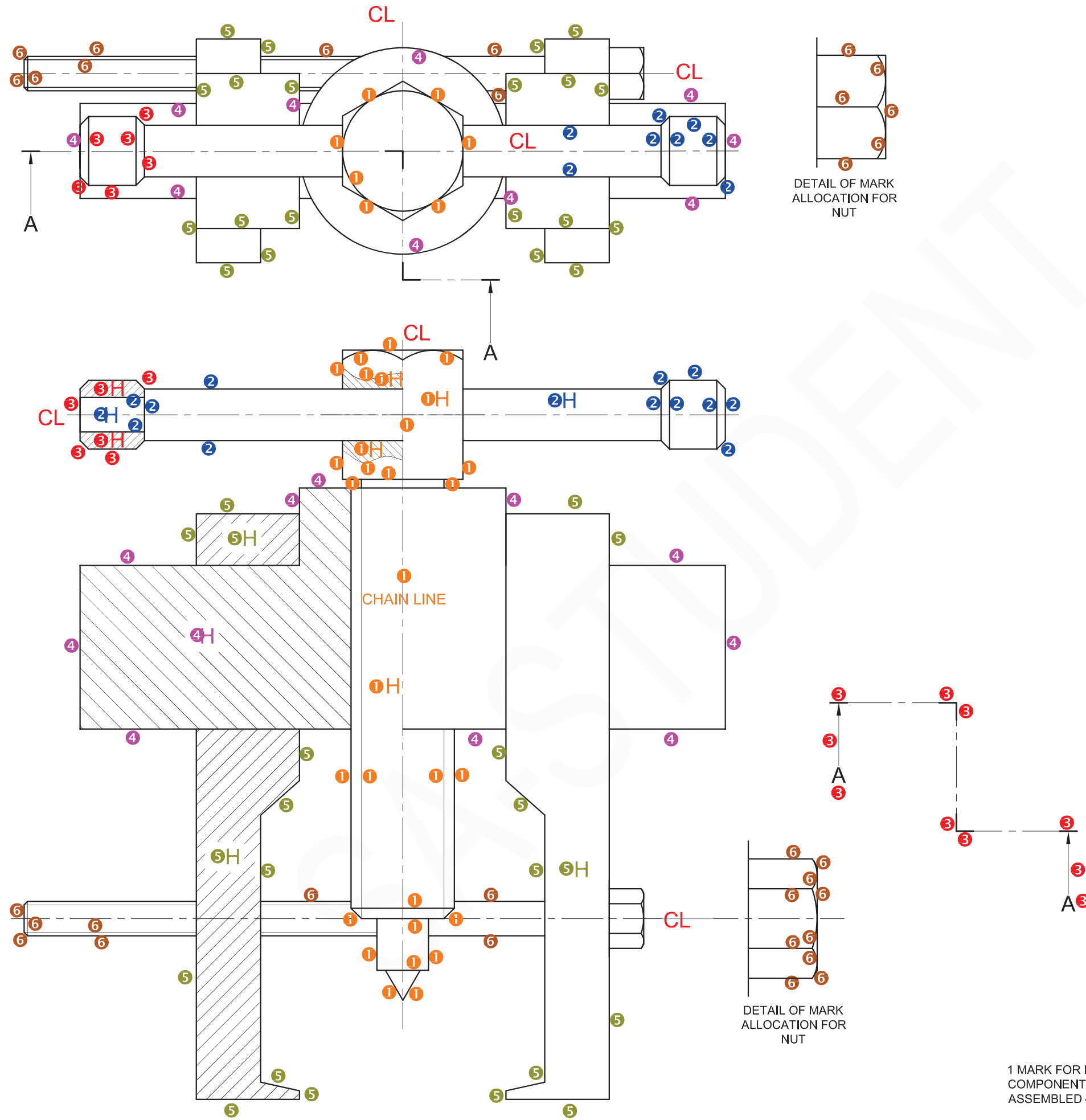


DETAIL OF THE MARK ALLOCATION FOR THE VALVE CAPS AND THE SPRING

DETAIL OF MARK ALLOCATION FOR TOP PART OF THE SPACING BOLT

FOR OFFICIAL USE ONLY		
INCORRECT SCALE		
INCORRECT HATCHING		
PARTS NOT ASSEMBLED		
<b>TOTAL PENALTIES (-)</b>		

ASSESSMENT CRITERIA					
SECTIONAL FRONT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	VALVE BASE	16 1/2			
2	VALVE CAPS	8 1/2			
3	SPRING	1 1/2			
4	CONNECTING ROD	8 1/2			
5	FILLER PIECE	15			
6	SPLIT PIECE	11			
7	SPACING BOLT	8			
8	HAND WHEEL	9			
9	WASHER	2			
10	M18 NUT	5			
<b>SUBTOTAL</b>		<b>85</b>			
GENERAL					
1	CENTRE LINES	3			
2	ASSEMBLY	10			
<b>SUBTOTAL</b>		<b>13</b>			
<b>TOTAL</b>		<b>98</b>			
TOTAL PENALTIES(-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					



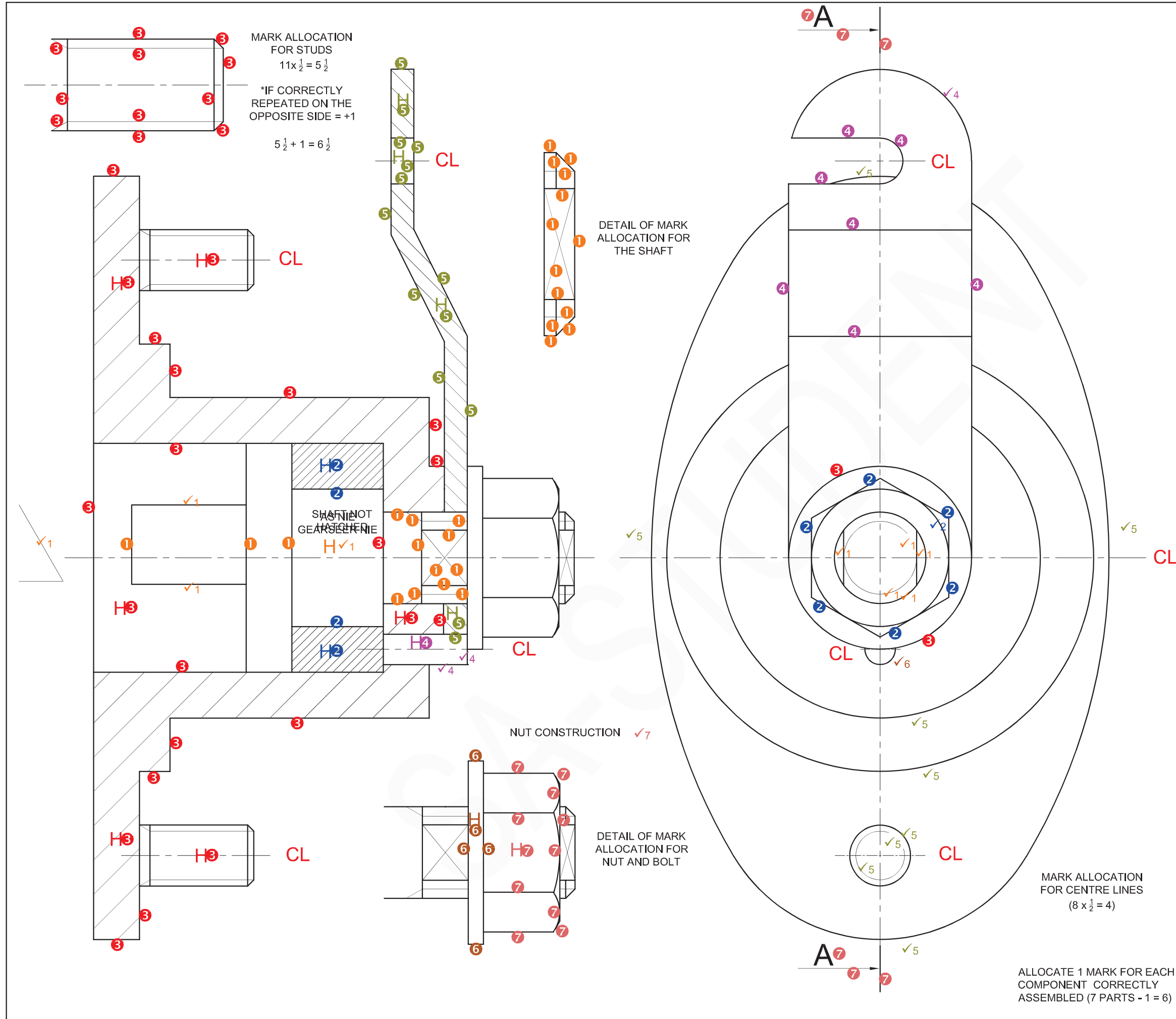
DETAIL OF MARK ALLOCATION FOR NUT

DETAIL OF MARK ALLOCATION FOR NUT

1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED - MAKSIMUM 6

PENALTIES		
NOT IN THIRD ANGLE		
INCORRECT OVERALL SCALE		
INCORRECT HATCHING		
NOT ASSEMBLED		
<b>TOTAL PENALTIES (-)</b>		

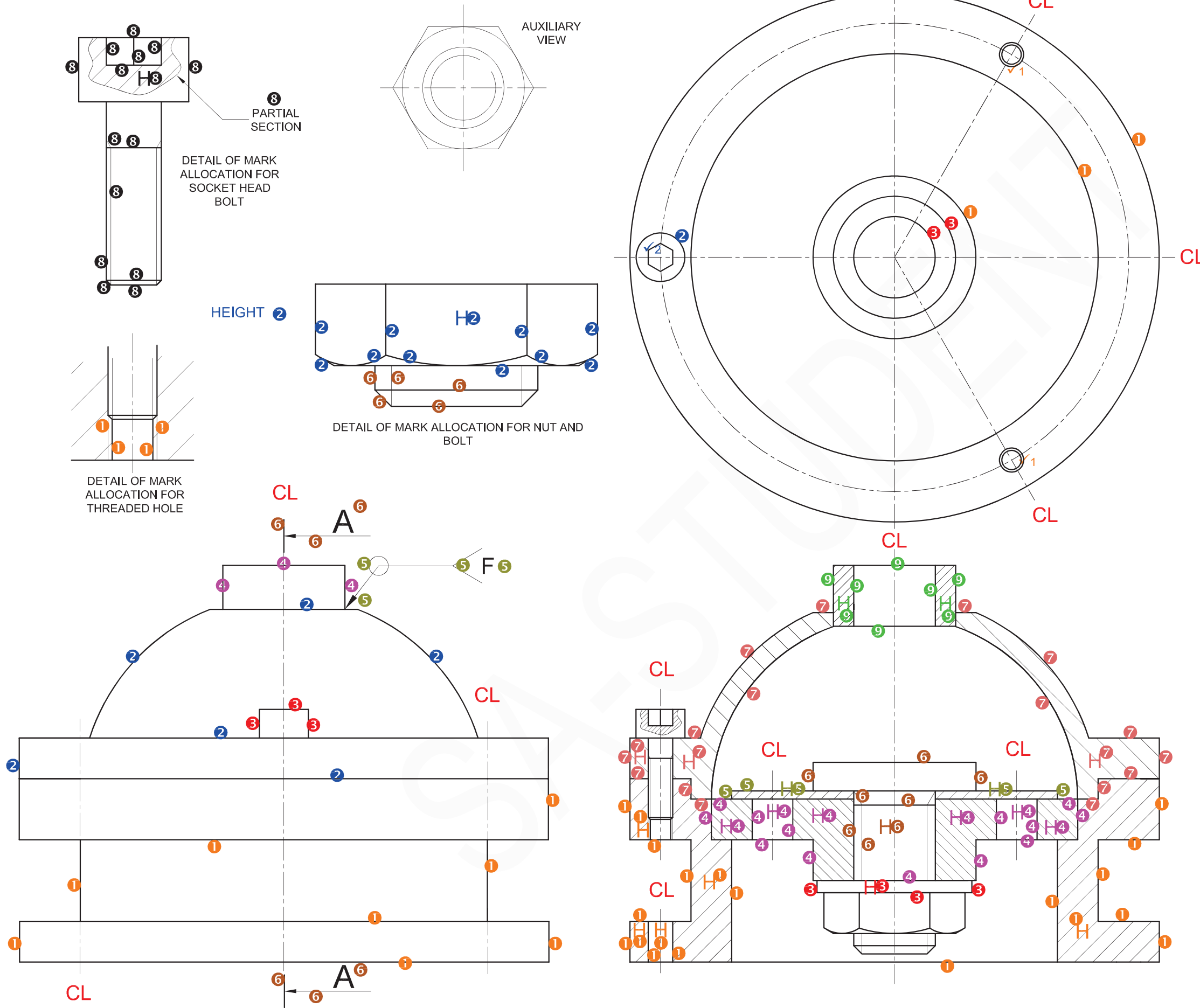
ASSESSMENT CRITERIA					
TOP VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	WORM SCREW	3½			
2	LEVER	4			
3	END RING	3			
4	BEAM	4½			
5	STRONG ARM	10			
6	M8 BOLT	7			
<b>SUBTOTAL</b>		32			
SECTIONAL FRONT VIEW					
1	WORM SCREW	15			
2	LEVER	7			
3	END RING	3			
4	BEAM	5½			
5	STRONG ARM	10½			
6	M8 BOLT	9			
<b>SUBTOTAL</b>		50			
GENERAL					
1	CENTRE LINES	3			
2	ASSEMBLY	6			
3	CUTTING PLANE	5			
<b>SUBTOTAL</b>		14			
<b>TOTAL</b>		<b>96</b>			
TOTAL PENALTIES(-)					
<b>GRAND TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					



PENALTIES		
THIRD ANGLE		
INCORRECT SCALE		
HATCHING		
<b>TOTAL PENALTIES (-)</b>		

ASSESSMENT CRITERIA					
SECTIONAL FRONT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	SHAFT	17 $\frac{1}{2}$			
2	SEAL	2			
3	BASE	18 $\frac{1}{2}$			
4	GUIDE PIN	2 $\frac{1}{2}$			
5	LOCKING LEVER	7			
6	WASHER	2 $\frac{1}{2}$			
7	M12 NUT	6 $\frac{1}{2}$			
<b>SUBTOTAL</b>		<b>56 <math>\frac{1}{2}</math></b>			
RIGHT VIEW					
1	SHAFT	5			
2	M12 NUT	4			
3	WASHER	1			
4	LOCKING LEVER	4 $\frac{1}{2}$			
5	BASE	9			
6	GUIDE PIN	1			
7	CUTTING PLANE	3			
<b>SUBTOTAL</b>		<b>27 <math>\frac{1}{2}</math></b>			
GENERAL					
1	CENTRE LINES	4			
2	ASSEMBLY	6			
<b>SUBTOTAL</b>		<b>10</b>			
<b>TOTAL</b>		<b>94</b>			
TOTAL PENALTIES (-)					
<b>FINAL TOTAL</b>					
EXAMINATION NUMBER					
EXAMINATION NUMBER					

ALLOCATE 1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED (9 PARTS - 1 = 8)



PENALTIES			
THIRD ANGLE (TA)			
INCORRECT SCALE (IS)			
NUT CONSTRUCTION (NC)			
HATCHING (H)			
TOTAL			
Carry the TOTAL over to the penalties row under GENERAL			

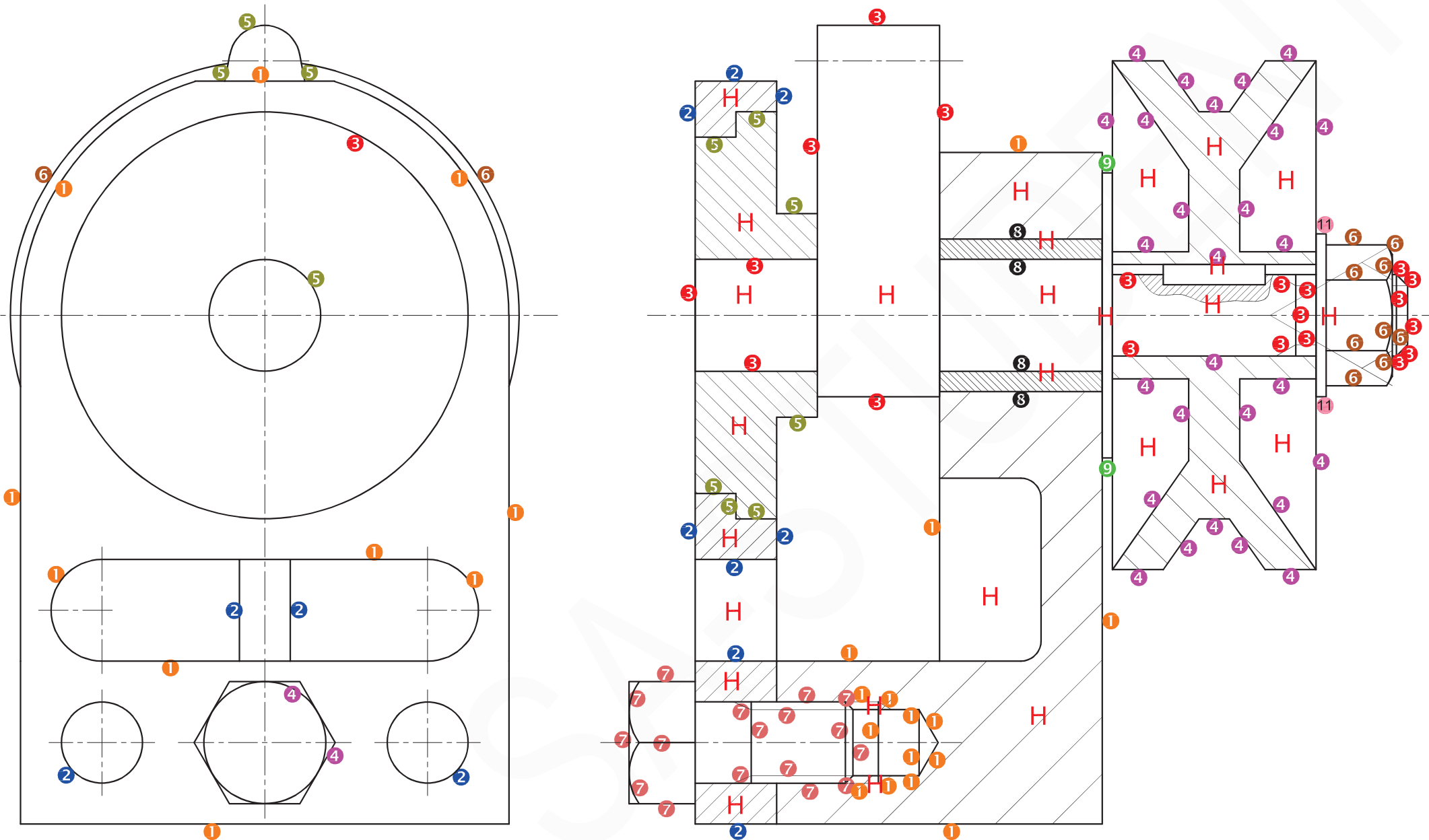
ASSESSMENT CRITERIA					
SECTIONAL FRONT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CYLINDER	12			
2	M20 NUT	6			
3	WASHER	2			
4	VALVE PLATE	9 1/2			
5	DIAPHRAGM	2 1/2			
6	FLANGE STUD	6 1/2			
7	CYLINDER HEAD	9 1/2			
8	SOCKET HEAD BOLT	8			
9	OUTLET PIPE	4			
<b>SUBTOTAL</b>		<b>60</b>			

TOP VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CYLINDER HEAD	3 1/2			
2	SOCKET HEAD BOLT	1 1/2			
3	OUTLET PIPE	1			
<b>SUB TOTAL</b>		<b>6</b>			

LEFT VIEW					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CYLINDER	4			
2	CYLINDER HEAD	3			
3	SOCKET HEAD BOLT	1 1/2			
4	OUTLET PIPE	1 1/2			
5	WELDING SYMBOL	2			
6	CUTTING PLANE	3			
<b>SUBTOTAL</b>		<b>15</b>			

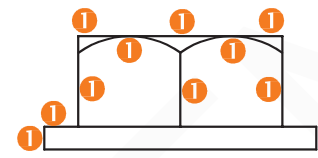
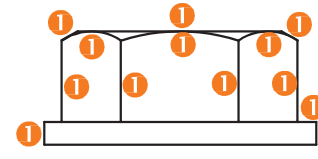
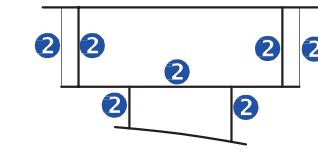
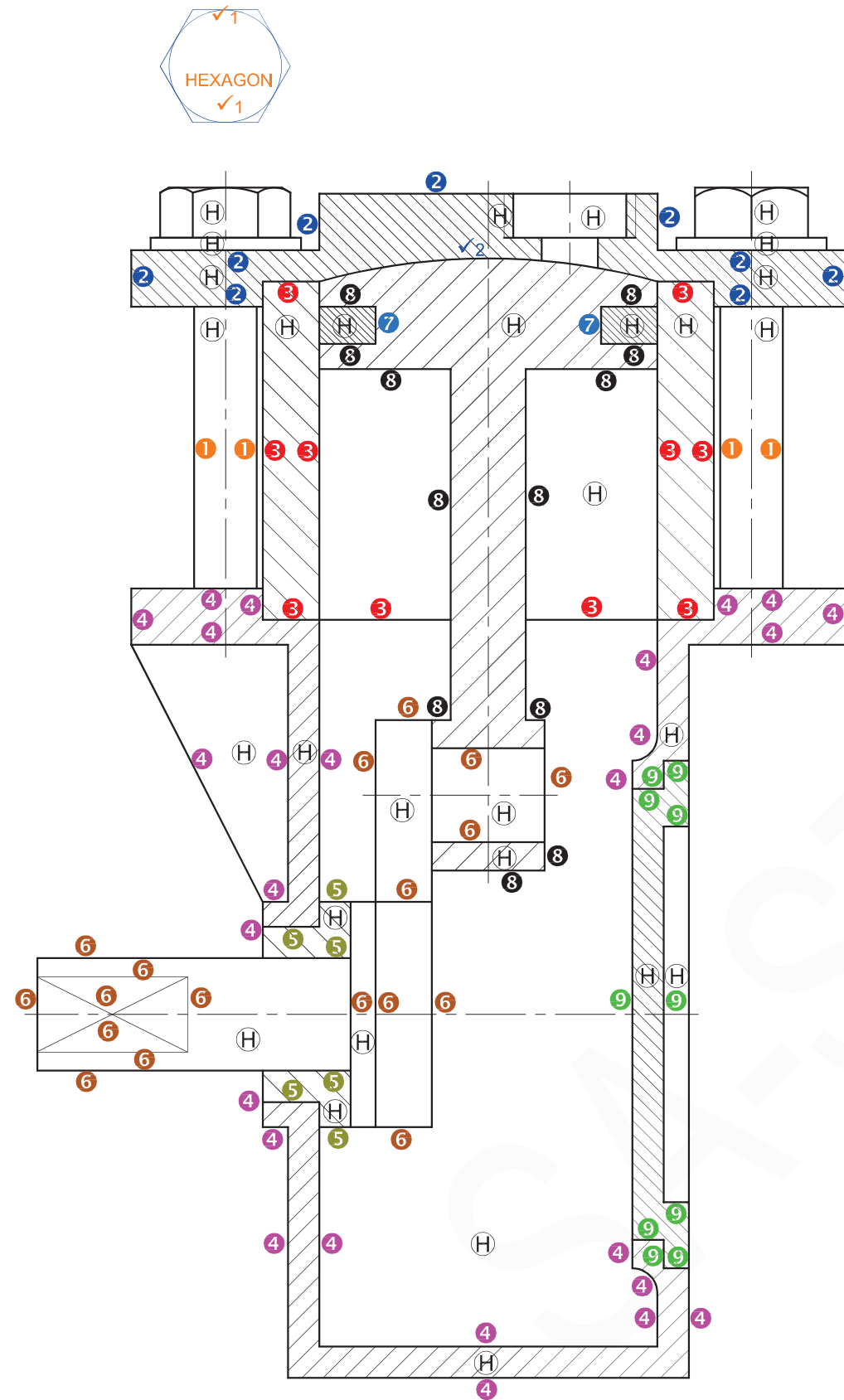
GENERAL					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	CENTRE LINES	6			
2	ASSEMBLY	8			
<b>SUBTOTAL</b>		<b>14</b>			

PENALTIES (-)				
<b>TOTAL</b>	<b>95</b>			
EXAMINATION NUMBER				
EXAMINATION NUMBER				<b>6</b>

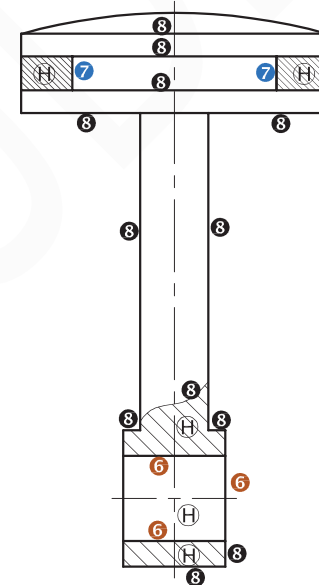


AN ASSEMBLY CONSTITUTES TWO OR MORE PARTS SO ALLOCATE 1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED (11 PARTS -1=10)

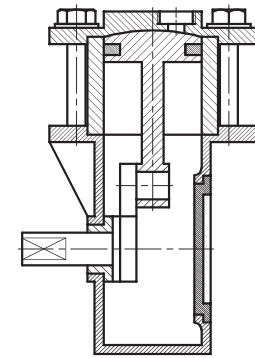
ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	BRACKET	7 1/2		
2	SIDE PLATE	4		
3	CAM SHAFT	10		
4	BELT PULLEY	13 1/2		
5	COLLAR	3 1/2		
6	M16 NUT	5		
7	M16 BOLT	8		
8	BUSH	2		
9	SPACER	1		
10	KEY	1 1/2		
11	WASHER	1		
H	HATCHING	13 1/2		
<b>SUBTOTAL</b>		<b>70 1/2</b>		
LEFT VIEW				
1	SIDE PLATE	5		
2	BRACKET	2		
3	COLLAR	1/2		
4	BOLT	1		
5	CAM SHAFT	2		
6	PULLEY	1		
<b>SUBTOTAL</b>		<b>11 1/2</b>		
GENERAL				
1	CENTRE LINES	8		
2	ASSEMBLY	5		
<b>SUBTOTAL</b>		<b>13</b>		
<b>PENALTIES (-)</b>				
<b>TOTAL</b>		<b>95</b>		
EXAMINATION NUMBER				
EXAMINATION NUMBER				



MARK ALLOCATION FOR THE HEXAGONAL BOLT HEADS SHOWING TWO FACES AND FOR THREE FACES AND THE WASHER.



ALTERNATIVE ANSWER FOR THE PRESENTATION OF THE PISTON SHOWING THE REDISTRIBUTION OF MARKS (8).

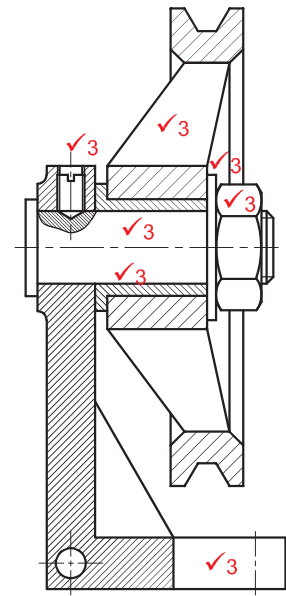
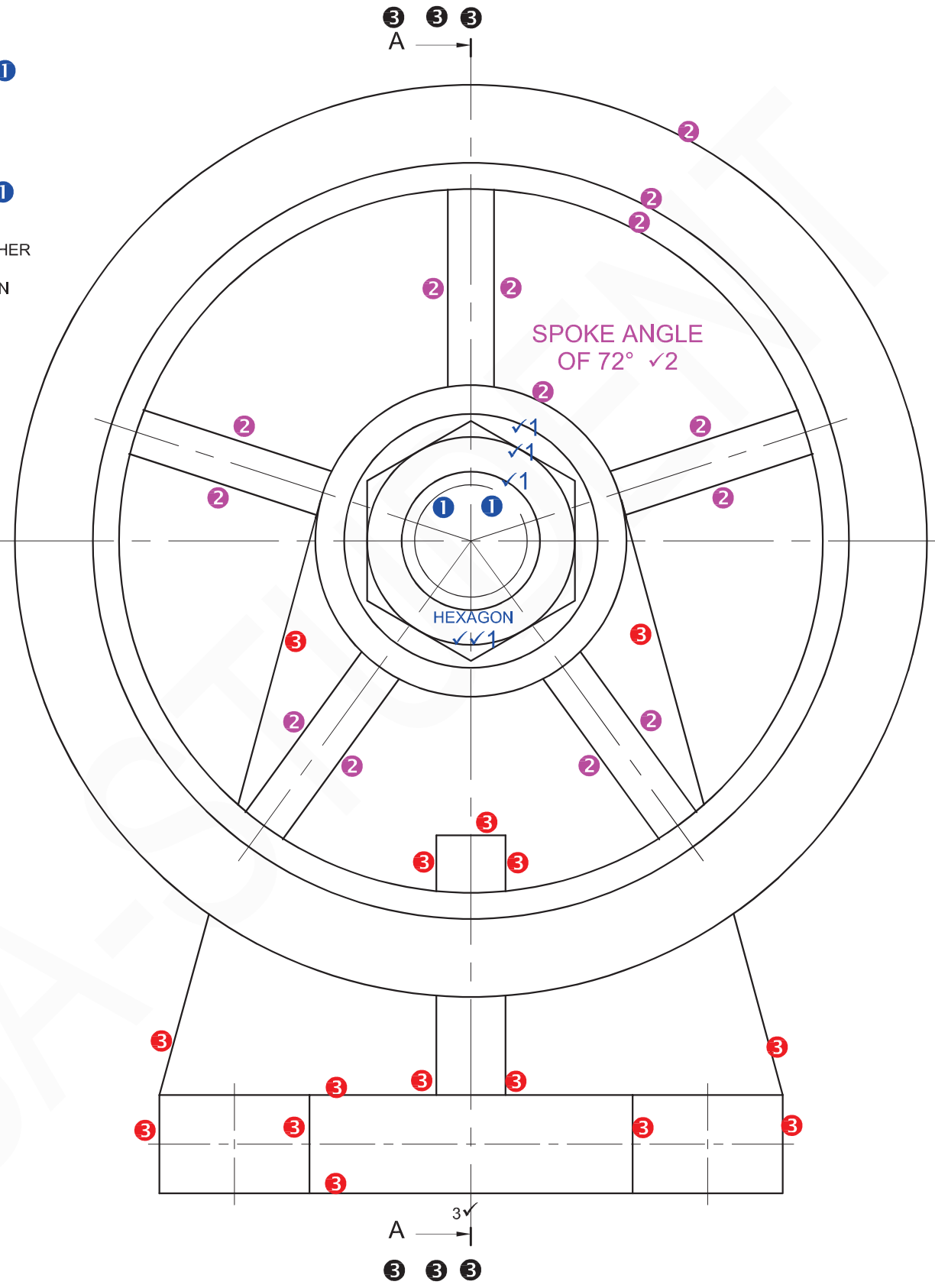
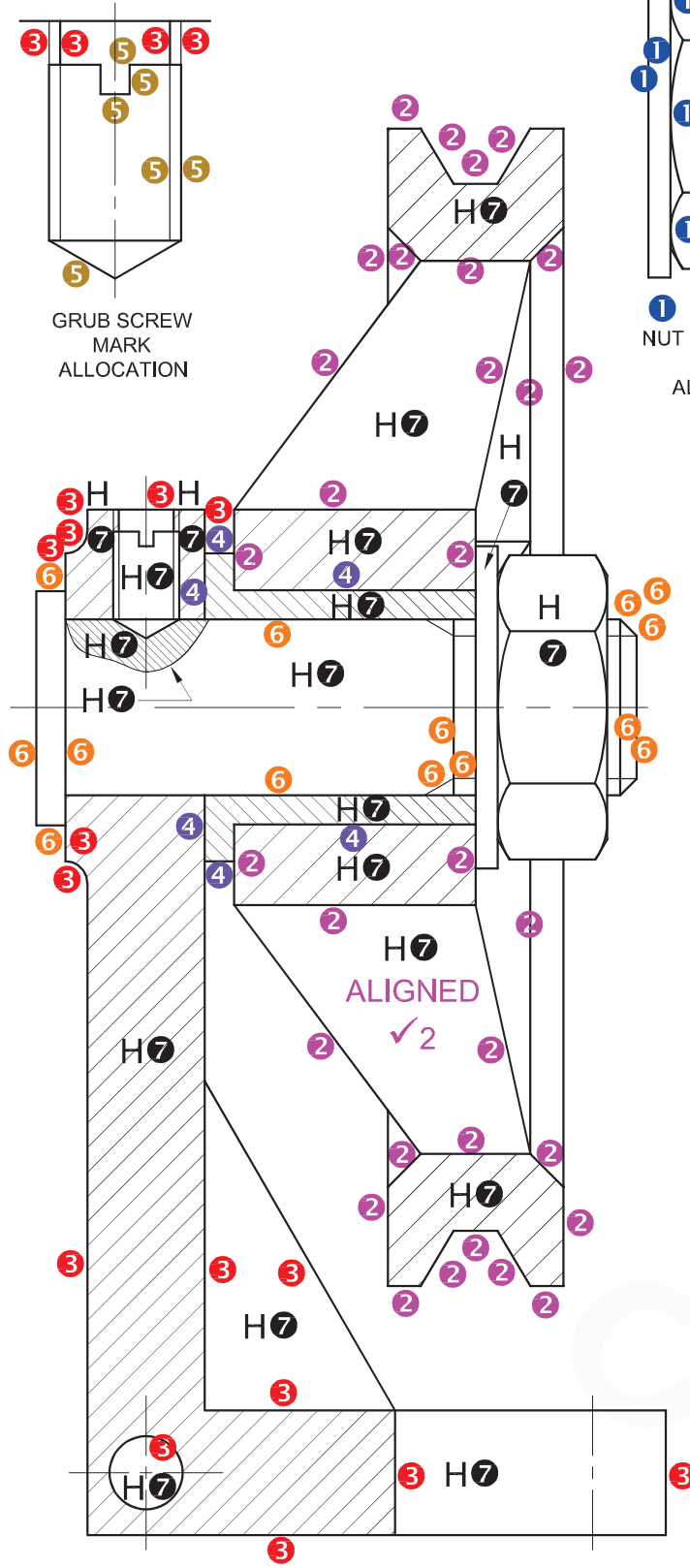
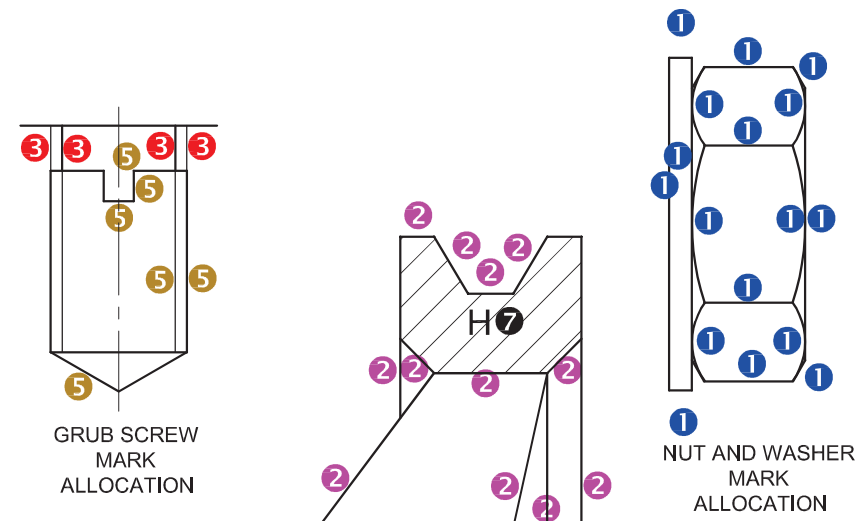


1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED  
MAXIMUM 9

ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	M12 BOLT + WASHER	15		
2	CYLINDER HEAD	9		
3	CYLINDER	5		
4	CRANK CASE	13		
5	BUSH	3		
6	CRANK SHAFT	9		
7	PISTON RING	1		
8	PISTON	6		
9	CRANK CASE COVER	5		
H	HATCHING	15		
<b>SUBTOTAL</b>		<b>81</b>		
GENERAL				
1	CENTRE LINES	3		
2	ASSEMBLY	9		
<b>SUBTOTAL</b>		<b>12</b>		
<b>TOTAL</b>		<b>93</b>		

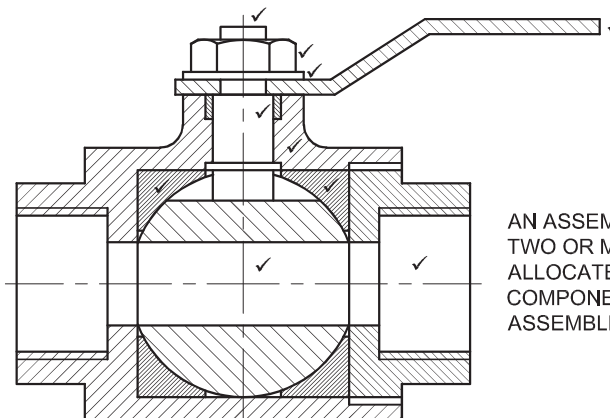
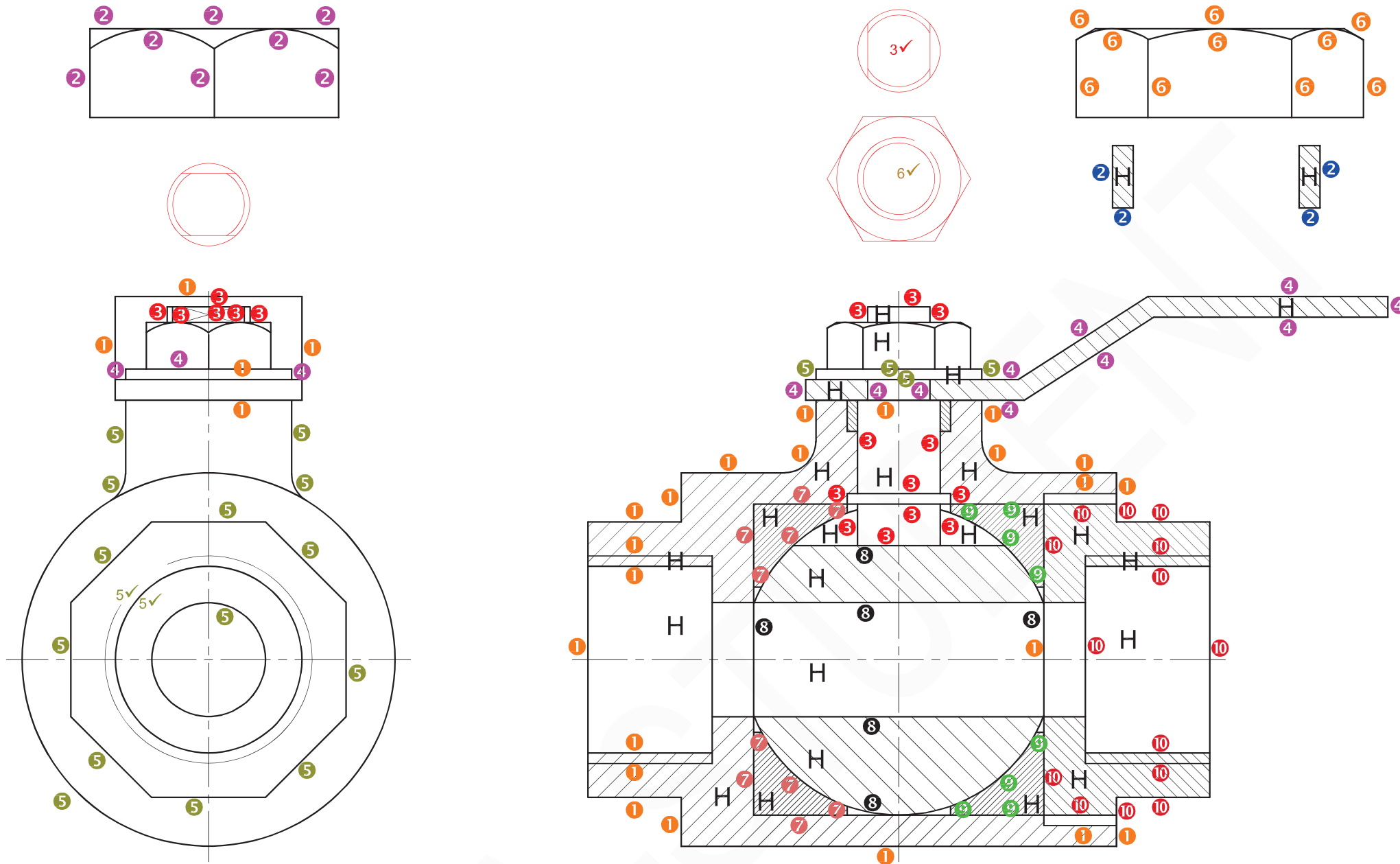
EXAMINATION NUMBER	
EXAMINATION NUMBER	





1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED (7 PARTS - 1 = 6)

ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	M24 NUT + WASHER	8½		
2	PULLEY	16		
3	BRACKET	9½		
4	BUSH	3		
5	GRUB SCREW	3		
6	SHAFT	7		
7	HATCHING	10		
SUBTOTAL		57		
RIGHT VIEW				
1	M24 NUT + WASHER	6		
2	PULLEY	8		
3	BRACKET	7½		
SUBTOTAL		21½		
GENERAL				
1	CENTRE LINES	7		
2	CUTTING PLANE + LABEL	3½		
3	ASSEMBLY	6		
SUBTOTAL		16½		
<b>TOTAL</b>		<b>95</b>		
EXAMINATION NUMBER				
EXAMINATION NUMBER				



AN ASSEMBLY CONSTITUTES TWO OR MORE PARTS SO ALLOCATE 1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED (10 PARTS -1=9)

**ASSESSMENT CRITERIA**

**SECTIONAL FRONT VIEW**

1	VALVE BODY	11		
2	FIBRE SEAL	2		
3	SHAFT	7		
4	HANDLE	5		
5	WASHER	2		
6	M16 NUT	6		
7	LEFT CUP SEAL	3		
8	VALVE	3		
9	RIGHT CUP SEAL	3		
10	END CAP	7		
H	HATCHING	13		
<b>SUBTOTAL</b>		<b>62</b>		

**LEFT VIEW**

1	HANDLE	2½		
2	M16 NUT	4		
3	SHAFT	3		
4	WASHER	1½		
5	VALVE BODY	9		
<b>SUBTOTAL</b>		<b>20</b>		

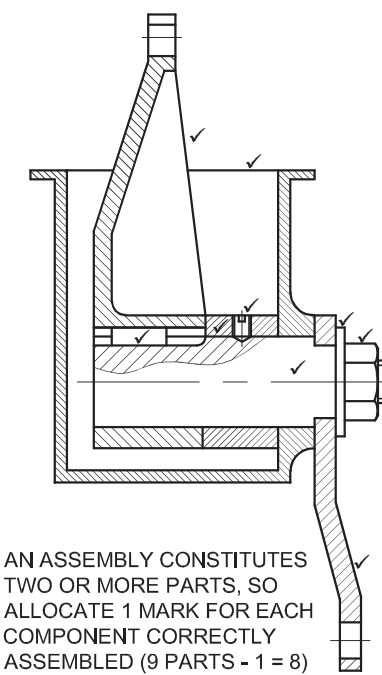
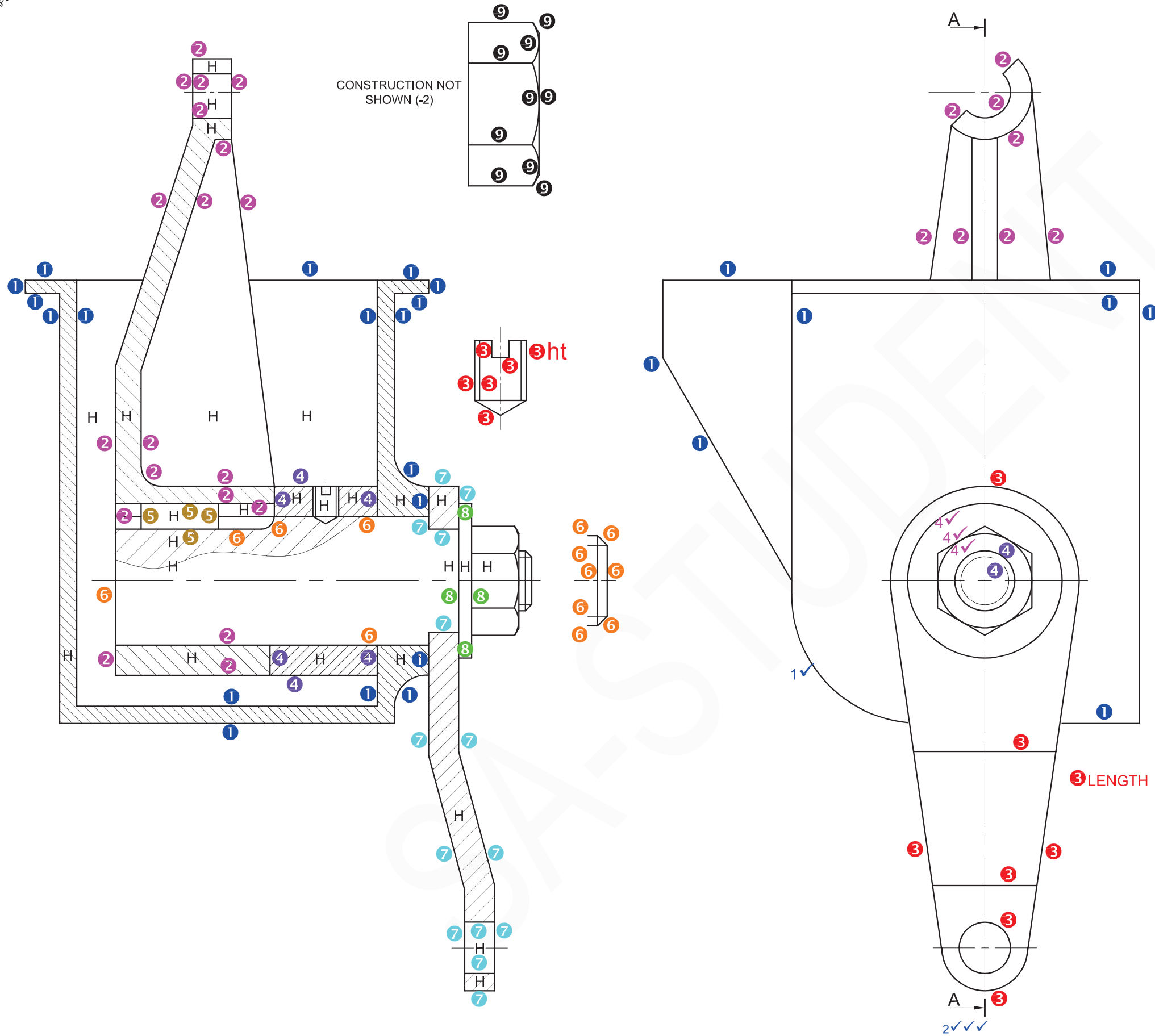
**GENERAL**

1	CENTRE LINES	2		
2	ASSEMBLY	9		
<b>SUBTOTAL</b>		<b>11</b>		
<b>TOTAL</b>		<b>93</b>		

EXAMINATION NUMBER

EXAMINATION NUMBER

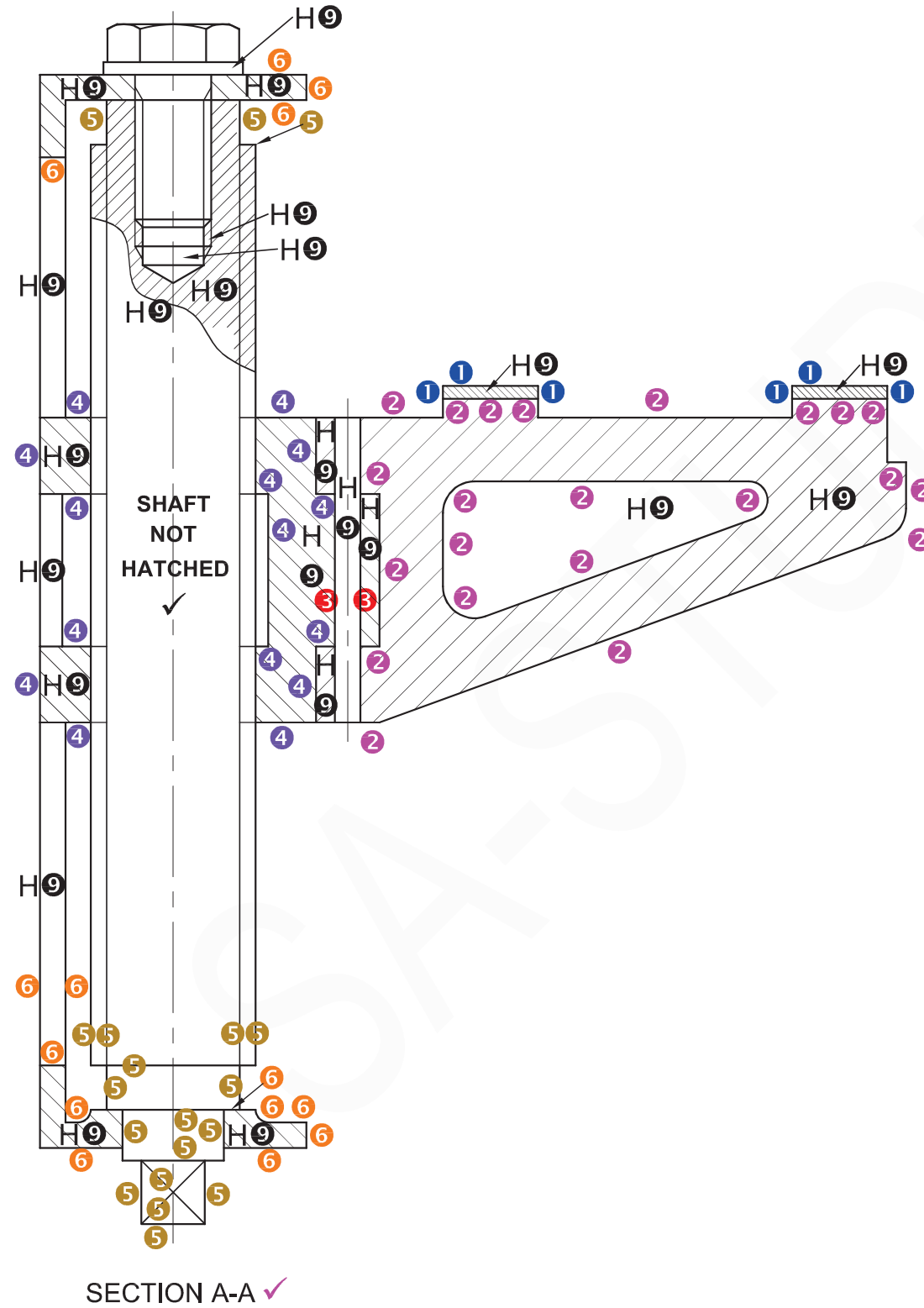
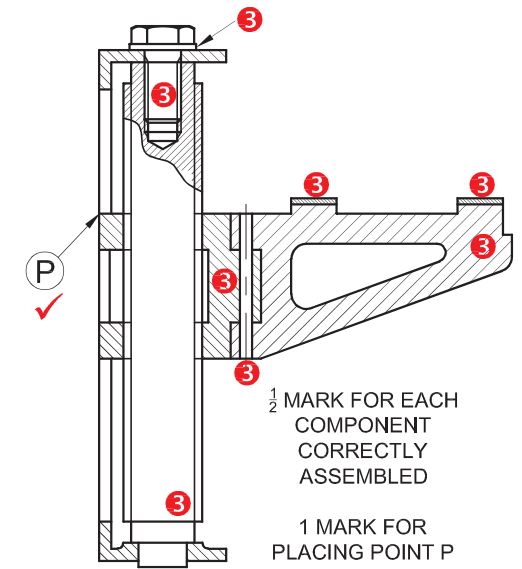
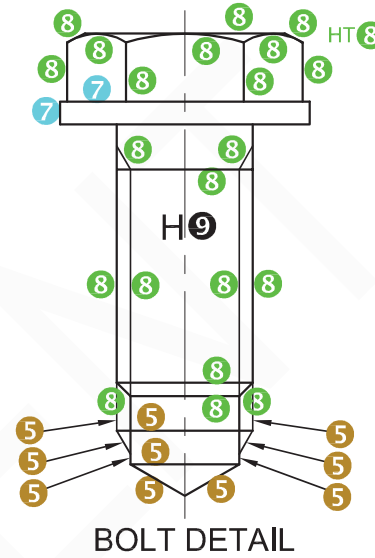
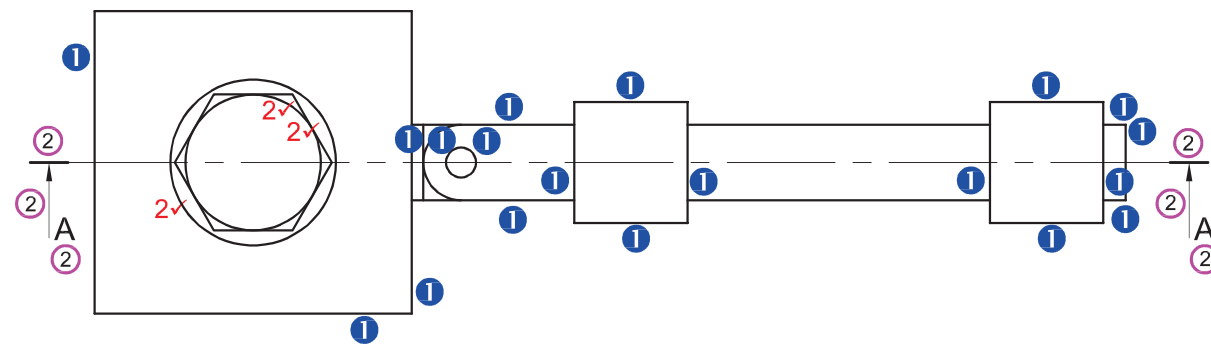
6



AN ASSEMBLY CONSTITUTES TWO OR MORE PARTS, SO ALLOCATE 1 MARK FOR EACH COMPONENT CORRECTLY ASSEMBLED (9 PARTS - 1 = 8)

ASSESSMENT CRITERIA		
SECTIONAL FRONT VIEW		
1	HOUSING	9
2	RELEASE ARM	9½
3	GRUB SCREW	3
4	SPACER	3
5	KEY	2
6	SHAFT	6½
7	LEVER	7
8	WASHER	2
9	M14 NUT	5
H	HATCHING	13
<b>SUBTOTAL</b>		<b>60</b>
RIGHT VIEW		
1	HOUSING	5
2	RELEASE ARM	4
3	LEVER	4
4	WASHER + M14 NUT	4
<b>SUBTOTAL</b>		<b>17</b>
GENERAL		
1	CENTRE LINES	4
2	CUTTING PLANE	3
3	ASSEMBLY	8
<b>SUBTOTAL</b>		<b>15</b>
<b>TOTAL</b>		<b>92</b>

STAPLE



**ASSESSMENT CRITERIA**

**SECTIONAL FRONT VIEW**

1	PAD	3		
2	JACK ARM	11		
3	PIN	1		
4	JACK	7½		
5	SHAFT	14½		
6	BRACKET	7		
7	WASHER	1		
8	M12 BOLT	11		
9	HATCHING	13		
<b>SUBTOTAL</b>		<b>69</b>		

**TOP VIEW**

1	OUTLINE	10		
2	M12 BOLT + WASHER	3		
<b>SUBTOTAL</b>		<b>13</b>		

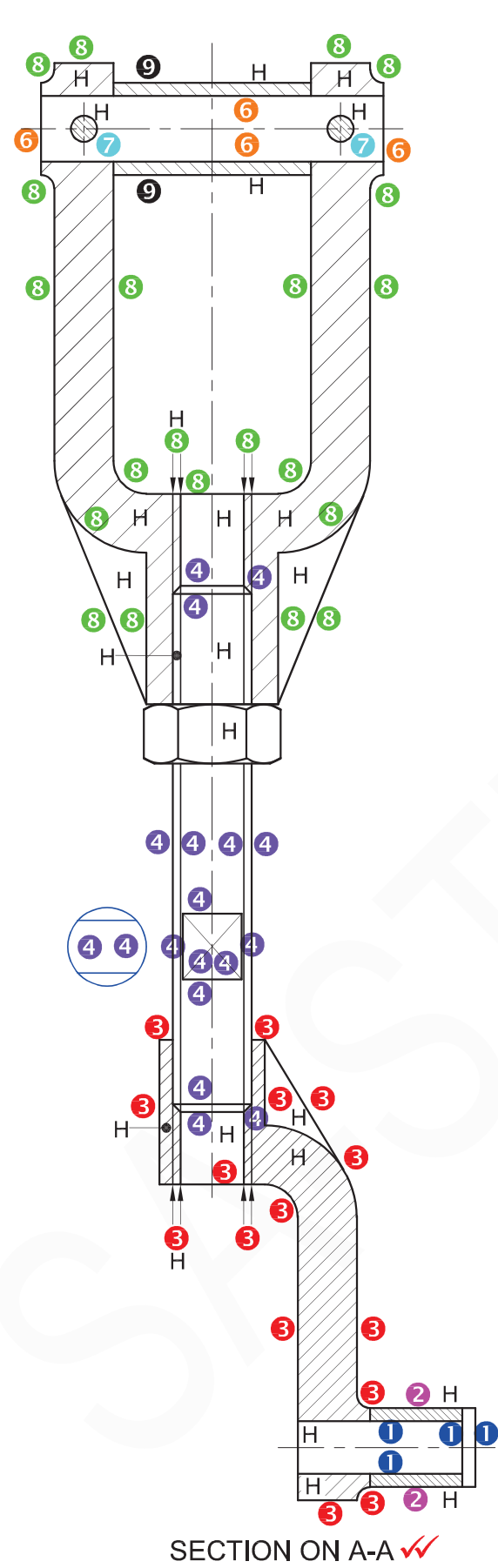
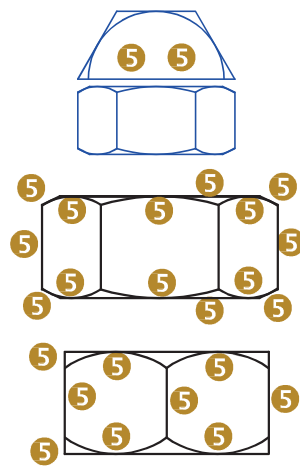
**GENERAL**

1	CENTRE LINES	2		
2	CUTTING PLANE + TITLE	4		
3	ASSEMBLY	5		
<b>SUBTOTAL</b>		<b>11</b>		
<b>TOTAL</b>		<b>93</b>		

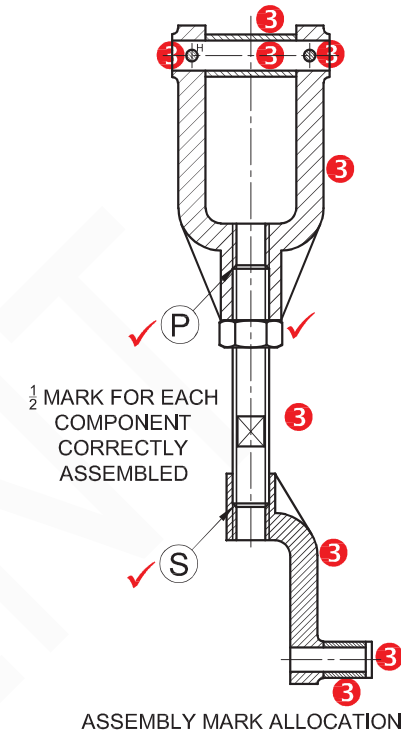
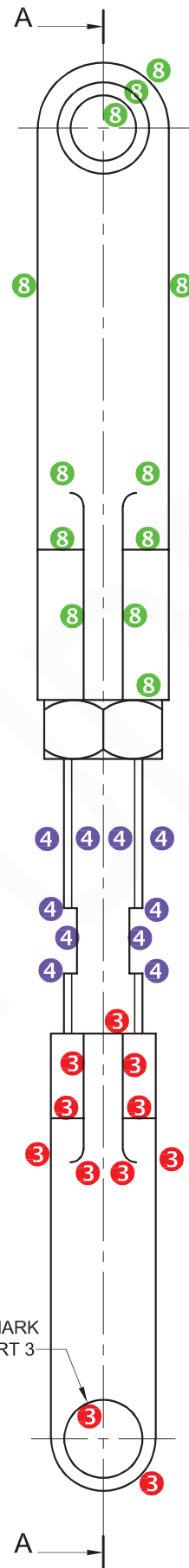
EXAMINATION NUMBER

EXAMINATION NUMBER

6

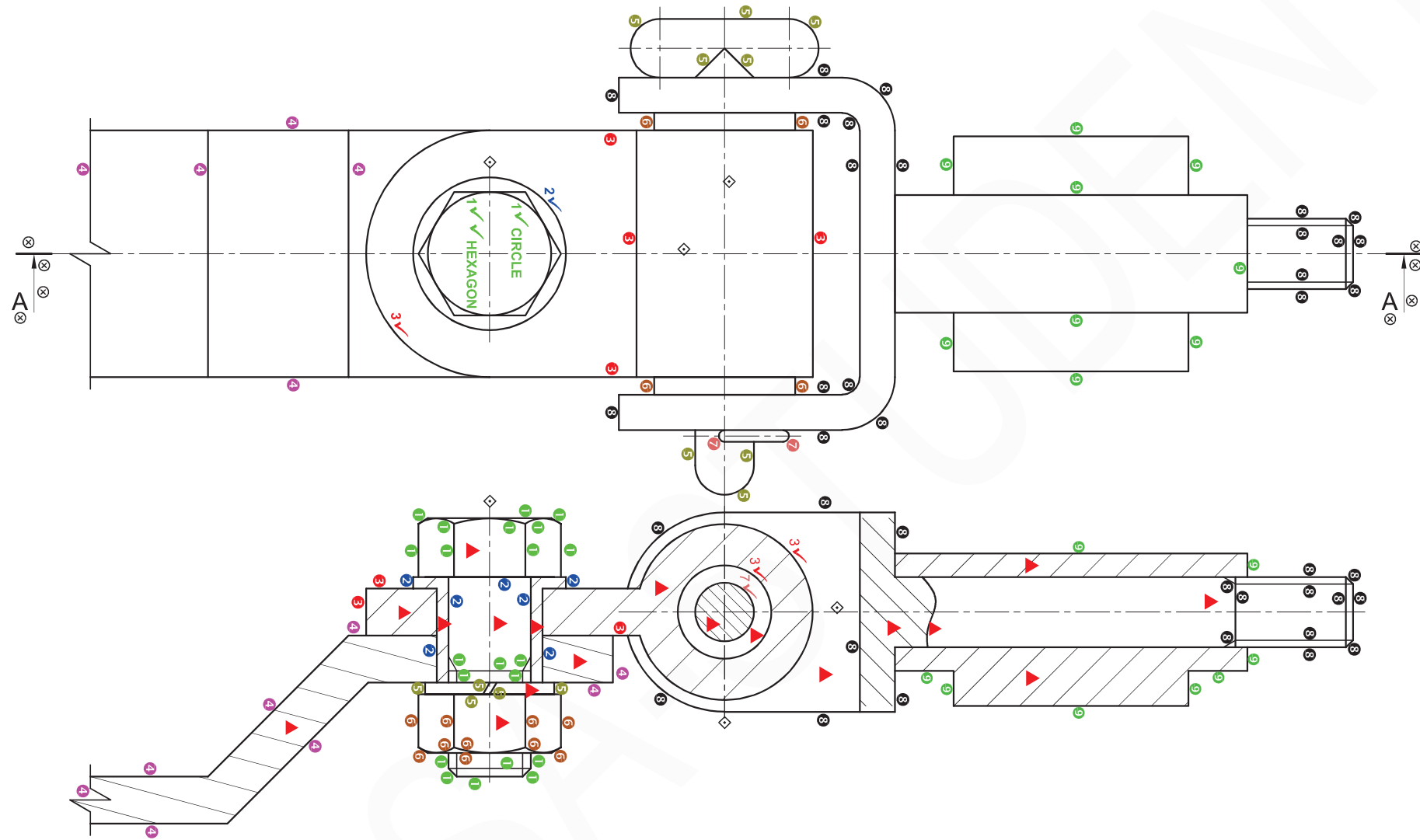


PART 1, MARK WITH PART 3



ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
	POSSIBLE	OBTAINED	SIGN	MODERATE
1	SHAFT A	2		
2	BUSH A	1		
3	OFFSET CONN'	7 1/2		
4	TIE-ROD	9		
5	M12 NUT	8		
6	SHAFT B	2		
7	DOWEL	1		
8	FORK	10 1/2		
9	BUSH B	1		
H	HATCHING	12		
<b>SUB-TOTAL</b>		<b>54</b>		
RIGHT VIEW				
3	OFFSET CONN'	5 1/2		
4	TIE-ROD	5		
5	M12 NUT	4 1/2		
8	FORK	6		
<b>SUB-TOTAL</b>		<b>21</b>		
GENERAL				
1	CENTRE LINES	4		
2	CUTTING PLANE + TITLE	5		
3	FV ASSEMBLY	7		
<b>SUB-TOTAL</b>		<b>16</b>		
<b>TOTAL</b>		<b>91</b>		
EXAMINATION NUMBER				
EXAMINATION NUMBER				

STAPLE



**ASSESSMENT CRITERIA**

**TOP VIEW**

	POSSIBLE	OBTAINED	SIGN	MODERATE
1. M14 BOLT	3			
2. BUSH	1			
3. SWIVEL	3			
4. FIXED ARM	2½			
5. PIN	4			
6. BUSH	2			
7. LOCKING PIN	1			
8. YOKE	10			
9. MOUNTING BRACKET	4½			
<b>SUBTOTAL</b>	<b>31</b>			

**SECTIONAL FRONT VIEW**

1. M14 BOLT	10½			
2. BUSH	3½			
3. SWIVEL	3½			
4. FIXED ARM	4			
5. SPRING WASHER	2½			
6. M14 NUT	5			
7. PIN	1			
8. YOKE	9			
9. MOUNTING BRACKET	4			
<b>SUBTOTAL</b>	<b>43</b>			

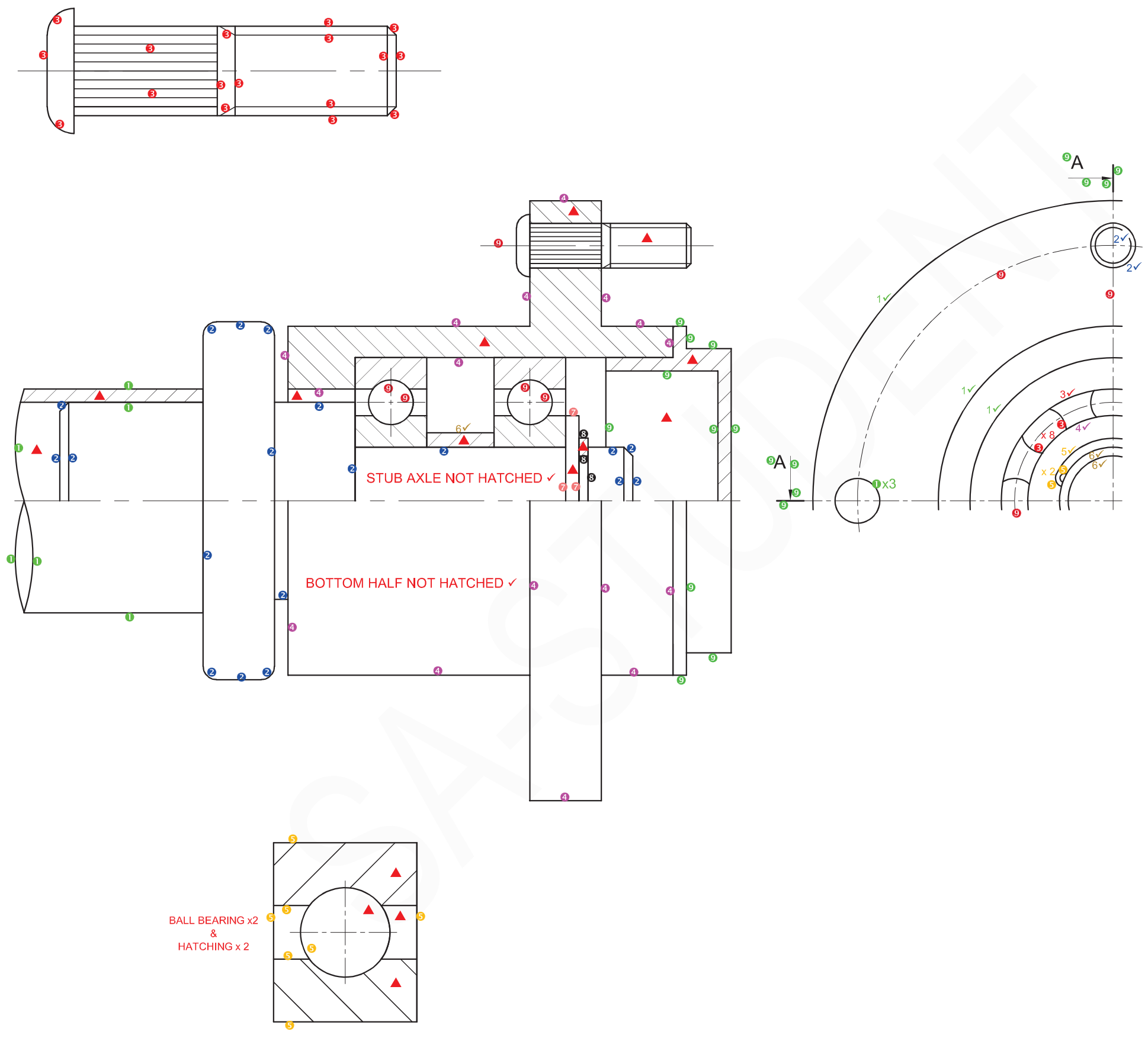
**GENERAL**

THIRD ANGLE	2			
◇ CENTRE LINES	3			
⊗ SECTION A-A	4			
▲ HATCHING	9			
ASSEMBLY ½ MARK OF EVERY PART CORRECTLY ASSEMBLED	5			
<b>SUBTOTAL</b>	<b>23</b>			
<b>TOTAL</b>	<b>97</b>			

EXAMINATION NUMBER

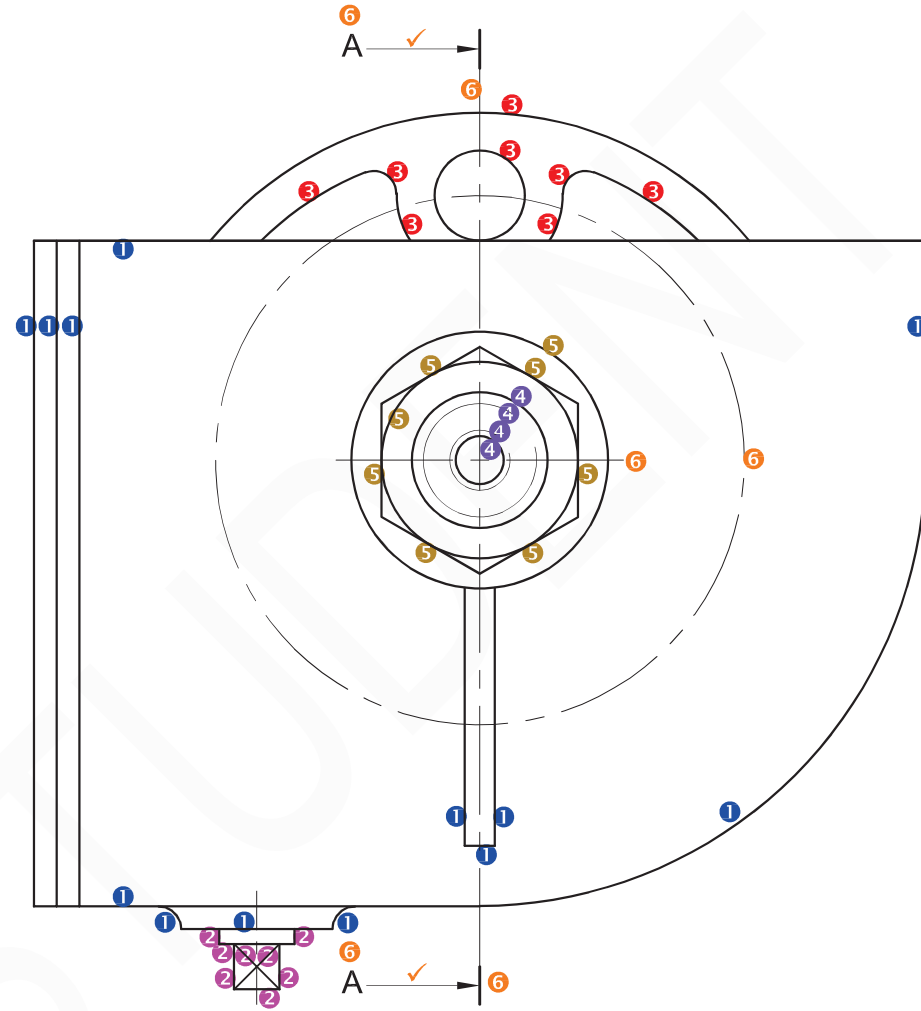
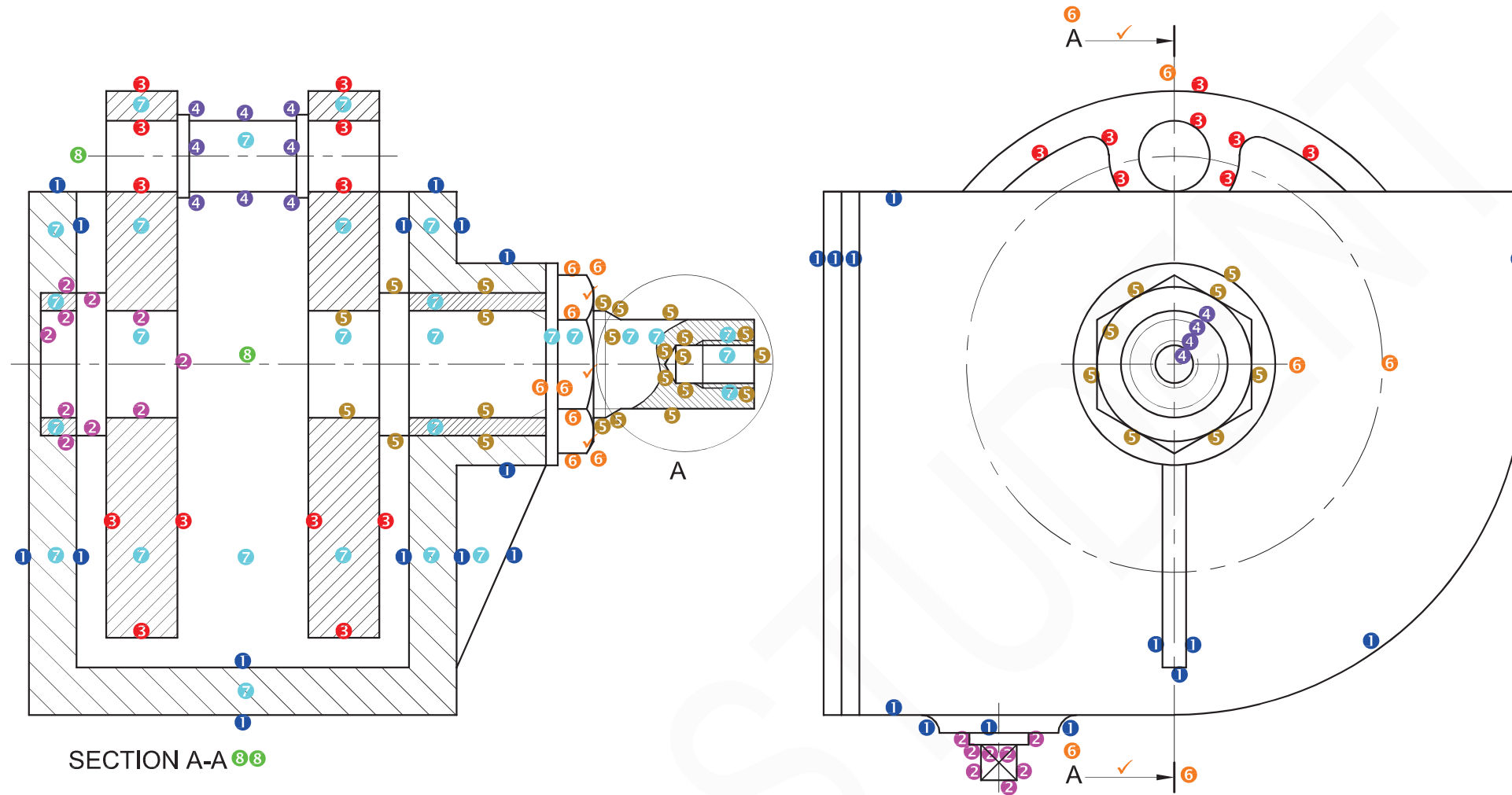
EXAMINATION NUMBER

STAPLE



ASSESSMENT CRITERIA				
HALF-SECTIONAL FRONT VIEW				
	POSSIBLE	OBTAINED	SIGN	MODERATE
THIRD ANGLE	2			
1. AXLE PIPE	3			
2. STUB AXLE	9½			
3. WHEEL STUD	8½			
4. WHEEL HUB	8			
5. BEARINGS	7			
6. SPACER	1			
7. WASHER	1½			
8. CIRCLIP	1½			
9. HUB CAP	5			
<b>SUBTOTAL</b>	<b>47</b>			
RIGHT VIEW + GENERAL				
1. WHEEL HUB	4½			
2. WHEEL STUD	2			
3. BEARING	9			
4. WASHER	1			
5. CIRCLIP	3			
6. STUB AXLE	2			
7. ASSEMBLY	9			
8. SECTION A-A	4			
9. CENTRE LINES	4			
10. HATCHING	11½			
<b>SUBTOTAL</b>	<b>50</b>			
<b>TOTAL</b>	<b>97</b>			

EXAMINATION NUMBER	
EXAMINATION NUMBER	6



NOTE:  
THE ARROW MUST POINT  
FROM THE LEFT.

NOTE:  
SHOULD THE CANDIDATE HAVE ASSEMBLED THE  
DRAWING INCORRECTLY, ANY MARK ALLOCATED  
TO A PARTICULAR LINE ON THE ASSEMBLY CAN  
ONLY BE AWARDED TO THE LINE ONCE.

**ASSESSMENT CRITERIA**

**SECTIONAL FRONT VIEW**

		POSSIBLE	OBTAINED	SIGN	MODERATE
1	HOUSING	7			
2	BUSH A + SHORT SHAFT	5			
3	FLYWHEELS	6			
4	JOURNAL	4			
5	BUSH B + DRIVE SHAFT	11½			
6	WASHER + NUT	7			
7	HATCHING + NON-HATCHING	14			
8	LABELS + CENTRE LINES	2			
<b>SUBTOTAL</b>		<b>56½</b>			

**RIGHT VIEW**

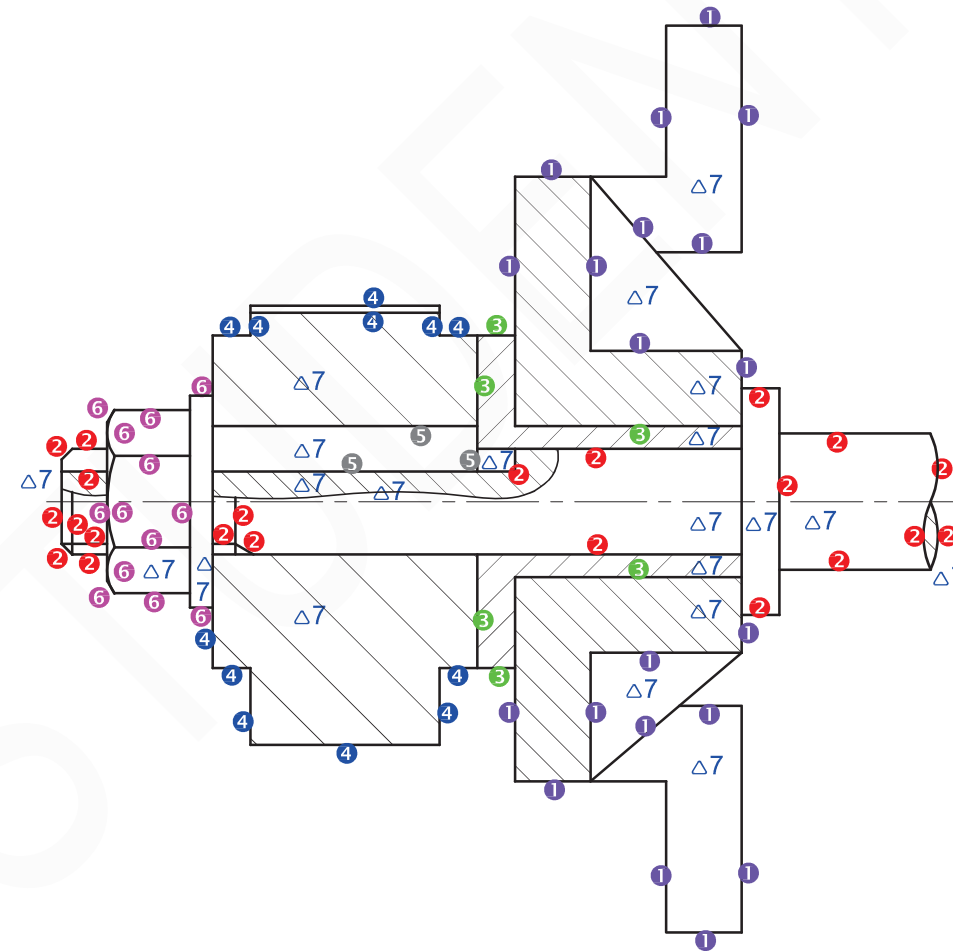
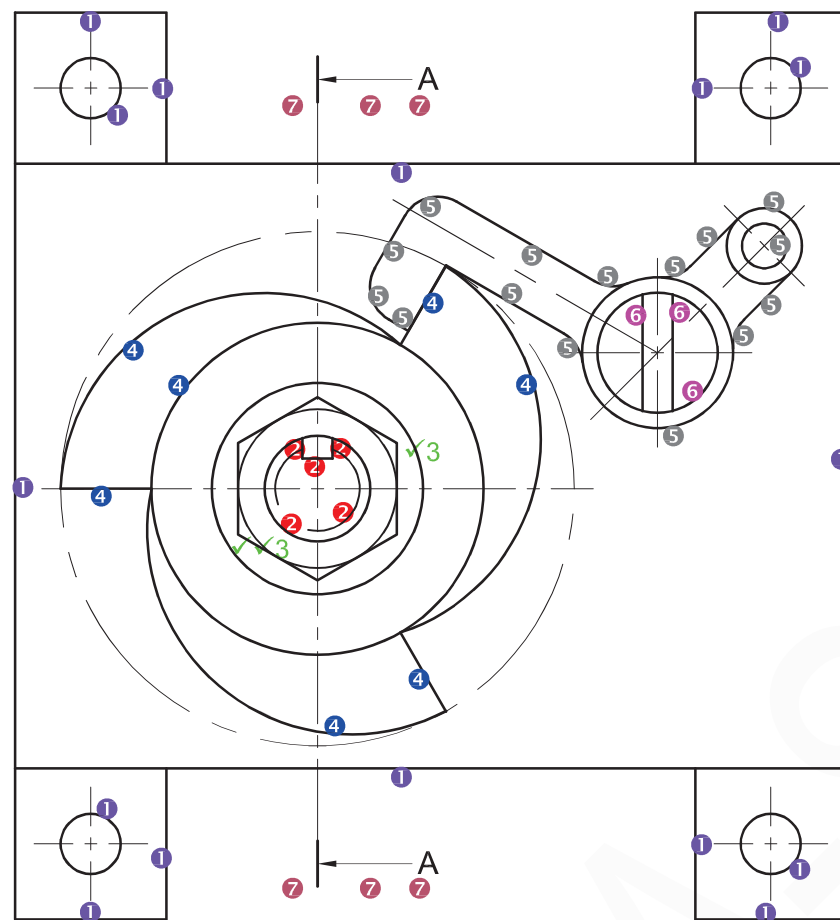
1	HOUSING	6½			
2	DRAIN PLUG	4			
3	FLYWHEEL	4			
4	DRIVE SHAFT	2			
5	NUT + WASHER	4			
6	CUTTING PLANE + CENTRE LINES	5			
7	3RD ANGLE RIGHT VIEW	2			
8	ASSEMBLY	10			
<b>SUBTOTAL</b>		<b>37½</b>			
<b>TOTAL</b>		<b>94</b>			

EXAMINATION NUMBER

EXAMINATION NUMBER

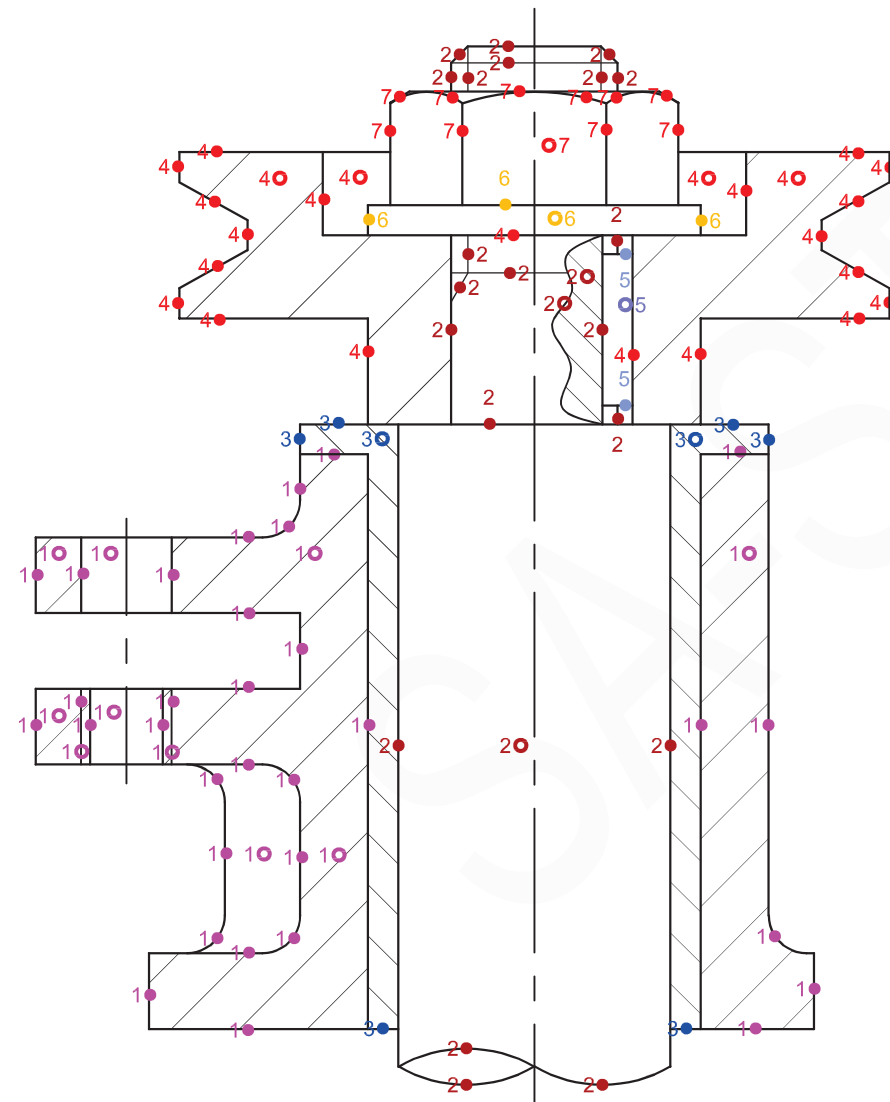
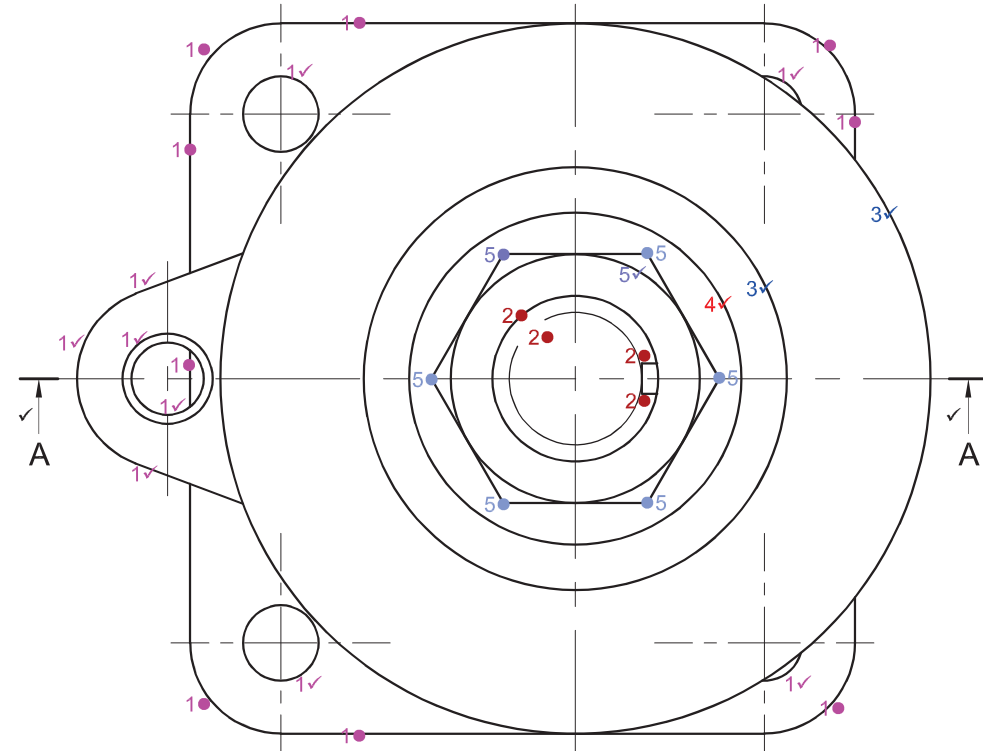
6





ASSESSMENT CRITERIA				
SECTIONAL VIEW				
	POSSIBLE	OBTAINED	SIGN	MODERATE
1. BASE	10			
2. SHAFT	11			
3. BUSH	3			
4. RATCHET	6			
5. KEY	1½			
6. WASHER + M14 NUT	6½			
7. HATCHING	10½			
FRONT VIEW				
1. BASE	8			
2. SHAFT	2½			
3. WASHER + M14 NUT	3			
4. RATCHET	3½			
5. RATCHET ARM	7½			
6. PIN	1½			
7. CUTTING PLANE A-A	3			
CENTRE LINES	$15 \times \frac{1}{2} = 7\frac{1}{2}$			
ASSEMBLY	6			
3rd ANGLE	2			
<b>TOTAL</b>	<b>93</b>			
EXAMINATION NUMBER				
EXAMINATION NUMBER				

ANSWER SHEET 4



ASSESSMENT CRITERIA

FRONT VIEW	FACET		SECTIONING		TOTAL	
	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED
1. SUPPORT BRACKET	16		5		21	
2. SHAFT	10 <sup>1</sup> / <sub>2</sub>		1 <sup>1</sup> / <sub>2</sub>		12	
3. BUSH	3		1		4	
4. PULLEY	10		2		12	
5. KEY	1		1 <sup>1</sup> / <sub>2</sub>		1 <sup>1</sup> / <sub>2</sub>	
6. WASHER	1 <sup>1</sup> / <sub>2</sub>		1 <sup>1</sup> / <sub>2</sub>		2	
7. M22 NUT	5		1 <sup>1</sup> / <sub>2</sub>		5 <sup>1</sup> / <sub>2</sub>	
TOP VIEW	FACET		SECTIONING		TOTAL	
	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED
1. SUPPORT BRACKET	13 <sup>1</sup> / <sub>2</sub>				13 <sup>1</sup> / <sub>2</sub>	
2. SHAFT	2				2	
3. PULLEY	2				2	
4. WASHER	1				1	
5. M22 NUT	4				4	
6. CUTTING PLANE A A	2				2	
CENTRE LINES					6 <sup>1</sup> / <sub>2</sub>	
ASSEMBLY					6	
<b>TOTAL</b>					<b>95</b>	

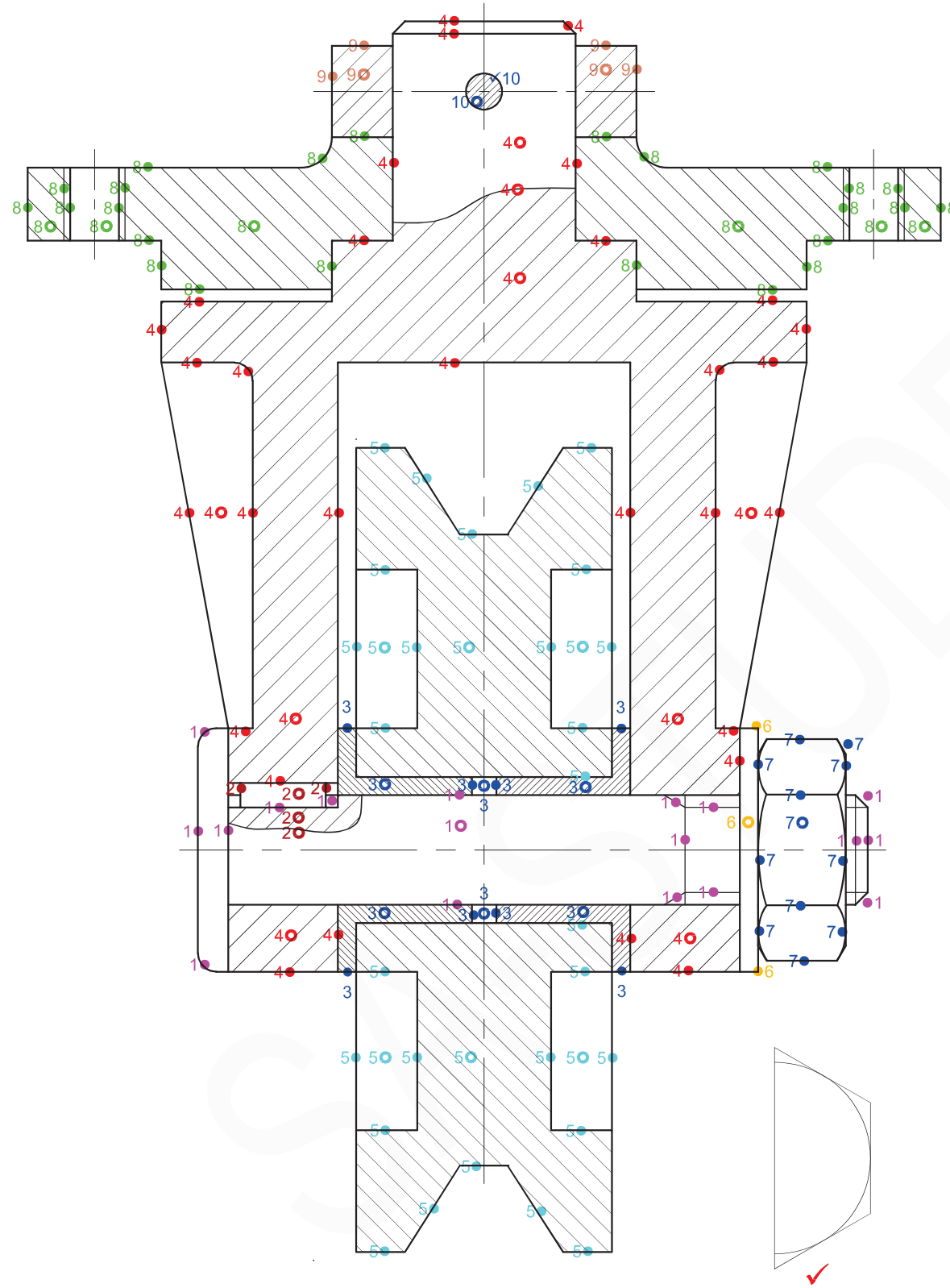
EXAMINATION NUMBER

EXAMINATION NUMBER

6

ANSWER SHEET 4

STAPLE



ASSESSMENT CRITERIA

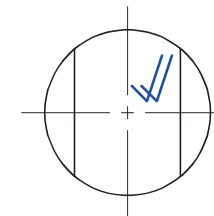
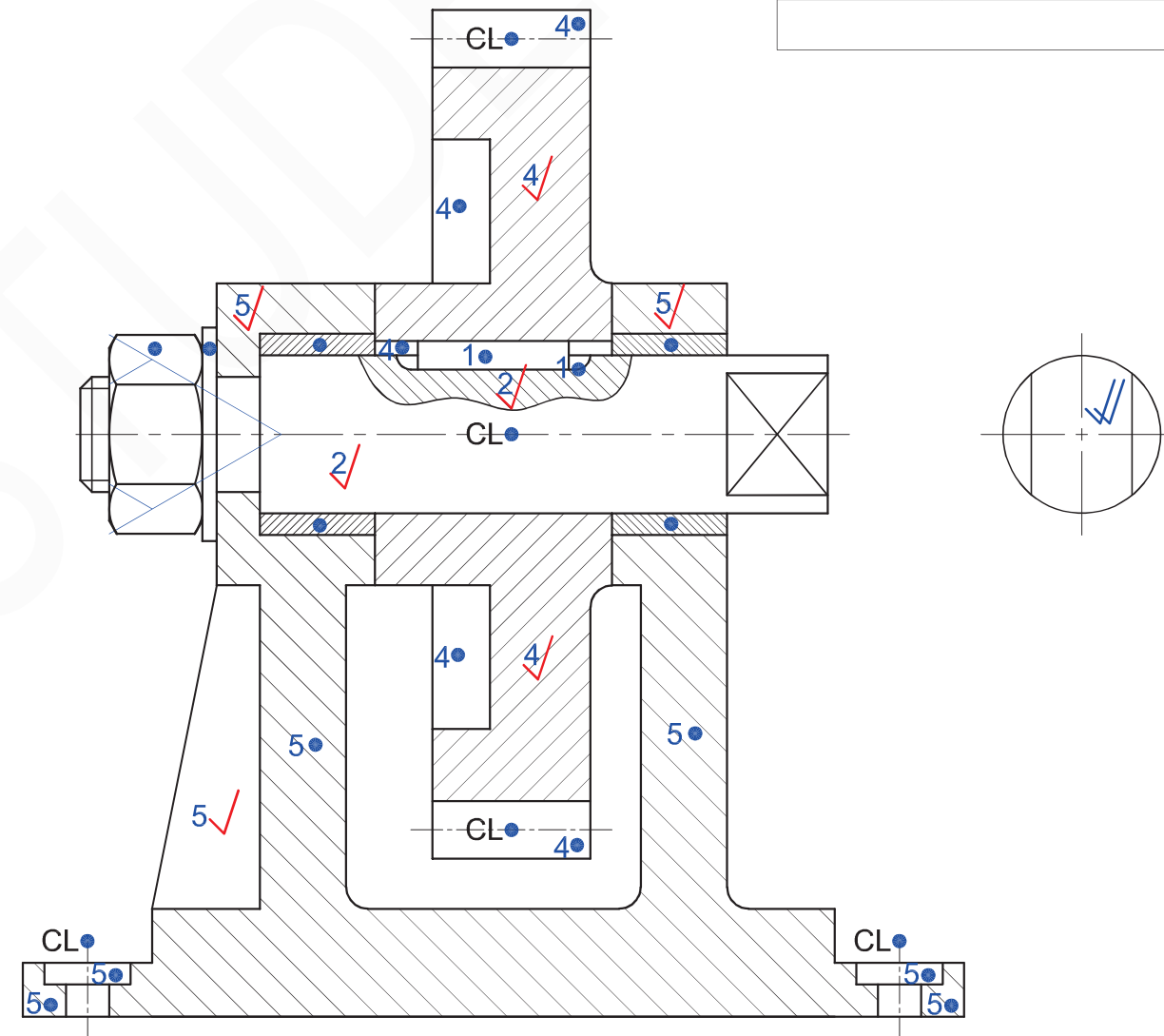
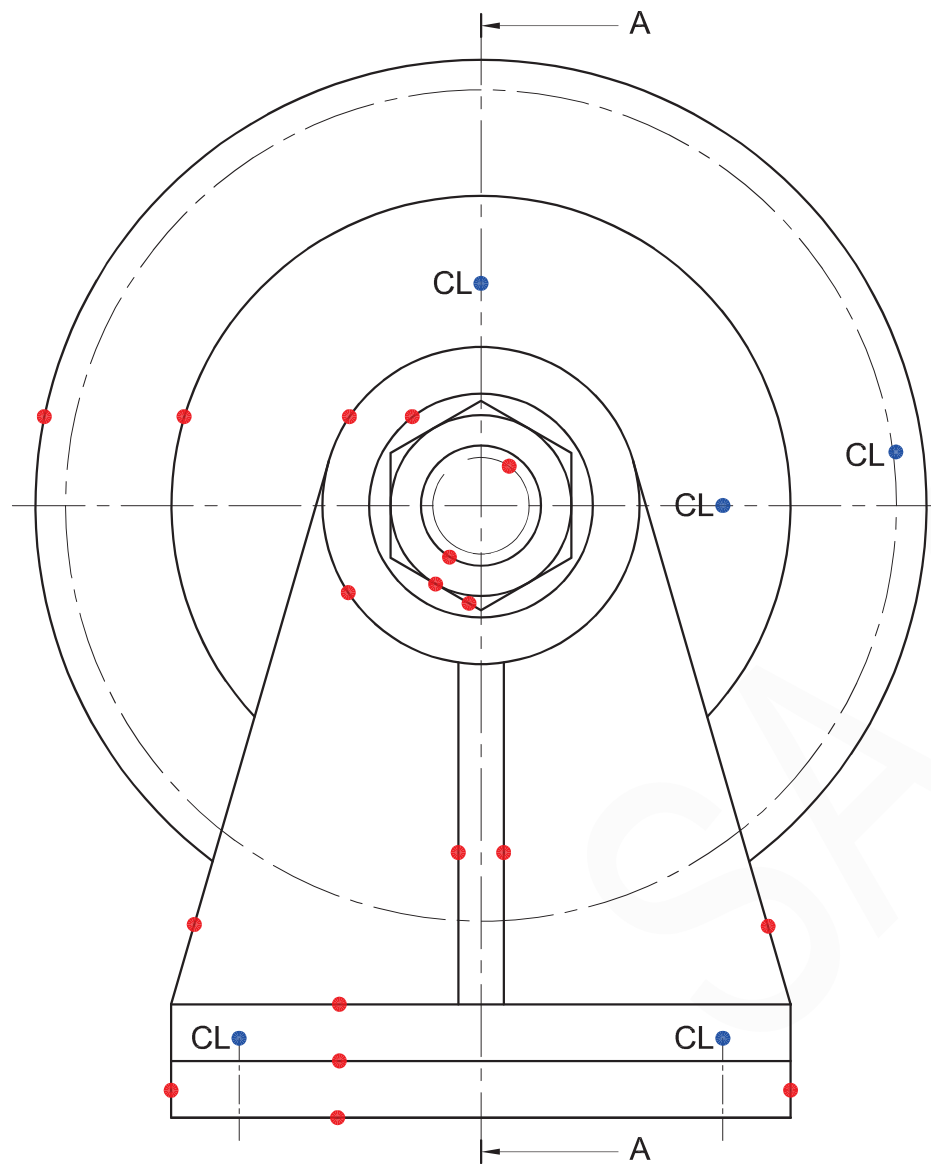
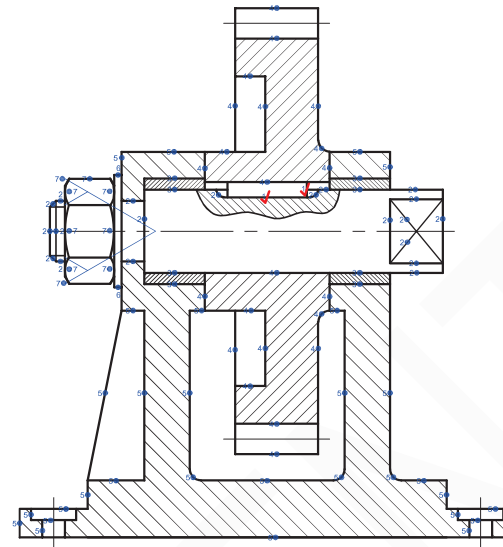
	FACET		SECTIONING		TOTAL	
	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED
1. SHAFT	8½		½		9	
2. KEY	1		1½		2½	
3. BUSH	4		3		7	
4. HANGER BRACKET	15		4½		19½	
5. PULLEY	14		3		17	
6. WASHER	1		½		1½	
7. M18 NUT	6½		½		7	
8. MOUNTING PLATE	12		3		15	
9. COLLAR	2		1		3	
10. PIN	1		½		1½	
CENTRE LINES					5	
ASSEMBLY					10	
<b>TOTAL</b>					<b>98</b>	

EXAMINATION NUMBER	
EXAMINATION NUMBER	6

ANSWER SHEET 4

ASSESSMENT CRITERIA

	FACET		SECTIONING		TOTAL	
	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED	POSSIBLE	OBTAINED
1 KEY	2		1		3	
2 SHAFT	10		2½		12½	
3 BUSH	4		2		6	
4 SPUR GEAR	11		4½		15½	
5 HOUSING BRACKET	15½		6		21½	
6 WASHER	1		½		1½	
7 M16-NUT	4½		½		5	
CENTRE LINES					5	
ASSEMBLY					7	
LEFT VIEW					9	
CUTTING PLANE					1	
LABEL VIEW					1	
AUXILIARY VIEW					2	
<b>TOTAL</b>					<b>90</b>	



SECTION ON A-A

EXAMINATION NUMBER	
EXAMINATION NUMBER	5