

**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

The front view and top view of a micrometer, sections, a parts list, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions which refer to the accompanying drawing, title block and mechanical content. [30]

QUESTIONS		ANSWERS	
1	Who prepared the drawing?	1	
2	On what date was the drawing checked?	1	
3	What was Siyabongi's responsibility?	1	
4	What is the drawing number?	1	
5	What material is used to manufacture the anvil?	1	
6	How many parts make up this micrometer?	1	
7	At what temperature will the micrometer be accurate?	1	
8	What is the maximum size that this micrometer can measure?	1	
9	Why is the shaft at A drawn as a phantom line (double chain line)?	1	
10	What does the S-break at B indicate?	1	
11	Give TWO uses of chain lines on mechanical drawings.	2	
12	How many surfaces on this micrometer are knurled?	1	
13	What is VIEW 1 called?	1	
14	Determine the complete dimensions at: C: D: E:	5	
15	Measure the angle at F.	1	
16	Name the type of section at G.	1	
17	Name the type of section at H.	1	
18	Name the type of section at J.	2	
19	With reference to the tolerance at K, determine the minimum dimension.	2	
20	In the space below (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

PARTS LIST		
PART	QUANTITY	MATERIAL
1	1	TUNGSTEN
2	1	CAST IRON
3	1	TOOL STEEL
4	1	TOOL STEEL
5	1	TOOL STEEL
6	1	SILVER STEEL
7	1	TOOL STEEL
8	1	TOOL STEEL

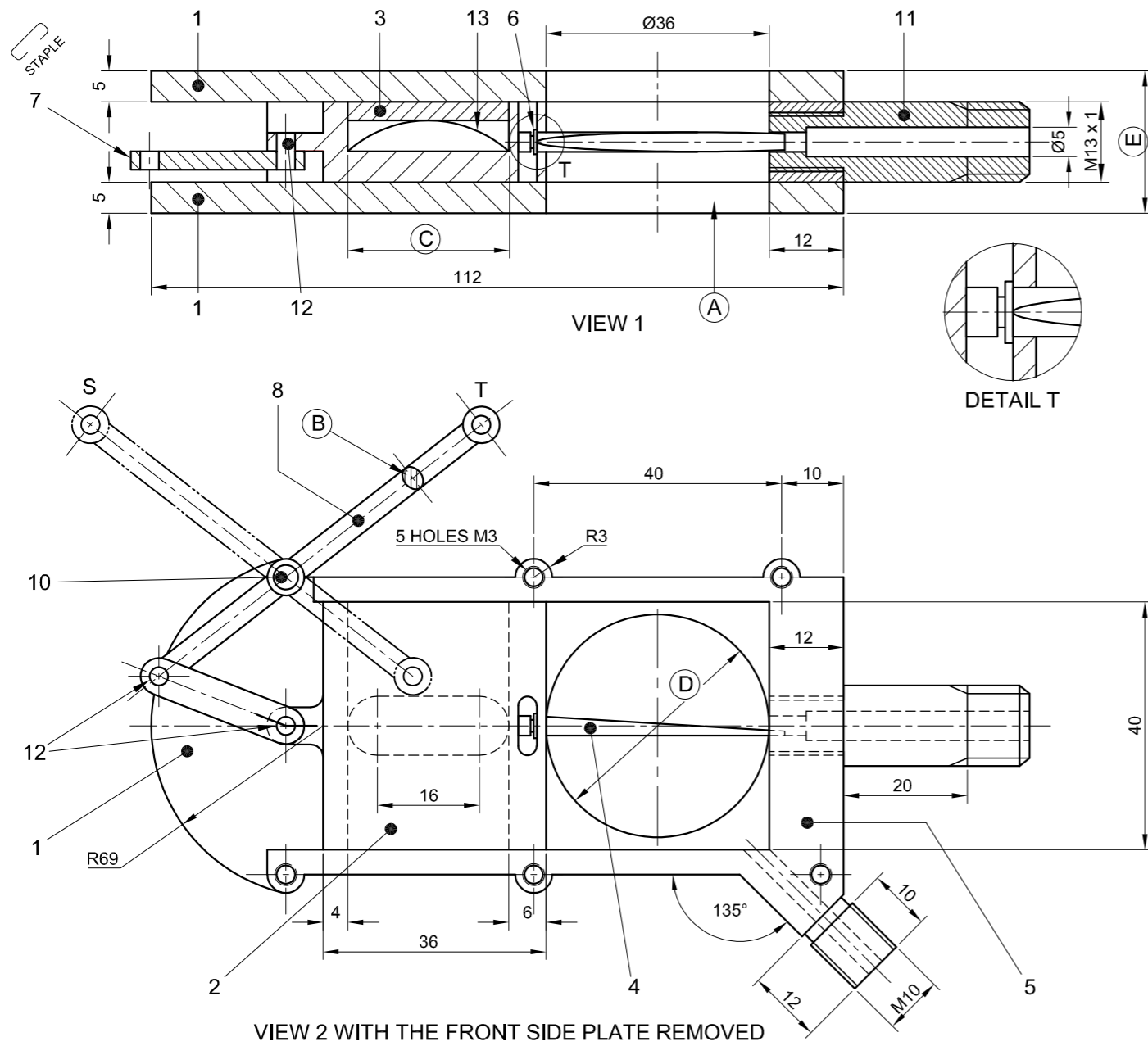
DRAWING PROGRAM: AUTOCAD 2018	SCALE 1 : 1
DIMENSIONS ARE ACCURATE AT 20 °C	
DRAWING NUMBER MC 25-V2018	
ACCURACY: 1 TURN OF THE OUTER SLEEVE = 0,5 mm	
MEASUREMENT RANGE: MINIMUM = 0,01 & MAXIMUM = 25,00	
APPROVED: SIYABONGI	DATE: 2018-02-28
CHECKED: JACQUES	DATE: 2018-02-10
DRAWN: WENDY	DATE: 2018-01-08
<b>TITLE MICROMETER</b>	

ANSWER 20: Projection symbol



EXAMINATION NUMBER	
EXAMINATION NUMBER	2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Two views and a detailed enlargement of a throttle assembly, a parts list, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which refer to the accompanying drawing and the title block. [30]

QUESTIONS		ANSWERS	
1	What is the manufacturer's street address?	1	
2	What is the file name of the drawing?	1	
3	Who checked the drawing?	1	
4	Which draughting method was used to prepare the drawing?	1	
5	What is the radius of all unspecified curves?	1	
6	What material is used to manufacture the throttle needle?	1	
7	How many parts make up the assembly?	1	
8	What is the shape of the unhatched area at A?	1	
9	Name the type of section at B.	1	
10	Give the complete title of VIEW 1?	1	
11	How many screw threads are shown in VIEW 2?	1	
12	The extreme positions of the lever (part 8) are S and T. Using the correct line type, according to the SANS 10111, draw the movement of the lever between S and T.	2	
13	Determine the complete dimensions at C: D: E:	3	
14	Why is part 12 in VIEW 1 not hatched?	1	
15	Name ALL the parts shown in DETAIL T.	3	
16	With reference to the machining symbol below, match the letter on the symbol with the correct element in the column to the right of this question.	DIRECTION OF LAY	1
		MACHINING ALLOWANCE	1
		PRODUCTION METHOD	1
		ROUGHNESS VALUE	1
17	Insert the cutting plane on VIEW 2 and label it A-A.	3	
18	In the space below (ANSWER 18), draw, in neat freehand, the symbol for the projection system used.	3	
<b>TOTAL</b>		<b>30</b>	

PARTS LIST		
PART	QUANTITY	MATERIAL
1	2	STAINLESS STEEL
2	1	BRASS
3	1	BRASS
4	1	BRASS
5	1	STAINLESS STEEL
6	1	SPRING STEEL
7	1	MILD STEEL
8	1	MILD STEEL
9	10	MILD STEEL
10	1	MILD STEEL
11	1	BRASS
12	2	MILD STEEL
13	1	SPRINGSTEEL

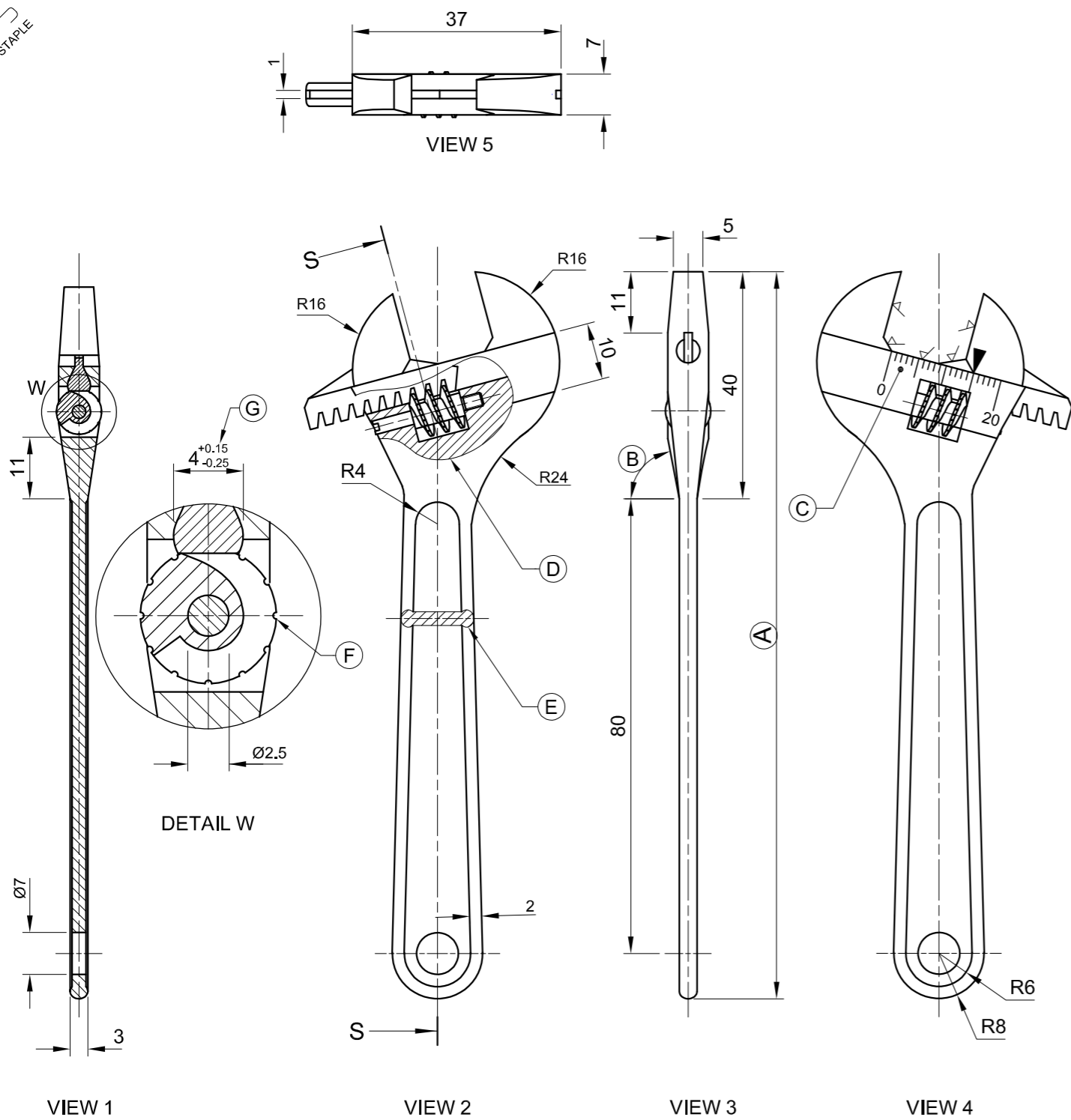
APPROVED: ALEX	DATE: 2018-05-17
CHECKED: ROLI	DATE: 2018-05-12
DRAWN: NICOLENE	DATE: 2018-04-29
DRAWING PROGRAM: AUTOCAD 2018	FILE NAME: BR2018
ALL UNSPECIFIED RADII ARE R2.	SCALE 1 : 1
1 VISCOUNT STREET HOPEFIELD 4561 www.aeroman.co.za ☎ 023-555 6699	

<b>AERO MAN</b>  TITLE <b>THROTTLE ASSEMBLY</b>
--

<p>QUESTION 16: MACHINING SYMBOL</p>	<p>ANSWER 18: PROJECTION SYMBOL</p> <p style="text-align: center;">-----</p> <p style="text-align: center;">EXAMINATION NUMBER</p> <hr/> <p style="text-align: center;">EXAMINATION NUMBER</p>
--------------------------------------	--



STAPLE



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Five views and a detailed enlargement of a shifting spanner assembly, a parts list, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions which all refer to the accompanying drawing and the title block. [28]

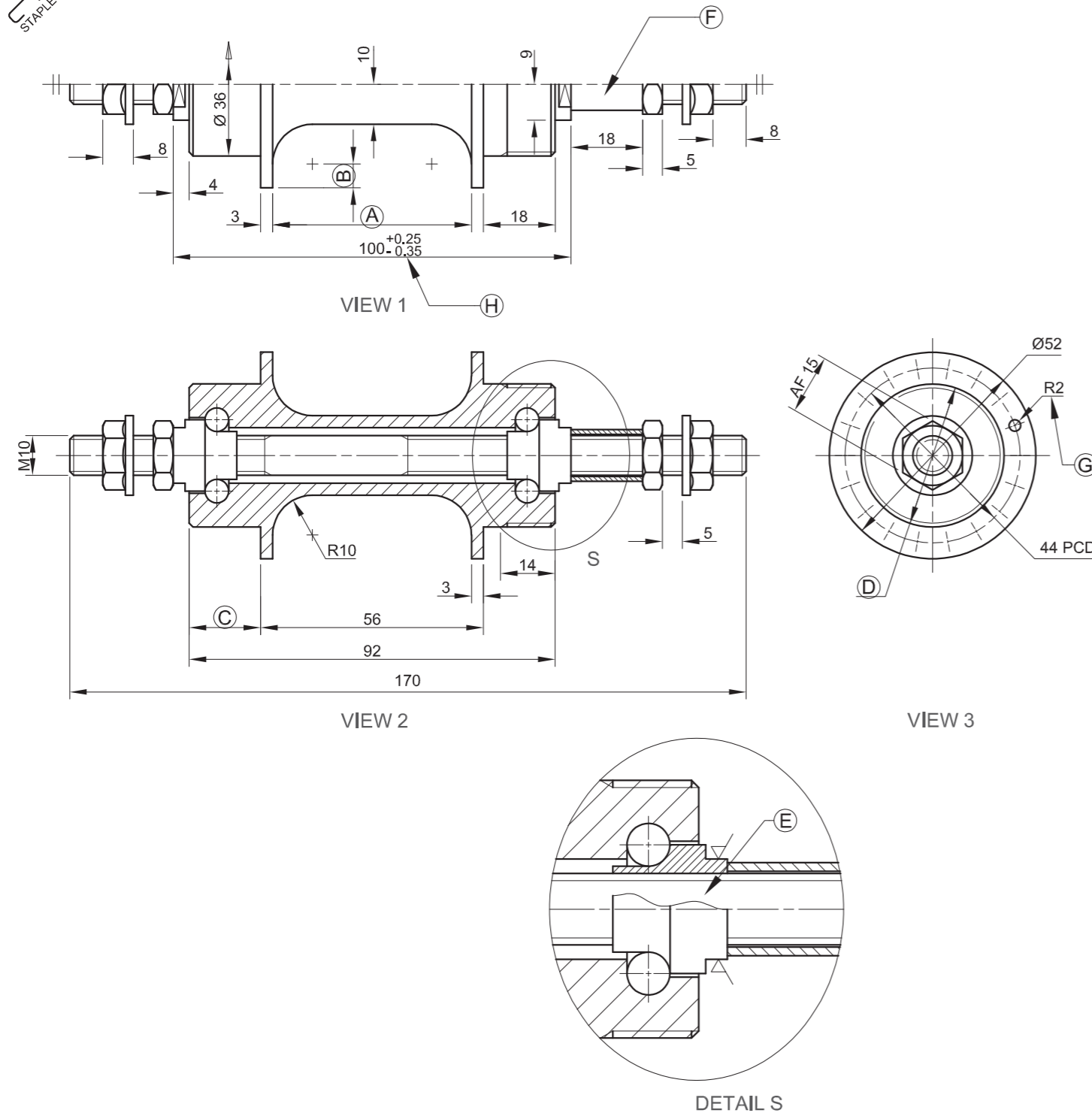
QUESTIONS		ANSWERS	
1	What is the title of the drawing?	1	
2	What scale is indicated for the drawing?	1	
3	What drawing program was used?	1	
4	On what date was the drawing drawn?	1	
5	Who approved the drawing?	1	
6	What is the radius of the unspecified curves?	1	
7	What material is used to manufacture the adjustable jaw?	1	
8	What type of heat treatment is required for the jaws?	1	
9	Which projection system has been used for the drawing?	1	
10	Determine the dimension at A.	1	
11	Measure the angle at B.	1	
12	What is the purpose of the measurements on the fixed jaw and handle at C?	2	
13	Name the type of section at D.	1	
14	Name the type of section at E.	1	
15	What is purpose of the grooves at F?	1	
16	If view 2 is the front view, what would view 4 be called?	1	
17	What is the purpose of the enlarged detailed view?	1	
18	What type of section resulted from cutting plane S-S?	1	
19	With reference to the tolerance, determine the minimum dimension at G.	2	
20	How many surfaces of the fixed jaw and handle must be machined?	1	
21	What direction of lay must be applied to the machined surfaces?	1	
22	In the space below (ANSWER 22), draw, in neat freehand, the conventional representation of a bearing on a section of a shaft.	5	
<b>TOTAL</b>		<b>28</b>	

PARTS LIST				DRAWING PROGRAM: AUTOCAD 2017	
PART	QUANTITY	MATERIAL	ALL UNSPECIFIED RADII ARE R2.		SCALE 1 : 1
1	FIXED JAW AND HANDLE	1	CHROME VANADIUM CASTING	APPROVED: STEYN	DATE: 2017-02-28
2	ADJUSTABLE JAW	1	TOOL STEEL	CHECKED: JOHN	DATE: 2017-02-10
3	WORM SCREW	1	EN 19	DRAWN: WERNER	DATE: 2017-01-08
4	WORM SHAFT	1	TOOL STEEL	TITLE	
HEAT TREATMENT ON ALL JAWS			HARDENING		
METHOD OF MACHINING			MILLING		
<b>SHIFTING SPANNER</b>					

ANSWER 22: Conventional representation of a bearing on a section of a shaft

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Three views of a rear wheel hub assembly, a detailed enlargement, a parts list, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which refer to the accompanying drawings and the title block. [30]

QUESTIONS		ANSWERS	
1	What is the title of the drawing?	1	
2	Which drawing program was used?	1	
3	What scale is indicated for the drawing?	1	
4	Who checked the drawing?	1	
5	What is the file name?	1	
6	What type of final finish is required?	1	
7	What material is used to manufacture the bearing nut?	1	
8	How many parts are there in the assembly?	1	
9	What is VIEW 3 called?	1	
10	Determine the complete dimensions at A: B: C: D:	4	
11	What does the abbreviation PCD stand for?	1	
12	What does the abbreviation AF stand for?	1	
13	Which convention is applied to VIEW 1?	1	
14	Name the type of section on the bearing nut at E.	1	
15	Refer to the parts list and identify the part at F.	1	
16	What type of machining is required?	1	
17	How many surfaces must be machined?	2	
18	How many R2 holes, as indicated at G, are there in the rear wheel hub?	1	
19	With reference to the tolerance, determine the minimum dimension at H.	2	
20	Insert the cutting plane on VIEW 3 and label it A-A.	3	
21	In the space below (ANSWER 21), draw, in neat freehand, ONE view that will indicate the convention for a square on a shaft or a flat face on a cylinder.	3	
<b>TOTAL</b>		<b>30</b>	

PARTS LIST			APPROVED: SASHA	DATE: 13-11-2016	
PART	QUANTITY	MATERIAL	CHECKED: JOHN	DATE: 11-11-2016	
1	M10 SHAFT	1	MILD STEEL	DRAWN: WERNER	DATE: 16-10-2016
2	BALL BEARINGS	16	STAINLESS STEEL	DRAWING PROGRAM: AUTOCAD	FILE NAME: BF 71116
3	BEARING NUT	2	EN 19	HEAT TREATMENT: HARDENING	SCALE 2 : 3
4	M10 NUT	2	TOOL STEEL	FINAL FINISH: CHROME PLATING	✓ MILLING
5	M10 LOCKNUT	2	TOOL STEEL	GP BICYCLES SPARES AND ACCESSORIES 179 MILTON ST Faraday Park www.uniquebikes.co.za 016 123 4567	
6	SPACER	1	MILD STEEL		
7	WHEEL HUB	1	MILD STEEL		

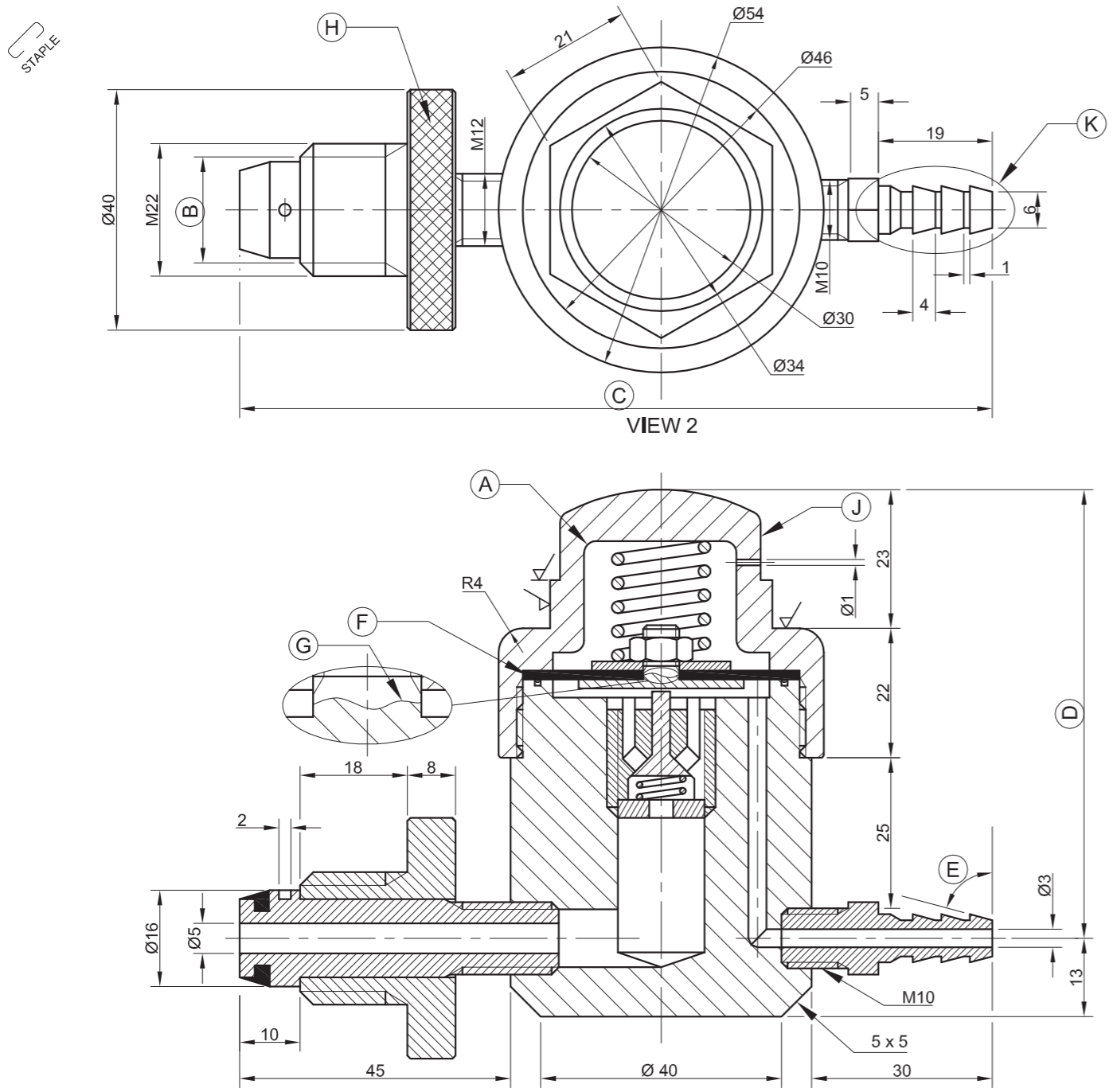
**ANSWER 21 - Convention for a square or a flat face**

TITLE **REAR WHEEL HUB**

EXAMINATION NUMBER

EXAMINATION NUMBER **2**





PARTS LIST		
PART	QUANTITY	MATERIAL
1	1	BRASS
2	1	BRASS
3	1	RUBBER
4	1	BRASS
5	1	BRASS
6	1	SPRING STEEL
7	1	STAINLESS STEEL
8	1	RUBBER
9	1	SPRING STEEL
10	1	BRASS
11	1	BRASS

APPROVED: SOON      DATE: 2015-12-06  
 CHECKED: VERNON      DATE: 2015-11-10  
 DRAWN: WIKUS      DATE: 2015-10-31  
 DRAWING PROGRAMME: AUTOCAD 2016  
 ALL UNSPECIFIED RADII ARE R2.      SCALE 1 : 1  
 METHOD OF MACHINING: MILLING

**THE ONE GAS COMPANY**      75 AIR STREET  
 www.theonegas.co.za      012 357 8910

TITLE  
**GAS REGULATOR**

**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**  
 An assembly drawing showing two views of a gas regulator assembly, a parts list, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**  
 Complete the table below by neatly answering the questions, which refer to the accompanying drawing and the title block. **[30]**

QUESTIONS		ANSWERS	
1	What is the title of the drawing?	1	
2	What is the web address of the company?	1	
3	What method of machining is prescribed?	1	
4	Which drawing program was used to prepare the drawing?	1	
5	On what date was the drawing drawn?	1	
6	Who approved the drawing?	1	
7	What material is used to manufacture the seal?	1	
8	What is VIEW 1 called?	1	
9	Name the feature at A.	1	
10	Determine the complete dimensions at B: C: D:	3	
11	Measure the angle at E.	1	
12	Why is the part at F filled in solid?	1	
13	What is indicated by the feature at G?	1	
14	Name the type of finish at H.	1	
15	Refer to the parts list and identify the part at J.	1	
16	How many surfaces of the gas regulator assembly must be machined?	1	
17	Why is the feature at K tapered to one side only?	2	
18	Insert the cutting plane on VIEW 2 and label it S-S.	3	
19	In the space below (ANSWER 19), draw, in neat freehand, the convention for a coil spring.	3	
20	In the space below (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

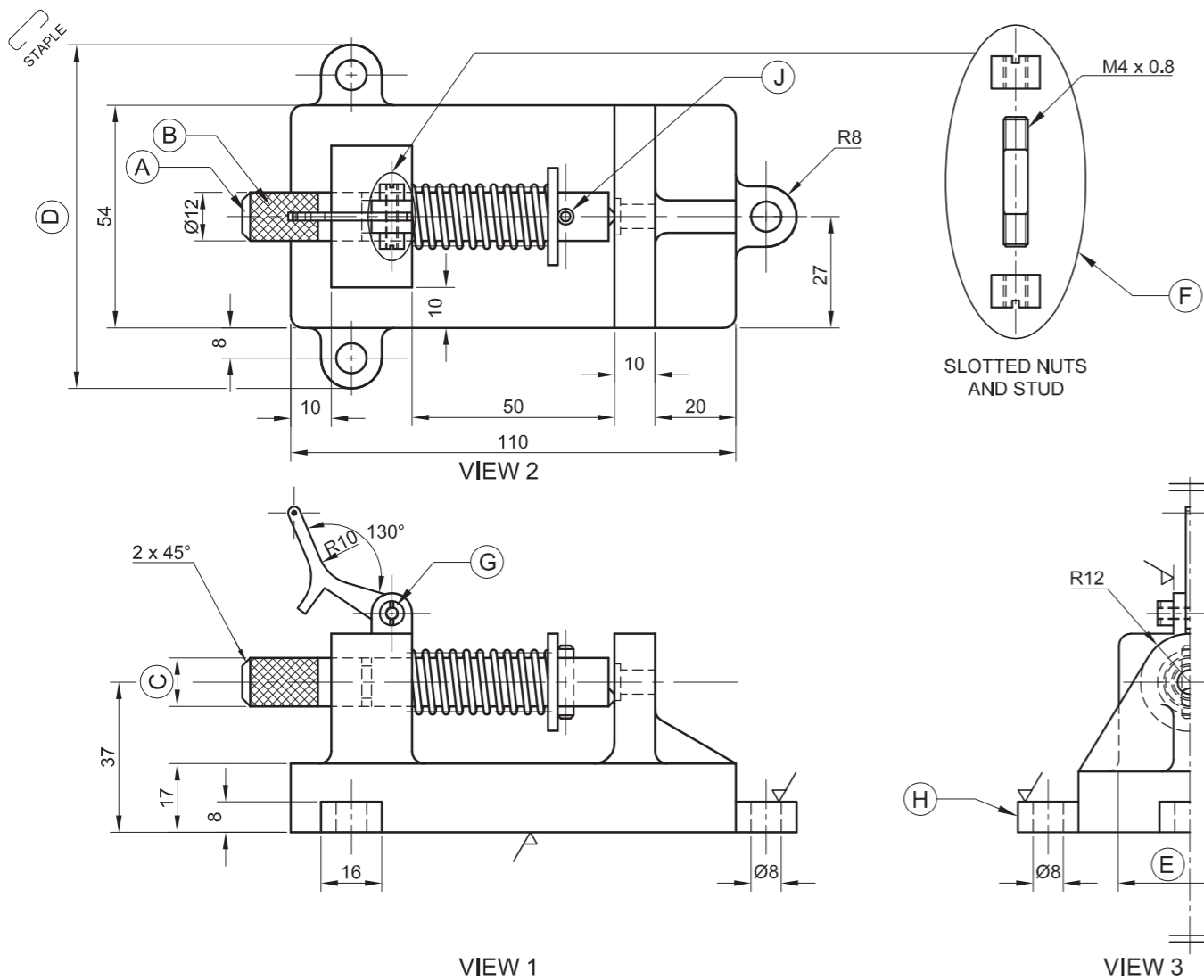
ANSWER 19:  
 Convention for a coil spring

ANSWER 20:  
 Projection symbol

EXAMINATION NUMBER

EXAMINATION NUMBER **2**





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

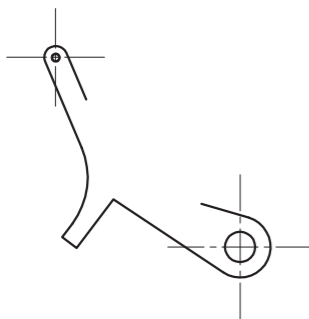
Three views of a trigger mechanism assembly, an enlarged view, a parts list, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which refer to the accompanying drawings and the title block. [30]

QUESTIONS		ANSWERS	
1	What was Francu's responsibility?	1	
2	What drawing method was used to prepare the drawings?	1	
3	What scale is indicated for the drawing?	1	
4	What should all the unspecified radii be?	1	
5	What material is used to manufacture the striking pin?	1	
6	Name the type of finish at A.	1	
7	Name the type of finish at B.	1	
8	What is VIEW 3 called?	1	
9	Determine the complete dimensions at C: D: E:	3	
10	How many parts make up the trigger mechanism assembly?	1	
11	What is the purpose of the enlarged view at F?	1	
12	How many surfaces need to be machined?	1	
13	What direction of lay must be applied to the machined surfaces?	1	
14	What is the screw thread specification of the stud nut at G?	2	
15	With reference to the tolerance, determine the maximum height of the feature at H.	2	
16	Referring to the parts list, identify the part at J.	1	
17	In the space above the parts list (ANSWER 17), complete the view of the trigger plate by neatly constructing the R10 fillet. Show ALL construction.	3	
18	In the space below (ANSWER 18), draw, in neat freehand, the convention for a coil spring.	3	
19	In the space below (ANSWER 19), draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

**ANSWER 17:**  
Construction



APPROVED: DELISE	DATE: 2015-10-31
CHECKED: FRANCU	DATE: 2015-10-15
DRAWN: CARLOS	DATE: 2015-10-12

DRAWING PROGRAMME: AUTOCAD 2016	<b>SCALE 1 : 1</b>
ALL UNSPECIFIED RADII ARE R3.	
TOLERANCE ON ALL DIMENSIONS: ± 0,25 mm	
SURFACE TREATMENT	

**HOME SECURITY PRODUCTS**  
1 ZIRK BAARD STREET  
PRETORIA  
0001  
www.homesecure.co.za  
012 341 0810

TITLE  
**TRIGGER MECHANISM**

**ANSWER 18:**  
Convention for coil spring.

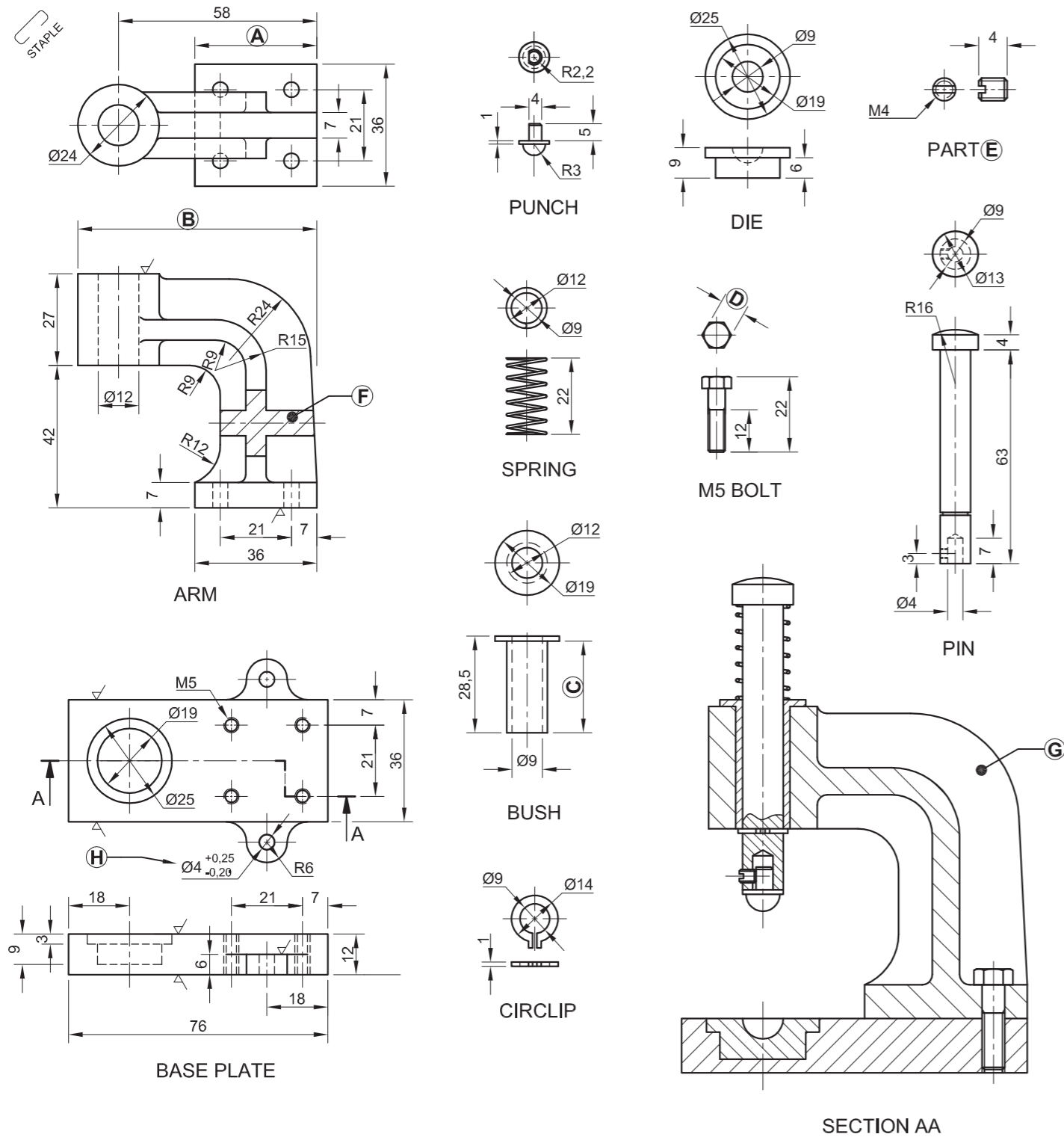
**ANSWER 19:**  
Projection symbol

EXAMINATION NUMBER

EXAMINATION NUMBER

2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Drawings of the parts of a punch, a sectional view of the punch assembly, a title block and a table of questions. The drawings have not been prepared according to the indicated scale.

**Instructions:**

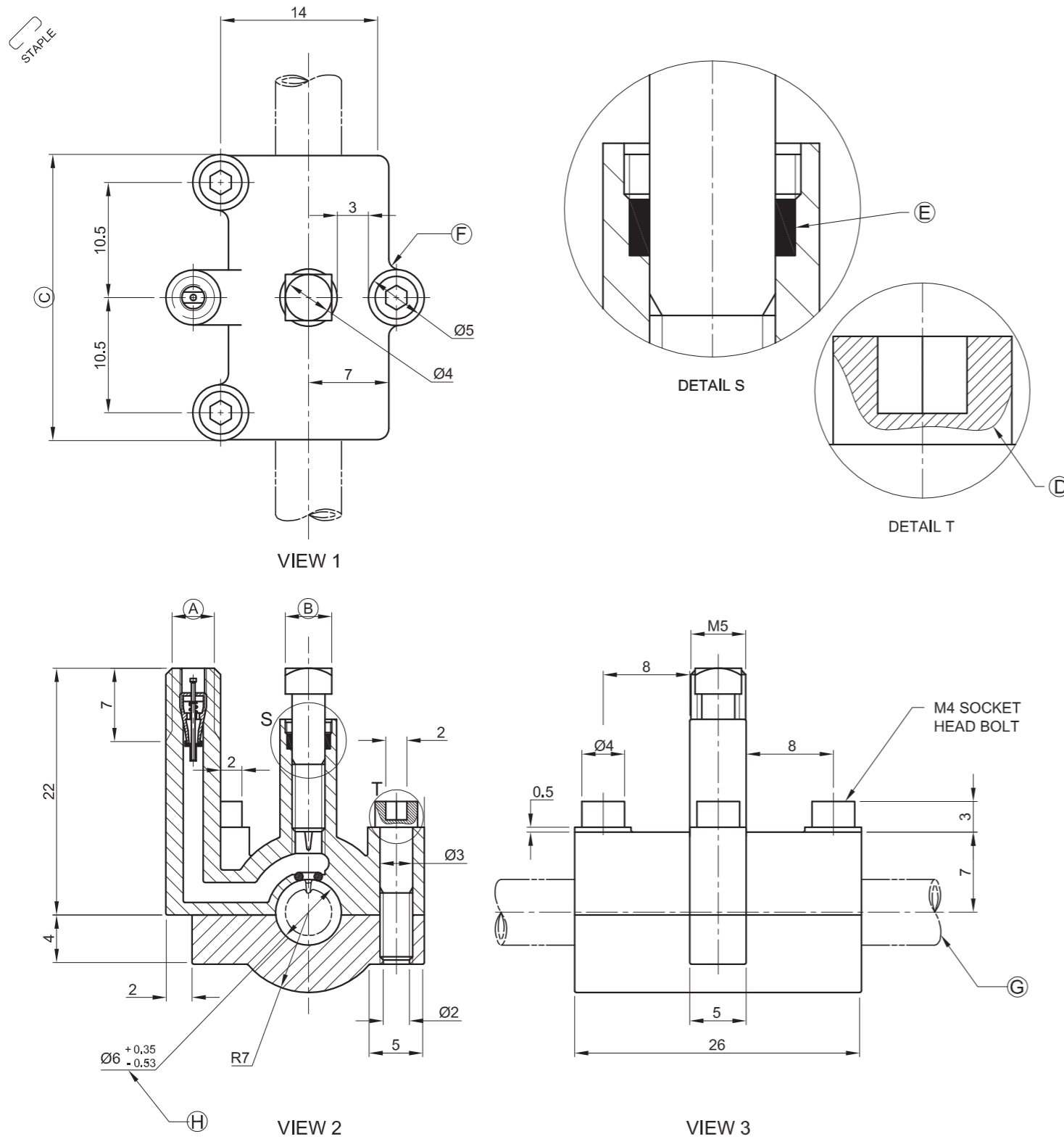
Complete the table below by neatly answering the questions, which all refer to the accompanying detailed drawings and the title block. [30]

QUESTIONS		ANSWERS	
1	On what date was the drawing checked?	1	
2	In which town is the engineering company situated?	1	
3	In which SI unit are the dimensions presented?	1	
4	What type of heat treatment is required?	1	
5	What is the file name?	1	
6	What material is used to manufacture the punch?	1	
7	On what date was the last revision made?	1	
8	How many surfaces require machining?	1	
9	What type of section is shown on the base plate?	1	
10	Determine the dimensions at: A: B: C: D:	4	
11	What is part E called?	1	
12	What type of section is shown at F on the arm?	1	
13	How many M5 bolts will be used to attach the arm to the base plate?	1	
14	What is the thickness of the feature at G?	1	
15	What is the purpose of the circlip in the assembly?	2	
16	With reference to the tolerance, determine the minimum size of the hole at H.	2	
17	With reference to the tolerance, determine the maximum size of the hole at H.	2	
18	In the box below (ANSWER 18), draw, in neat freehand, the symbol for the projection system used.	4	
19	In the box below (ANSWER 19), draw, in neat freehand, the convention of a spring.	3	
<b>TOTAL</b>		<b>30</b>	

22/04/2015	ANDREW	INSERT CIRCLIP	3	DRAWING SET: 4 OF 5	DRAWN: PETER	07/03/2015
16/04/2015	ANDREW	INSERT GRUB SCREW	2	DRAWING PROGRAM: AutoCAD 2014	CHECKED: JOHN	13/03/2015
16/03/2015	ANDREW	CHANGE BUSH	1	DRAWING №: PUNCH/34/2015	APPROVED: ILSE	29/05/2015
DATE	CHANGED BY	REVISION DESCRIPTION	No.	FILE NAME: punch3.dwg	MATERIAL: CAST IRON	
<b>PUNCH</b>				UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETRES WITH A TOLERANCE OF 0,25.	HEAT TREATMENT: TEMPER	
<b>WEST COAST ENGINEERS (SA) (Pty) Ltd</b>					SCALE 2 : 1	
					QUANTITY: 200	
15 MAIN ROAD VELDDRIFT 7365 www.wce.co.za 022 959 5432				✓ FOR SURFACE FINISHES		
				EXAMINATION NUMBER		

ANSWER 18		ANSWER 19	
-----			
EXAMINATION NUMBER			
EXAMINATION NUMBER		2	





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Three views and two detailed enlargements of a tapping valve assembly, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

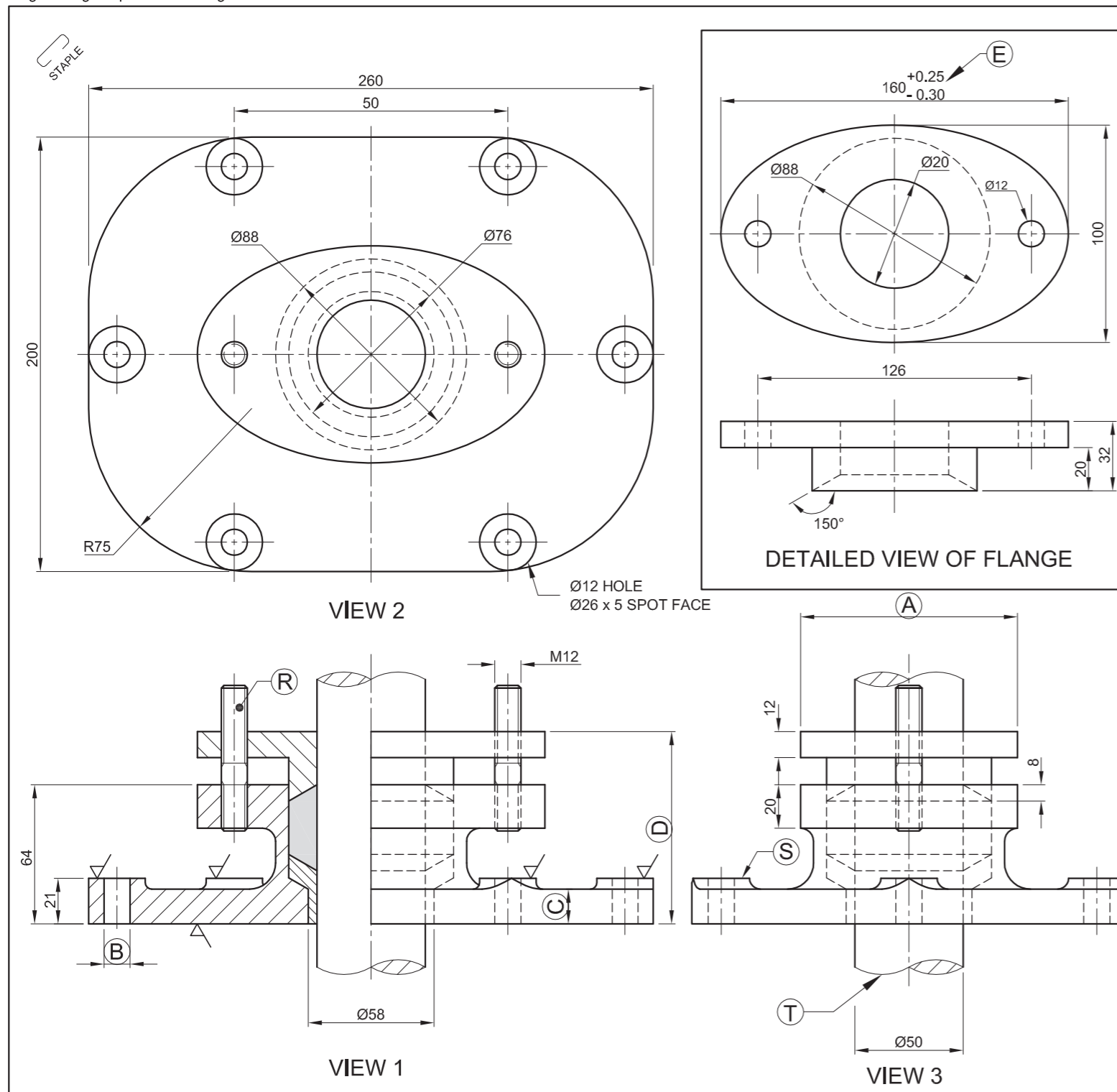
Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. [30]

QUESTIONS		ANSWERS	
1	What is the title of the assembly?	1	
2	On what date was the drawing drawn?	1	
3	What is the drawing number?	1	
4	What scale is indicated for the drawing?	1	
5	Which drawing program was used?	1	
6	Who approved the drawing?	1	
7	What material is used to manufacture the main base?	1	
8	What would VIEW 2 be called?	1	
9	How many socket head bolts are there in the assembly?	1	
10	Give the complete dimensions at:      A :                      B :                      C :	3	
11	Name the feature at F.	1	
12	Name the type of section at D.	1	
13	Why is the component at E filled in solid?	1	
14	What is the total height of the assembly?	1	
15	What is the purpose of the two enlarged detailed views?	2	
16	What is indicated by the convention at G?	1	
17	With reference to the tolerance, determine the maximum dimension at H?	2	
18	With reference to the tolerance, determine the minimum dimension at H?	2	
19	Insert the cutting plane on VIEW 3 and label it A-A.	3	
20	In the space provided below, draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

PARTS LIST			FILE NAME: RCO/VK 0002.dwg	TITLE		ANSWER 20
PART	QUANTITY	MATERIAL	DRAWING No. 2015 - A - 005	TAPPING VALVE		
1	VALVE ASSEMBLY	1	REF: DETAILED DRAWING	ALL DIMENSIONS ARE IN MILLIMETRES.	APPROVED:      ANDREW BRAND	2015/01/23
2	SOCKET HEAD BOLT	3	TOOL STEEL	DRAWING PROGRAM: AUTOCAD 2015	CHECKED:      SOON DENTON	2015/01/16
3	SQUARE BOLT WITH PUNCH	1	TOOL STEEL	MATERIALS: STEEL, PEWTER AND RUBBER	DRAWN:      CHRISTI GREEF	2015/01/05
4	MAIN BASE	1	PEWTER	<b>ReCO REFRIGERATION</b>	15 EDISON BLVD INDUSTRIAL PARK 1911	TAP VALVE TO BE USED FOR TAPPING OF 134a, R11, R22 AND 501 REFRIGERANTS IN COPPER PIPE ONLY
5	CAP	1	PEWTER			
6	O-RING	1	RUBBER			SYMBOL
7	O-SEAL	1	RUBBER			EXAMINATION NUMBER
						EXAMINATION NUMBER
						EXAMINATION NUMBER







**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A front view, top view and right view of a box and gland assembly, detailed drawing of the flange, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. **[30]**

QUESTIONS		ANSWERS	
1	On what date was the drawing approved?	1	
2	What is the title of the assembly?	1	
3	What scale is indicated for the drawing?	1	
4	What material is used to manufacture the bush?	1	
5	On what date was the revision done?	1	
6	What is the drawing number?	1	
7	What would VIEW 3 be called?	1	
8	What type of section is shown in VIEW 1?	1	
9	What part is used to protect the flange surface when the nut is being tightened?	1	
10	Name the part at R.	1	
11	Name the feature at S.	1	
12	Name the feature at T.	1	
13	How many surfaces need to be machined?	1	
14	Give the complete dimensions at: A B	2	
15	Determine the complete dimensions at: C D	4	
16	With reference to the tolerance, determine the maximum dimension at E.	2	
17	With reference to the tolerance, determine the minimum dimension at E.	2	
18	Insert the cutting plane on VIEW 3 and label it A-A.	3	
19	In the space provided below, draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

ALL DIMENSIONS ARE IN MILLIMETRES	SCALE: 1 : 2
DRAWING PROGRAM: AUTOCAD 2013	FINISH: POLISHED
FILE NAME: ANAS15.dwg	QUANTITY: 325 UNITS
DRAWING No. BG-15/4	MACHINING: MILLING

UNLESS OTHERWISE SPECIFIED, ALL TOLERANCES ON DIMENSIONS ARE ± 0,15. ALL UNSPECIFIED RADII ARE R3.

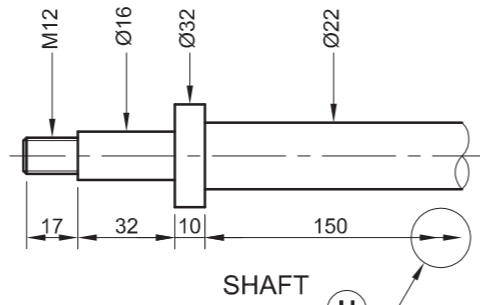
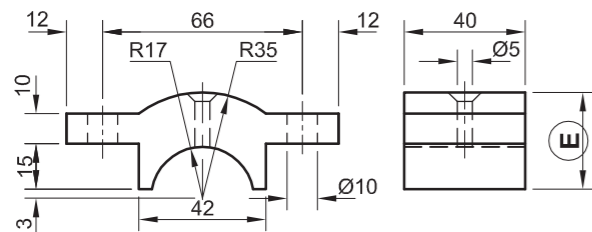
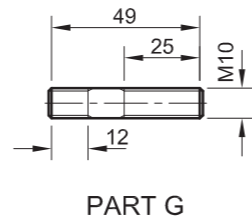
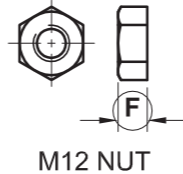
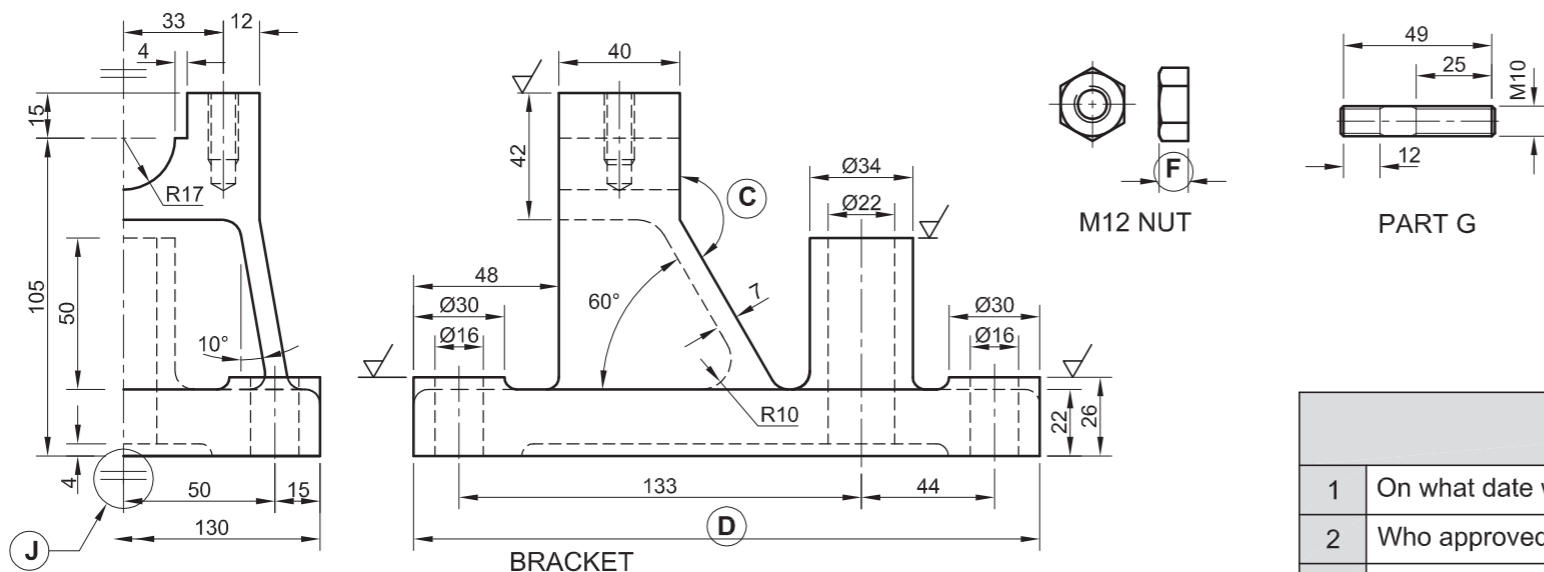
<b>PEWIJO</b> ENGINEERING	15 FABRICIA ROAD KLISSERVILLE KIMBERLEY 8301 051 6273 849
	TITLE <b>BOX AND GLAND</b>

REVISIONS	DATE
1. INSERT SPOT FACE	2014/02/03
DRAWN: ALFA	2014/01/01
CHECKED: BRAVO	2014/02/02
APPROVED: ZERO	2014/03/03

PARTS LIST		
PART	MATERIAL	QUANTITY
1 BASE	CAST IRON	1
2 FLANGE	MILD STEEL	1
3 STUD	MILD STEEL	2
4 SHAFT	HARDENED STEEL	1
5 BUSH	RUBBER	1
6 WASHER	MILD STEEL	2
7 NUT	MILD STEEL	2

ANSWER 19  -----	EXAMINATION NUMBER
	EXAMINATION NUMBER
	SYMBOL

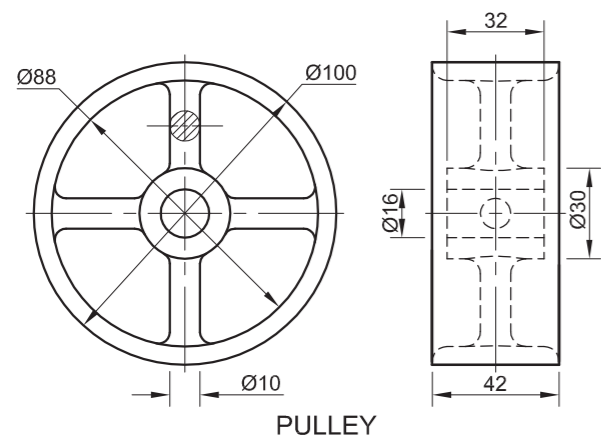




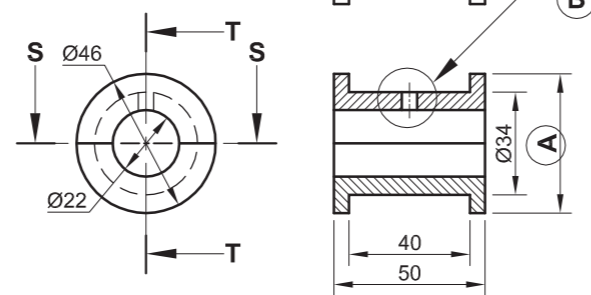
BEARING CAP

SHAFT

ANSWER 9



PULLEY



BEARING HALVES

**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

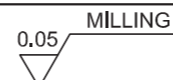
A drawing showing orthographic views of the parts of a bearing bracket assembly, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawing and the title block. [30]

QUESTIONS		ANSWERS	
1	On what date was the drawing drawn?	1	
2	Who approved the drawing?	1	
3	What is the drawing number?	1	
4	Who was responsible for the revision?	1	
5	If the drawing was drawn to scale 1 : 1, what would the dimension at A read?	1	
6	What heat treatment is required?	1	
7	What type of machining is required?	1	
8	What is the tolerance allowed on dimensions?	1	
9	Complete, in neat freehand, the sectional top view of the BEARING HALVES on cutting plane S-S.	3	
10	Name the encircled feature at B.	1	
11	What type of section is shown on the PULLEY?	1	
12	Give the complete dimensions at: C                      D                      E	3	
13	Determine the dimension at F. Show ALL calculations.	2	
14	Give the correct name of PART G.	1	
15	What is indicated by the encircled convention at H?	1	
16	What is indicated by the encircled convention at J?	1	
17	How many surfaces on the BRACKET require machining?	1	
18	What is the purpose of the two shoulders on the BEARING HALVES?	2	
19	Name a part that can be added to the assembly to ensure that the momentum is effectively carried over from the PULLEY to the SHAFT?	2	
20	In the space below, draw, in neat freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>30</b>	

UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE ± 0,3. ALL UNSPECIFIED RADII ARE 6 mm.



DRAWING PROGRAMME: AUTOCAD

FILE NAME: ANA0113.dwg

DRAWING No. 01-NOV-13

DATE: 2013-12-04

DATE: 2013-11-15

DATE: 2013-11-04

MATERIAL: CAST IRON

HEAT TREATMENT: NORMALISE

APPROVED BY: K CIZAKE

CHECKED BY: W GOEDE

DRAWN BY: J STANDER

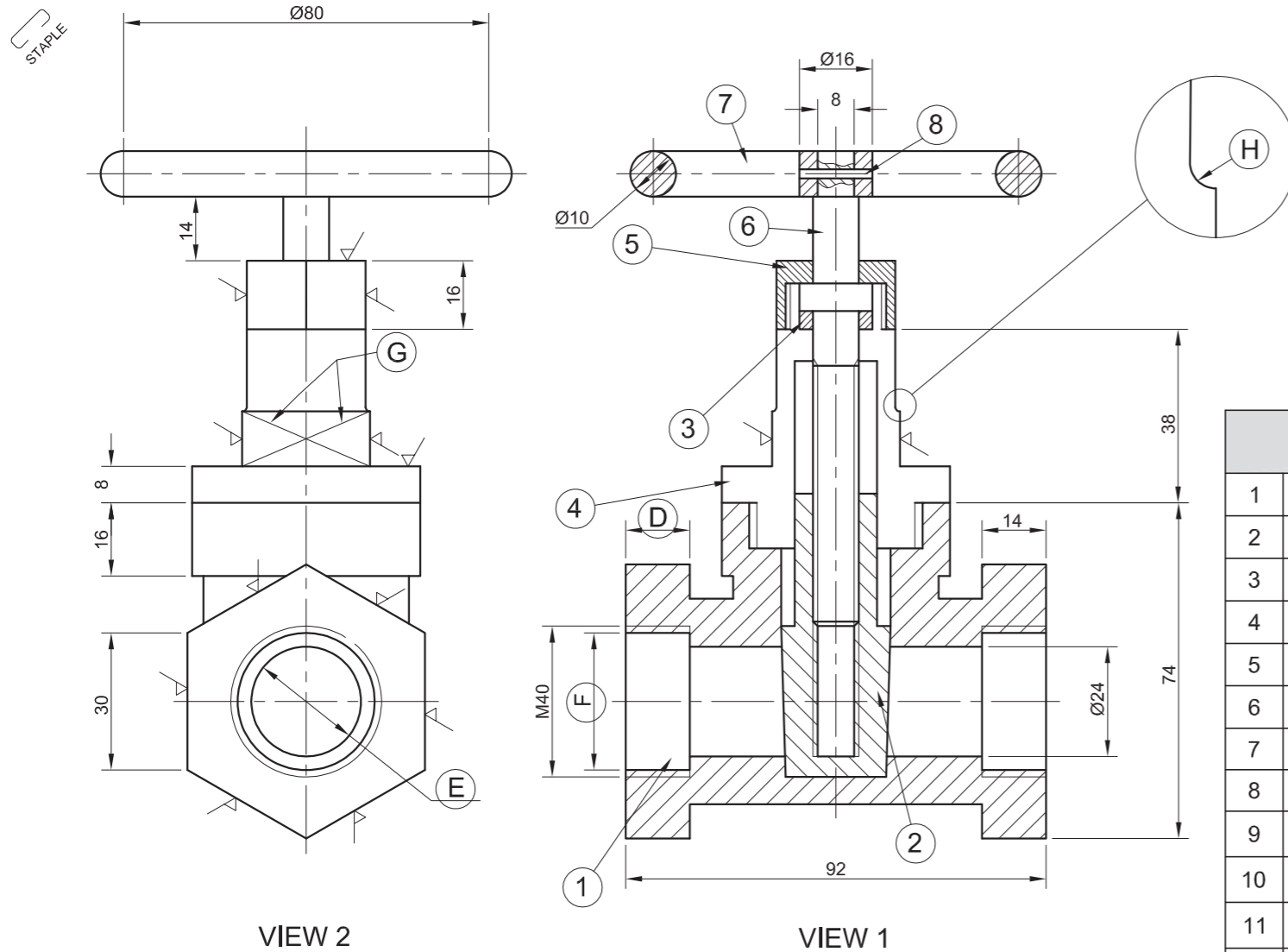
SCALE 1 : 2

ANSWER 20

05/11	P MOOLMAN	INSERT OIL HOLE	1
DATE	REVISED BY	DESCRIPTION OF REVISION	No
<b>JPW DEVELOPMENTS</b> 123 STRUBEN STR Pretoria www.jpwdevelopments.co.za ☎ 012 345 6789		TITLE <h3 style="text-align:center">BEARING BRACKET</h3>	



EXAMINATION NUMBER	
EXAMINATION NUMBER	<b>2</b>



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A front and the left view of a brass tap assembly in third-angle orthographic projection, an isometric drawing of the brass tap, a parts list, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. **[29]**

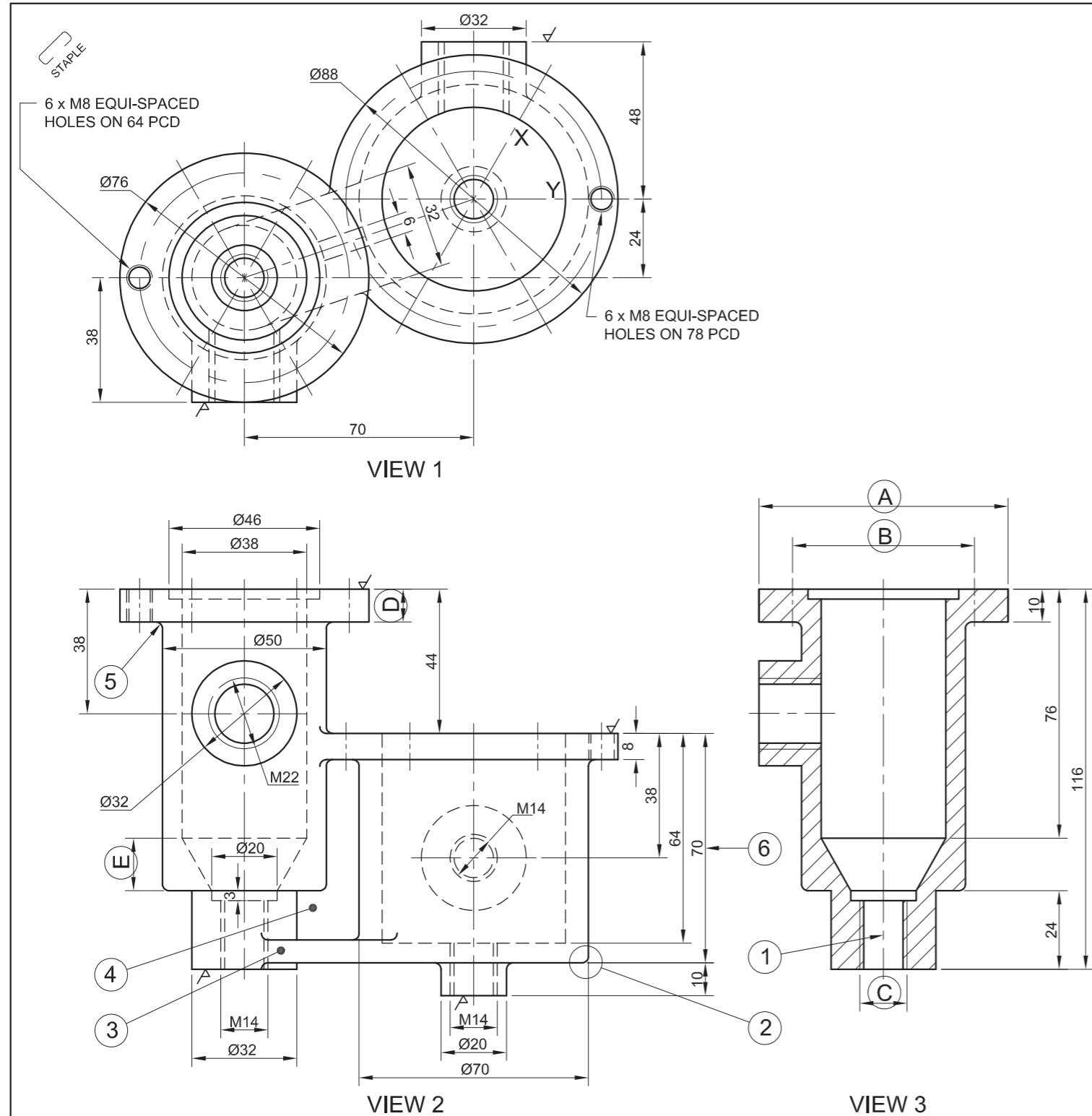
QUESTIONS		ANSWERS	
1	On what date was the drawing prepared?	1	
2	In which city is the manufacturing company situated?	1	
3	From what material is the seal (part 3) made ?	1	
4	Who made the revision?	1	
5	What is the file name of the drawing?	1	
6	What scale is indicated for the drawing?	1	
7	What would <b>VIEW 1</b> be called?	1	
8	Name the feature at H.	1	
9	What is indicated by feature G?	1	
10	What is the total height of the brass tap?	1	
11	How many parts make up the brass tap?	1	
12	Determine the complete dimensions at: D. E. F.	3	
13	With reference to the welding symbol, name the following elements.	A	1
		B	1
		C	1
14	What is the purpose of the pin (part 8)?	1	
15	How many surfaces must be machined?	1	
16	Add, in neat freehand, suitable hatching to the shaft guide (part 4) on view 1.	3	
17	Insert the cutting plane on <b>VIEW 2</b> and label it S-S.	3	
18	In the box below (answer 18), neatly draw, in freehand, the symbol for the projection system used.	4	
<b>TOTAL</b>		<b>29</b>	

PARTS LIST			
	PART	QUANTITY	MATERIAL
1.	TAP BODY	1	BRASS
2.	WEDGE	1	BRASS
3.	SEAL	1	RUBBER
4.	SHAFT GUIDE	1	BRASS
5.	GUIDE NUT	1	BRASS
6.	SHAFT	1	STAINLESS STEEL
7.	HAND WHEEL	1	STEEL
8.	PIN	1	STEEL

2013-09-26	AFROX	WELDING DETAIL	1
DATE	REVISED BY	REVISION DESCRIPTION	No
123 STRUBEN STR Pretoria www.jpwdevelopments.co.za 012 345 6789			
		<b>TITLE</b> <b>BRASS TAP</b>	

	DRAWING PROGRAMME: AUTOCAD
DRAWING No. 01-225-BT	FILE NAME: ME31.dwg
APPROVED BY : J CLAASEN	DATE: 2013-09-20
CHECKED BY: L VAN ZYL	DATE: 2013-09-19
DRAWN BY: H SHADER	DATE: 2013-09-02
SCALE: 1 : 1	

ANSWER 18		
<b>EXAMINATION NUMBER</b>		
<b>EXAMINATION NUMBER</b>		<b>2</b>



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A detailed drawing showing THREE views of a carburettor body, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawing and title block. **[30]**

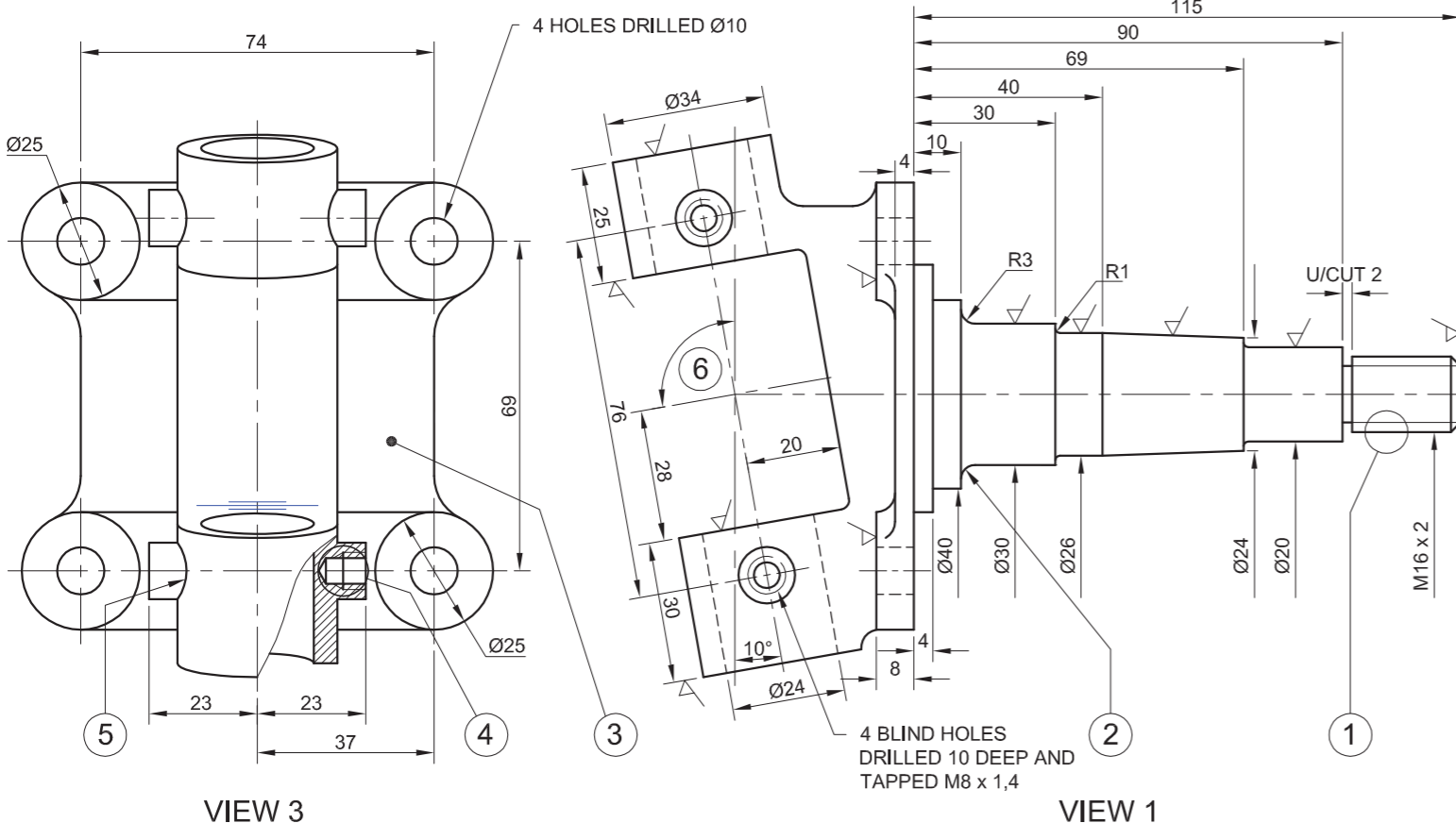
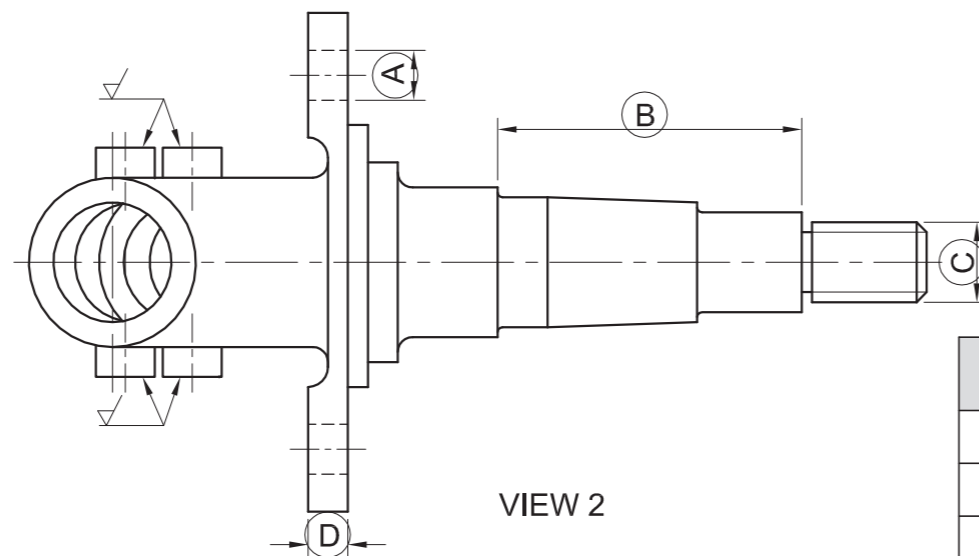
QUESTIONS		ANSWERS	
1	How many carburettor bodies must be produced?		1
2	From what material is the carburettor body manufactured?		1
3	What is the file name of the drawing?		1
4	On what date was the drawing checked?		1
5	In which province is the engineering company situated?		1
6	Name the line at 1.		1
7	Name the encircled feature at 2.		1
8	What is the width of the feature at 3?		1
9	Name the feature at 4.		1
10	What is the radius of the feature at 5?		1
11	What would the dimension at 6 be if a drawing scale of 1 : 1 was used?		1
12	What is the angle between the centre lines marked X and Y in VIEW 1?		1
13	What type of section is shown in VIEW 3?		1
14	How many threaded holes are there on the carburettor body?		1
15	What does the abbreviation PCD stand for?		1
16	How many surfaces need to be machined?		1
17	What direction of lay is indicated by the machining symbol?		2
18	Insert the cutting plane for VIEW 3. Label the cutting plane A-A.		3
19	Determine the complete dimensions at: A B C D E		5
20	In the space provided in the title block (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>		<b>30</b>	

PROGRAMME: AUTOCAD	MATERIAL: ALUMINIUM	SCALE: 1 : 5
FILE NAME: 562 CB - SS.dwg	QUANTITY: 18000 UNITS	ALL UNSPECIFIED RADII ARE 2,5 mm.
DRAWING No. YAP 356	TREATMENT: NORMALISE	ALL DIMENSIONS ARE IN MILLIMETRES.
REMOVE ALL BURRS AND SHARP EDGES.	MACHINED 0,05/C	ANSWER 20
<b>DYNAMIC</b> ENGINEERING 1051 BRAKEN ROAD LITTLE FALLS GAUTENG 1735 011 355 1550		_____ _____ _____
TITLE <b>CARBURETTOR BODY</b>		SYMBOL

REVISIONS	DATE
DRAWN: MARYNA	2013/09/10
CHECKED: ANDY	2013/10/12
APPROVED: MVE	2013/10/22

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A detailed drawing of a front stub axle, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawing and the title block. [30]

QUESTIONS		ANSWERS	
1	On what date was the drawing checked?		1
2	What is the name of the engineering firm?		1
3	What scale is indicated for the drawing?		1
4	What treatment must the stub axles undergo?		1
5	On what date was the axle angle revised?		1
6	What is the drawing number?		1
7	What would VIEW 1 be called?		1
8	How many surfaces need to be machined?		1
9	How many threaded holes are there in the stub axle?		1
10	What production method is required to achieve the finish on the stub axle?		1
11	What type of section is shown in VIEW 3?		1
12	Name the encircled feature at 1.		1
13	Name the feature at 2.		1
14	What is the thickness of the feature at 3?		1
15	Name the encircled feature at 4.		2
16	Name the type of curve at 5.		2
17	Determine the angle between the centre lines at 6.		2
18	What is the depth of the undercut?		2
19	Determine the complete dimensions at: A B C D		4
20	In the space provided in the title block (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>			<b>30</b>

ALL UNSPECIFIED RADII ARE 5 mm.	
ALL DIMENSIONS ARE IN MILLIMETRES.	SCALE: 1 : 2
DRAWING PROGRAM: AUTOCAD 2008	MATERIAL: CAST IRON
FILE NAME: T-SA FS AXLE.dwg	QUANTITY: 9 500 UNITS
DRAWING No. AWF 3628 W	TREATMENT: HARDENING
REMOVE ALL BURRS AND SHARP EDGES.	TURNING 0,25
<b>PRECISION</b> ENGINEERING	54 SOMTSEU ROAD KINGSMEAD DURBAN 4000 031 335 1600
TITLE	<b>FRONT STUB AXLE</b>

ANSWER 20

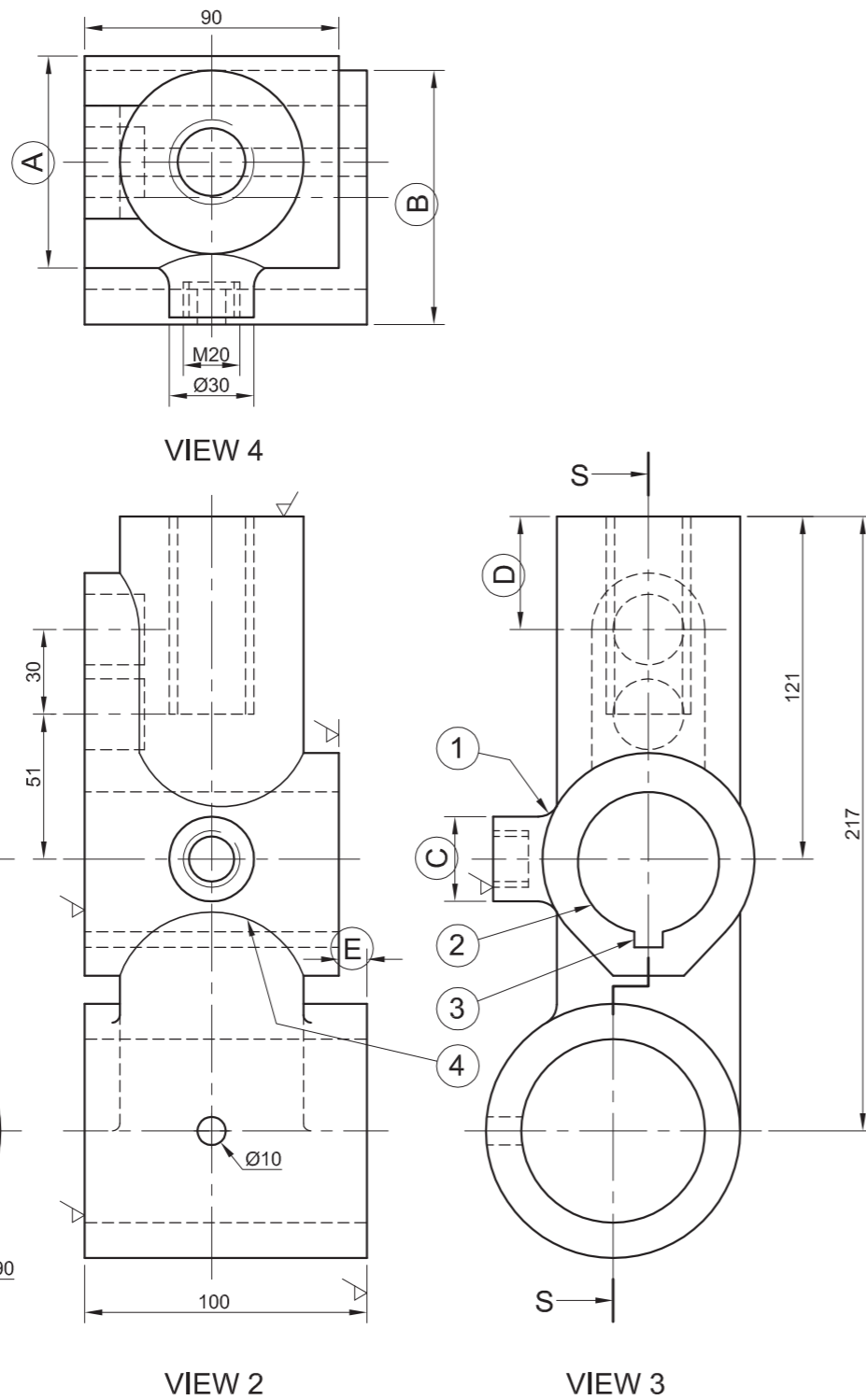
2. AXLE HOLES	2013/05/16
1. AXLE ANGLE	2013/05/15
<b>REVISIONS</b>	<b>DATE</b>
DRAWN: JVL	2013/04/10
CHECKED: KC	2013/05/12
APPROVED: SC	2013/05/22

SYMBOL



EXAMINATION NUMBER	
EXAMINATION NUMBER	2

STAPLE



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A detailed drawing showing FOUR views of a connector, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**

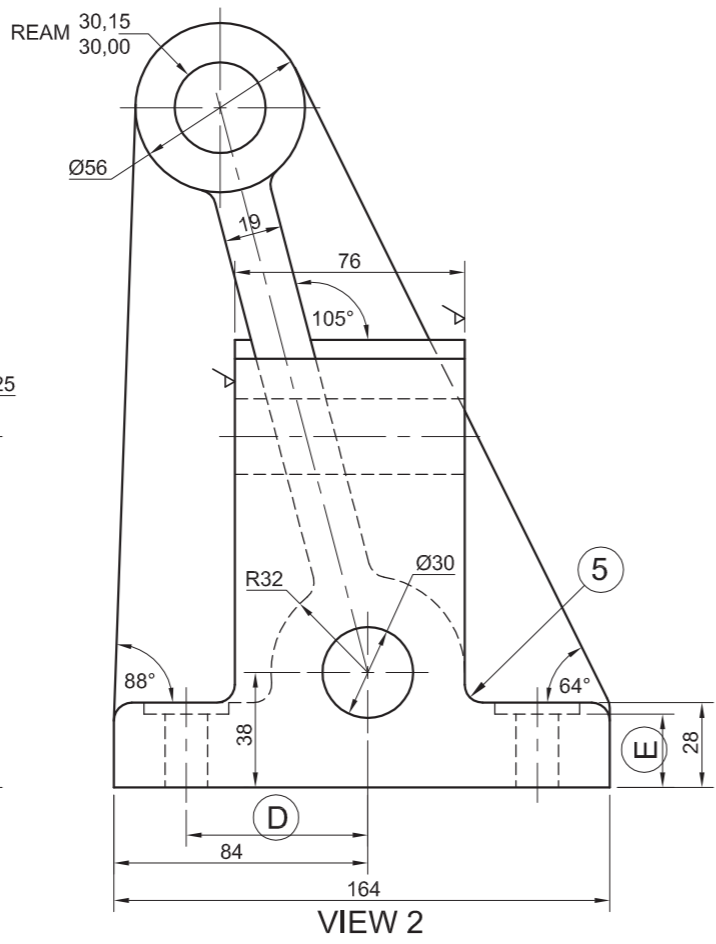
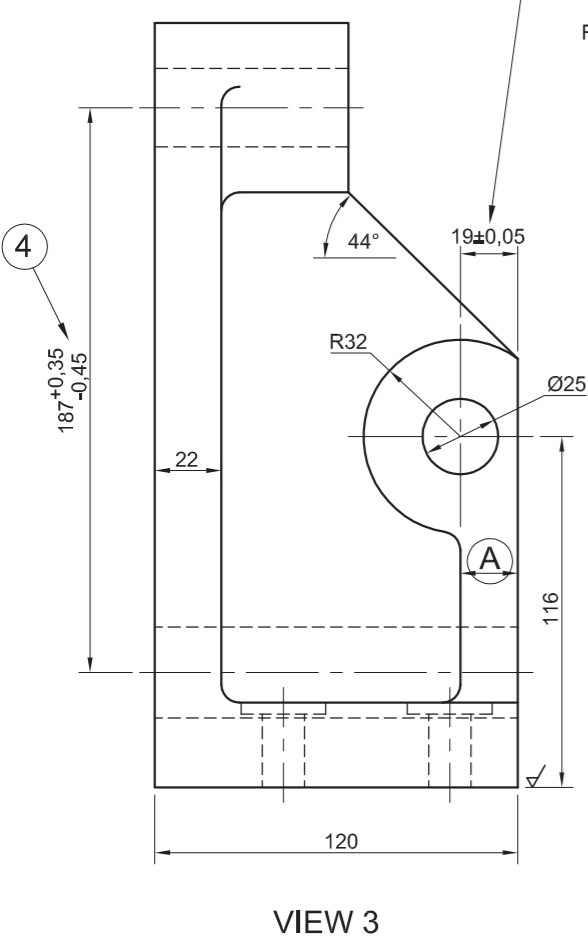
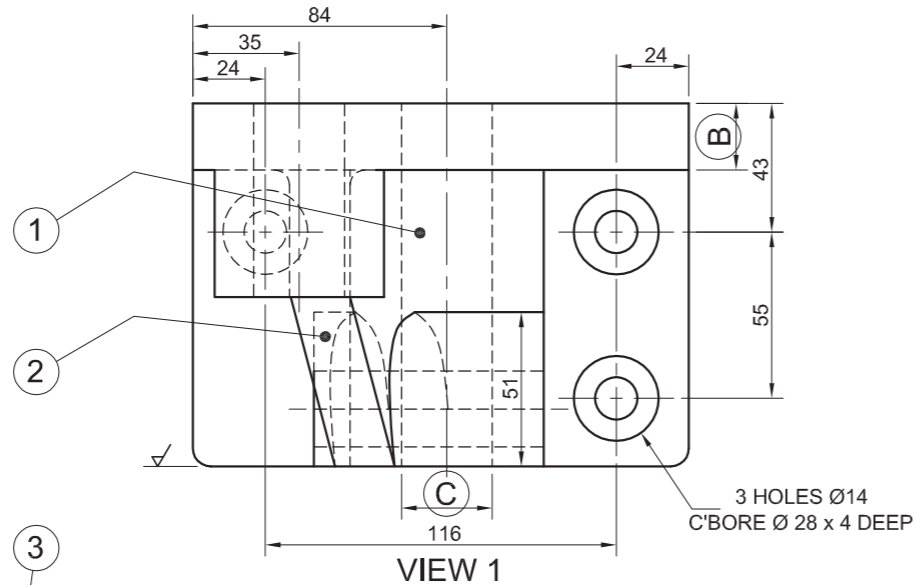
Complete the table below by neatly answering the questions, which all refer to the accompanying detailed drawing and the title block. [30]

QUESTIONS		ANSWERS	
1	On what date was the drawing approved?		½
2	What is the file name of the drawing?		½
3	What was the nature of the first revision?		½
4	What material is the connector made of?		½
5	What is the radius of the unspecified curves?		½
6	How many surfaces require machining?		½
7	What method must be used to produce the machined surfaces?		1
8	What does N4 on the machining symbol represent?		1
9	Name the curve at 1.		1
10	What is the diameter of the circle at 2?		1
11	Name the slot at 3.		1
12	Name the curve at 4.		1
13	What is the tolerance on the unspecified dimensions?		1
14	What is the distance between the centres of the two holes at 5?		1
15	How many threaded holes are there on the connector?		1
16	What is the total height of the connector?		1
17	What would VIEW 4 be called?		1
18	What type of sectional view would result from cutting plane SS?		1
19	Determine the complete dimensions: A                      B                      C                      D                      E		5
20	What is the upper tolerance of the dimension at 6?		2
21	What is the upper and lower tolerance of the dimension at 7?		4
22	In the box below (ANSWER 22), draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>			<b>30</b>

				ALL DIMENSIONS ARE IN MILLIMETRES. ALL UNSPECIFIED RADII ARE 2,5 mm.	
2012-08-06	MARYNA	ADD MACHINING SYMBOLS	2	UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE ± 0,3.	
2012-08-04	MARYNA	INCREASE TOLERANCE	1		QUANTITY: 76
DATE	REVISED BY	REVISION DESCRIPTION	№	DRAWN BY: NOLWAZI	DATE: 2012-07-15
<p><b>PRECISION</b> ENGINEERING WORKS</p> <p>15 DYER STREET EAST LONDON www.precision.co.za 043 645 7820</p>				CHECKED BY: AKHEEL	DATE: 2012-07-18
				APPROVED BY: DANIEL	DATE: 2012-07-19
				MATERIAL: CAST IRON	FILE NAME: UFF 335.dwg
				HEAT TREATMENT: NONE	DRAWING No. 12-0967-msc
TITLE: <b>CONNECTOR</b>				SCALE: 1 : 2	



EXAMINATION NUMBER	
EXAMINATION NUMBER	2



ALL DIMENSIONS ARE IN MILLIMETRES.

**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A detailed drawing showing THREE views of an ejector base, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

**Instructions:**

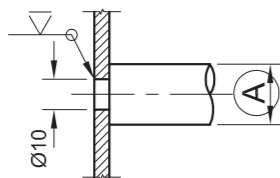
Complete the table below by neatly answering the questions, which all refer to the accompanying detailed drawing and the title block. [30]

QUESTIONS		ANSWERS	
1	Who approved the drawing?		½
2	What SI unit are the dimensions presented in?		½
3	When was the drawing checked?		½
4	Who was responsible for the revision?		½
5	What drawing method was used to prepare the drawing?		½
6	How many ejector bases must be manufactured?		½
7	How many surfaces require machining?		1
8	What is the roughness value of the machined surfaces?		1
9	What method must be used to produce the machined surfaces?		1
10	What is the angle to the horizontal of the surface at 1?		1
11	What is the angle to the horizontal of the surface at 2?		1
12	How many holes are there in the casting?		1
13	What does the abbreviation C'BORE stand for?		1
14	What would VIEW 2 be called?		1
15	What is the radius of the fillet at 5?		1
16	Determine the complete dimensions at: A                      B                      C                      D                      E		5
17	What is the total height of the ejector base?		3
18	What is the upper tolerance of the dimension at 3?		2
19	What is the upper and lower tolerance of the dimension at 4?		4
20	In the box below (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>			<b>30</b>

UNLESS OTHERWISE SPECIFIED, ALL TOLERANCES ON DIMENSIONS ARE ± 0,3. ALL UNSPECIFIED RADII ARE 6 mm.				0,03 GRINDING	SCALE: 1 : 2	ANSWER 20	
2012-08-03	S GOBA	REDUCE TOLERANCE VALUES	1	DRAWING PROGRAMME: AUTOCAD	<div style="border: 1px solid black; height: 100px; width: 100%;"></div>		
DATE	REVISED BY	REVISION DESCRIPTION	No.	FILE NAME: TLS30.dwg			
<b>MASTERCAST</b> ENGINEERING 29 BURMAN ROAD DEALPARTY PORT ELIZABETH 6025 www.mtech.co.za 041 545 7820				MATERIAL: CAST IRON			DRAWING No. 12-729-KM3
				HEAT TREATMENT: NORMALISE			DATE: 2012-07-15
TITLE				DRAWN BY: K MOODLEY			DATE: 2012-07-18
EJECTOR BASE				CHECKED BY: L MBELE	DATE: 2012-07-19		
				APPROVED BY: J BURGER	DATE: 2012-07-19		
				QUANTITY: 382			

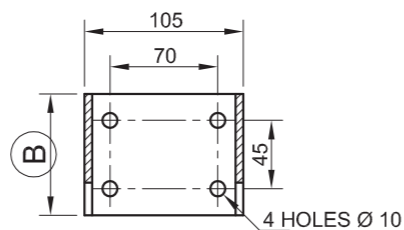
EXAMINATION NUMBER	
EXAMINATION NUMBER	2



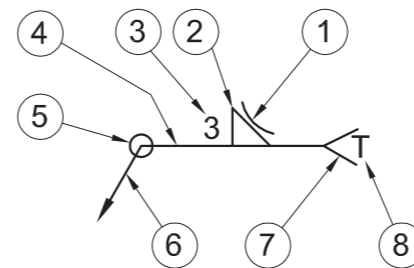


WELDING DETAIL FOR ALL THE HORIZONTAL BARS

DETAIL 'R'



VIEW 1



WELDING SYMBOL

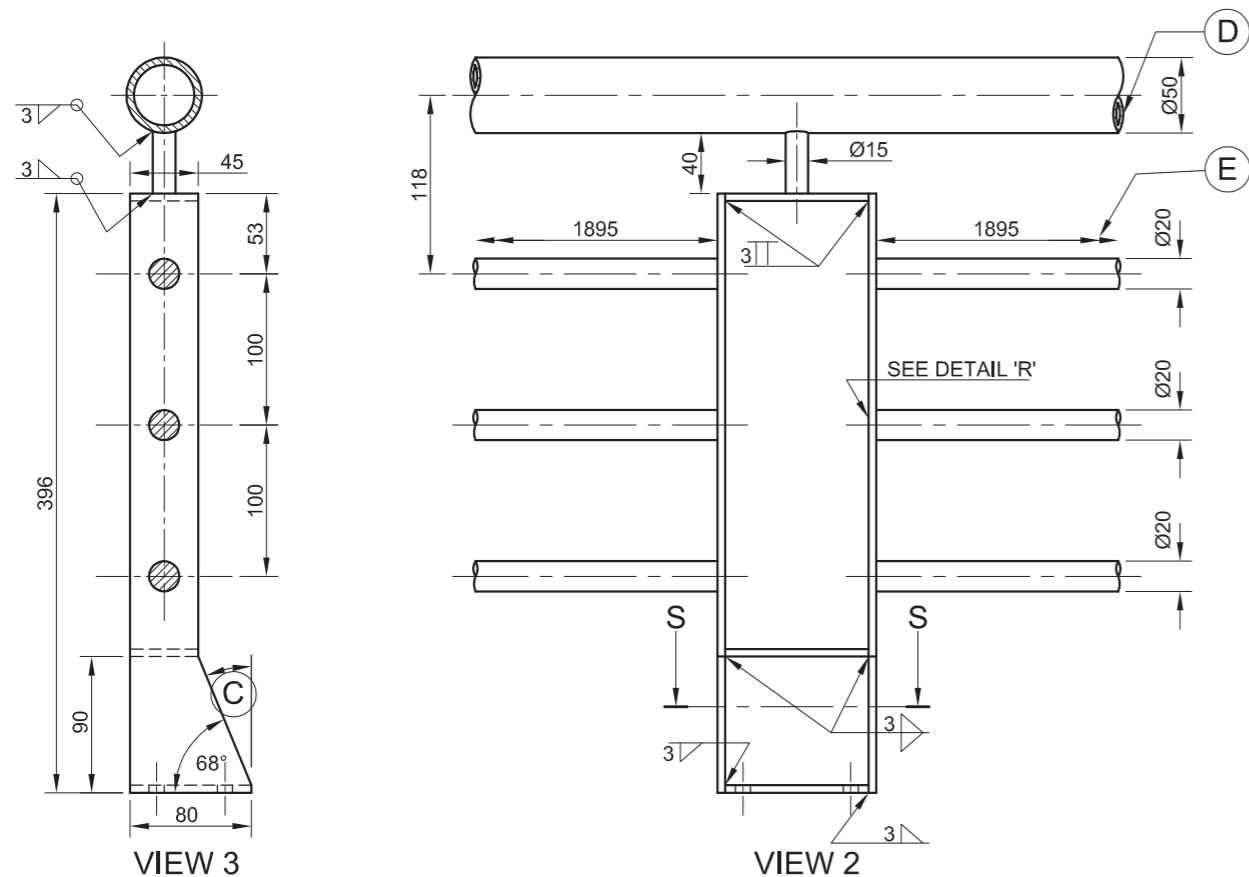
**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A selection of views of a balustrade bracket, a welding symbol, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

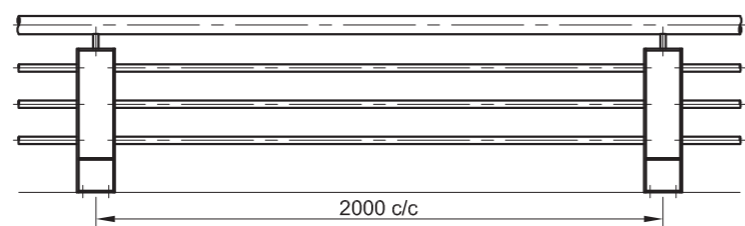
**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. **[30]**



VIEW 3

VIEW 2



INSTALLATION DIAGRAM

QUESTIONS		ANSWERS	
1	With reference to the welding symbol, link the number on the drawing with the correct element in the column to the right of this question.	ARROW LINE	7
		TAIL	
		REFERENCE LINE	
		WELDING PROCESS	
		CONCAVE FINISH	
		WELD ALL AROUND	
		SIZE OF WELD	
2	When was the drawing approved?		1
3	What is the manufacturing company's web address?		1
4	What finish is required for the balustrade?		1
5	What is the file name?		1
6	What is the thickness of the plate used on the bracket?		1
7	How many brackets must be manufactured?		1
8	What would view 1 be called?		1
9	What would view 3 be called?		1
10	What size bolt is needed to secure the bracket?		1
11	Determine the dimensions: A B C		3
12	What is the centre-to-centre distance between two brackets?		1
13	How many surfaces need to be welded on each bracket?		2
14	What is feature D called on view 2?		1
15	What is the meaning of the double arrow at E?		1
16	If the permissible tolerance on a dimension is $\pm 0,5$ , determine the upper and lower tolerance on a dimension of 30 mm.		2
17	In the box below, draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>			<b>30</b>

FILE NAME: PM 12-PSC-347	MATERIAL: 5 mm MILD STEEL PLATE	ALL DIMENSIONS ARE IN MILLIMETRES.	
DRAWING No. 7	FINISH: CHROME PLATED		
BALUSTRADE FOR PIET AND SONS CONTRACTORS 17 WALDO STREET DURBAN	DRAWING PROGRAMME: AUTOCAD 2008	DRAWN BY: HAROLD	2011/05/15
	ALL UNSPECIFIED RADII ARE R3.	CHECKED BY: SALLY	2011/05/25
<b>WELDTech</b> ENGINEERING	51 PARK AVENUE NEWLANDS 4070 www.weldtech.co.za 031 645 7820	APPROVED BY: GEORGE	2011/06/01
		SCALE: 1 : 10	
		QUANTITY: 26 BRACKETS	
TITLE	<b>BALUSTRADE BRACKET</b>		

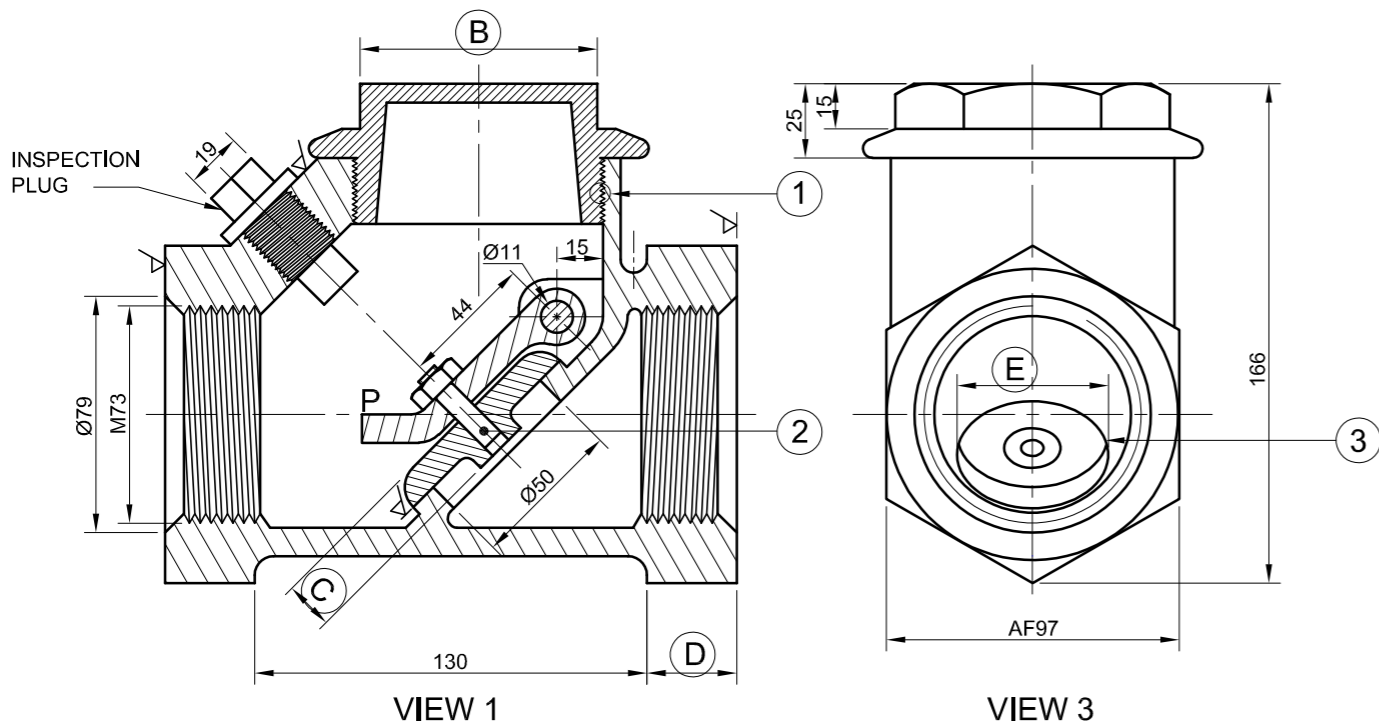
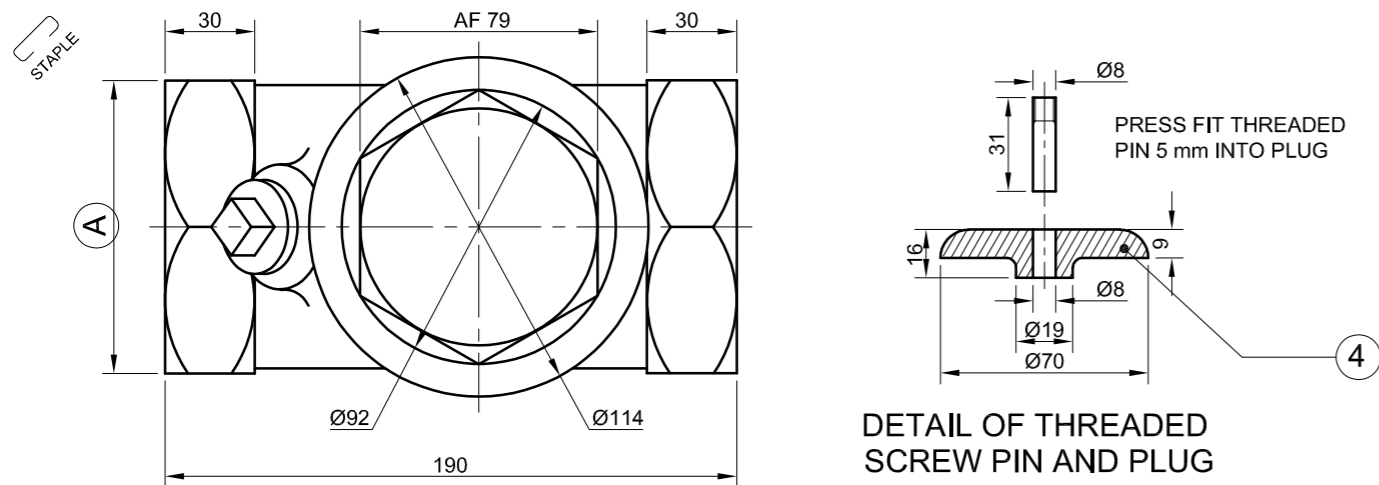
ANSWER 17

-----

SYMBOL

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**  
THREE detailed views of a swing check valve, a detail drawing of the screw pin and plug, a title block and a table of questions. The drawings have not been prepared to the indicated scale.

**Instructions:**  
Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. **[30]**

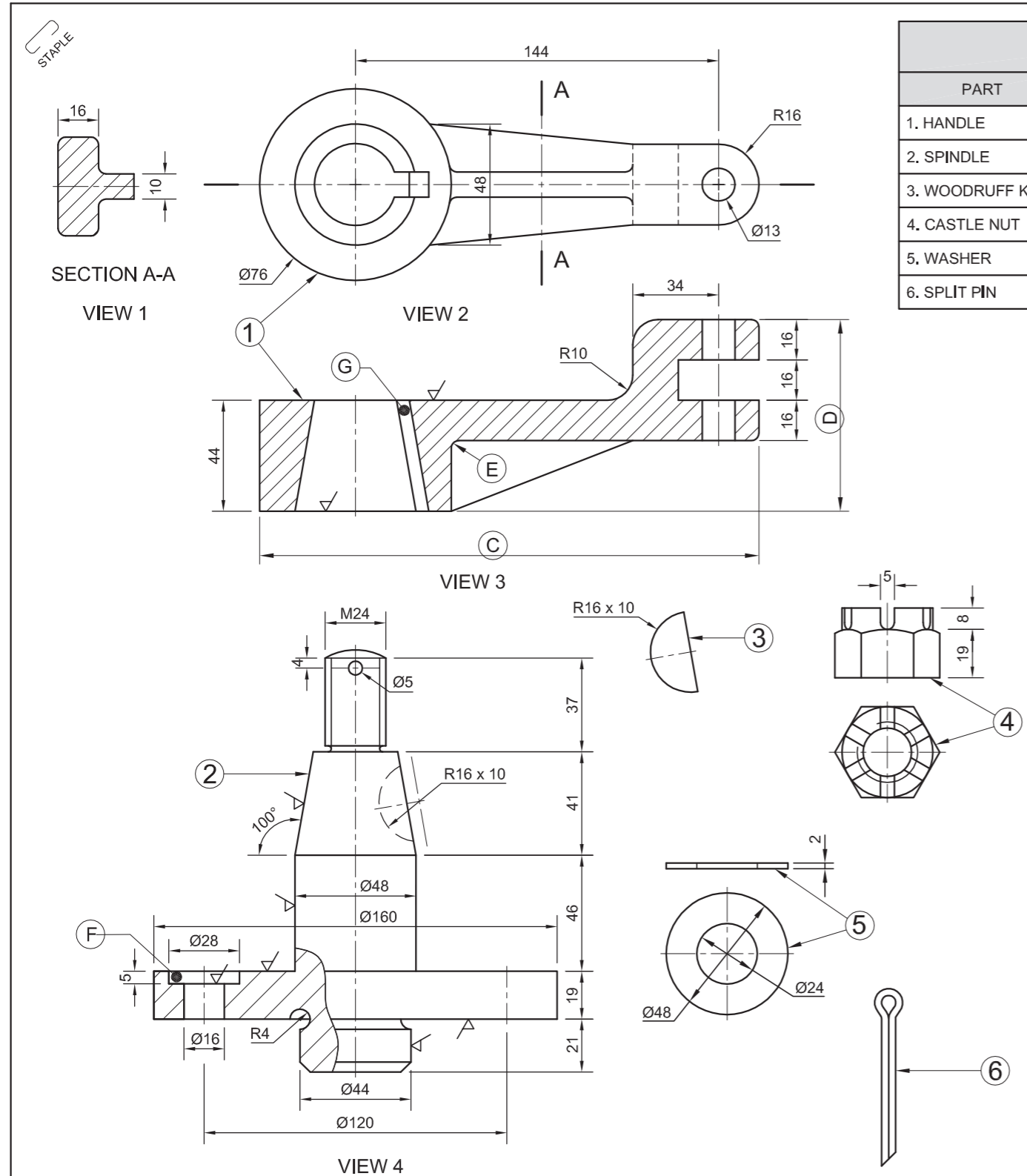
QUESTIONS		ANSWERS	
1	When was the drawing checked?		1/2
2	Who approved the drawing?		1/2
3	What scale is indicated for the drawing?		1/2
4	Who was responsible for the revisions?		1/2
5	How many revisions have there been to the drawing?		1/2
6	What was the nature of the first revision?		1/2
7	How many surfaces require machining?		1
8	What is the roughness value of the machined surfaces?		1
9	Name the circled feature at 1?		1
10	Name the component at 2?		1
11	In ONE word, describe the true shape of the feature at 3.		1
12	What type of section is shown at 4?		1
13	What thread size must a component have in order to be coupled to the swing check valve?		1
14	How many components make up the swing check valve?		1
15	What would view 3 be called?		1
16	Determine the dimensions: A B C D E		5
17	Draw the cutting-plane A-A on view 2.		3
18	In view 1, trace the locus that would be generated by point P as the gate opens to its maximum.		2
19	In the box below (ANSWER 19), draw, in neat freehand, the symbol for the projection system used.		4
20	In the box provided below (ANSWER 20), complete, in neat freehand, and according to SABS 0111 conventions, the drawing of the inspection plug on the right.		4
<b>TOTAL</b>			<b>30</b>

2011-08-12	N. BOOTH	LENGTHEN INSPECTION PLUG	3
2011-08-09	N. BOOTH	SHOW MACHINED SURFACES	2
2011-08-05	N. BOOTH	REMOVE WASHER	1
DATE	REVISED BY	REVISION DESCRIPTION	No

DRAWING No. 60305		MATERIAL: BRONZE	
FILE NAME: SCV 15-10		HEAT TREATMENT: NORMALISE	
UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE ± 0,25		DRAWING PROGRAMME: AUTOCAD 2011	
		ALL UNSPECIFIED RADII ARE R2.	
<b>MECHTECH</b> ENGINEERING		17 LONG STREET NEW PARK KIMBERLEY 8300 www.mtech.co.za 041 645 7820	
		APPROVED BY: A. MOKOENA 2011-07-03	
TITLE		SCALE: 1:2	
<b>SWING CHECK VALVE</b>		0,8	

ALL DIMENSIONS ARE IN MILLIMETRES		ANSWER 19	ANSWER 20
DRAWN BY: S. SHABALALA	2011-07-22	-----	
CHECKED BY: S. PIENAAR	2011-07-24		
APPROVED BY: A. MOKOENA	2011-07-03		
SYMBOL			

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



PARTS LIST		
PART	QUANTITY	MATERIAL
1. HANDLE	1	MILD STEEL
2. SPINDLE	1	MILD STEEL
3. WOODRUFF KEY	1	HARDENED STEEL
4. CASTLE NUT	1	HARDENED STEEL
5. WASHER	1	MILD STEEL
6. SPLIT PIN	1	SPRING STEEL

**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Six parts of a crank handle with a title block and a table of questions.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block. **[25]**

QUESTIONS		ANSWERS	
1	On what date was the drawing drawn?		1
2	What is the file name of the drawing?		1
3	In which street is the manufacturing company situated?		1
4	Who made changes to the drawing?		1
5	What scale is indicated for the drawing?		1
6	What is the tolerance allowed on the dimensions?		1
7	What type of section is indicated with view 1?		1
8	What would VIEW 3 be called?		1
9	How many surfaces must be machined on VIEW 4?		1
10	What is the thickness of the Woodruff key?		1
11	Determine the dimensions at C and D.	<b>C</b>	<b>D</b>
12	What is the size of the arc at E?		1
13	What is the feature at F called?		1
14	What is the feature at G called?		1
15	What is the purpose of the castle nut?		1
16	What is the purpose of the split pin?		1
17	What type of section is indicated on VIEW 4?		1
18	What is the purpose of the Woodruff key in the crank-handle assembly?		1
19	Draw the arrows for the cutting plane located on VIEW 2 and label it B-B.		2
20	In the box below (ANSWER 20), draw, in neat freehand, the symbol for the projection system used.		4
<b>TOTAL</b>			<b>25</b>

13/12/2010	STEVEN	INSERT KEY AND KEYWAY	A
ALL DIMENSIONS ARE IN MILLIMETRES.	DATE	CHANGED BY	REVISION DESCRIPTION
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE ± 0,15.	DRAWN BY: JOHAN	DRAWING NO. 2	MATERIAL: MILD AND HARDENED STEEL
	DATE: 05/11/2010	FILE NAME: CRANK_003	HEAT TREATMENT: NORMALISE
ALL UNSPECIFIED RADII ARE R3.	CHECKED BY: DE WET	<p style="text-align: center;"><b>MAXSTEEL</b>      GOVAN MBEKI DRIVE                  PORT ELIZABETH                  6001                  www.maxsteel.co.za</p> <p style="text-align: center;"><b>CRANK HANDLE</b></p>	
	DATE: 10/11/2010		
APPROVED BY: ALIDA			
DRAWING PROGRAM: AUTOCAD 2008	DATE: 20/11/2010		
	SCALE: 1 : 2		

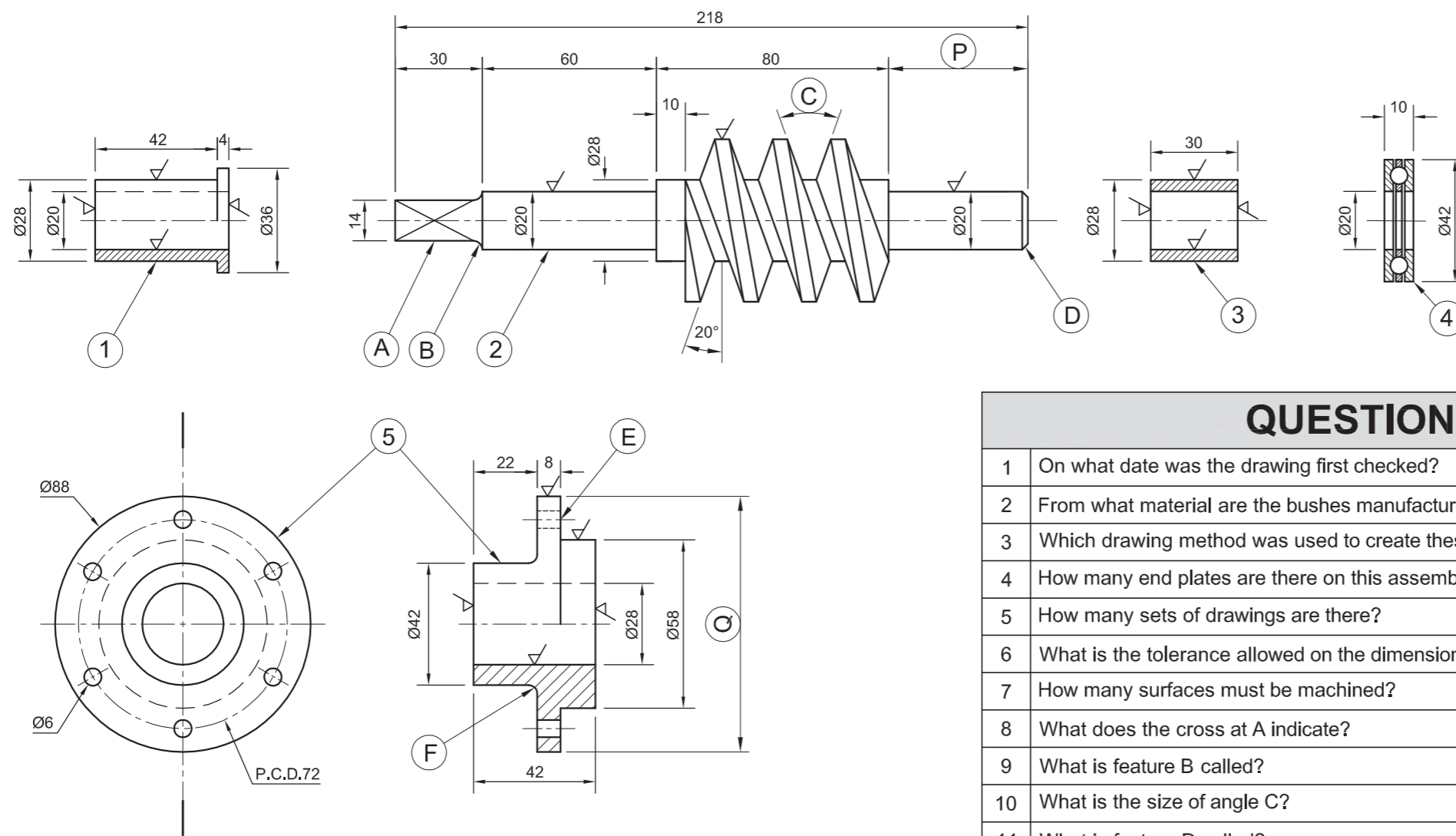
ANSWER 20

\_\_\_\_\_

SYMBOL

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Five parts of a worm gear assembly with a title block and a table of questions

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and title block. [30]

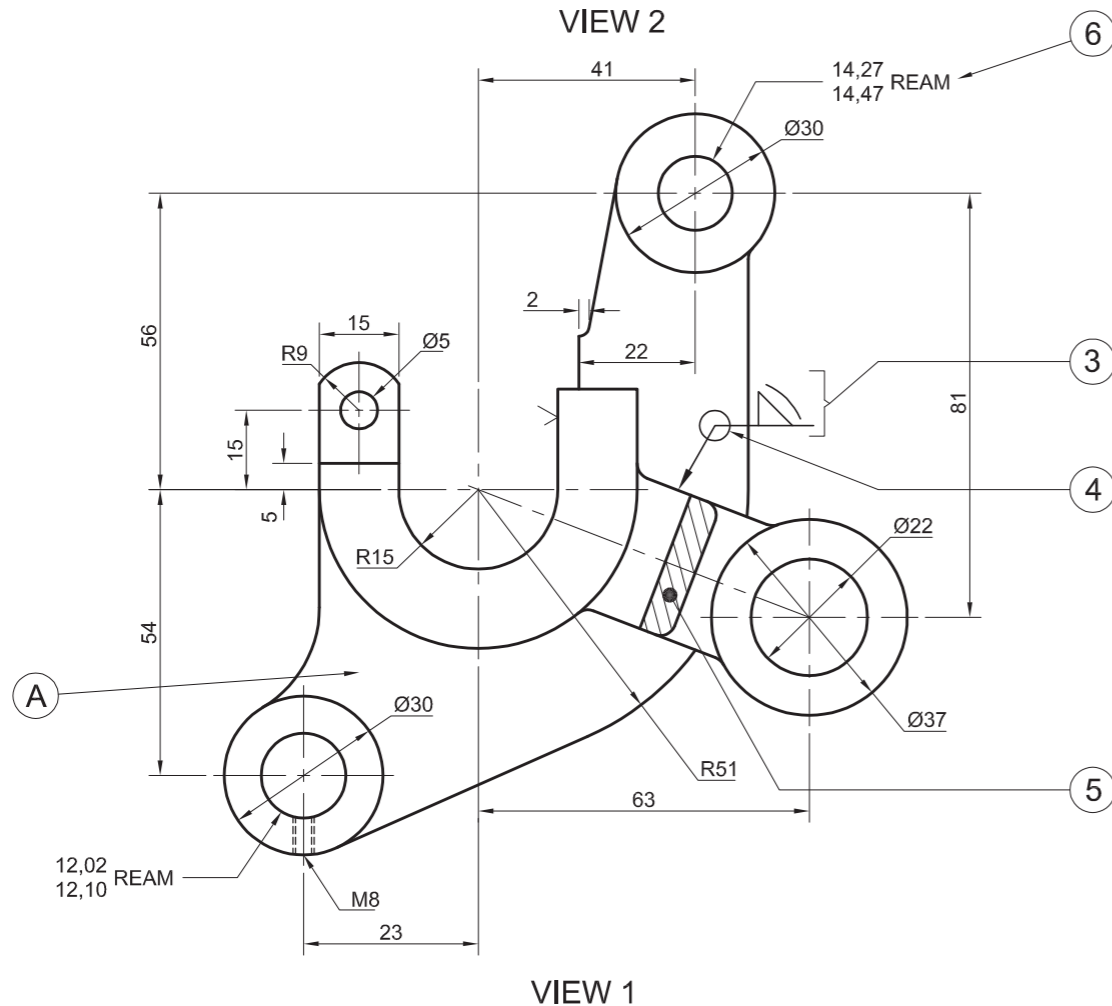
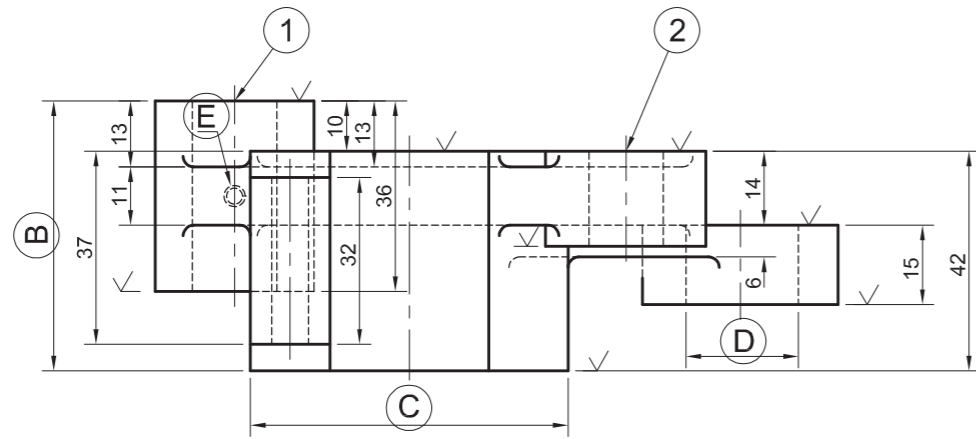
PARTS LIST		
PART	QUANTITY	MATERIAL
1. BUSH	1	BRASS
2. WORM	1	CASE-HARDENED STEEL
3. BUSH	1	BRASS
4. BEARING	1	CASE-HARDENED STEEL
5. END PLATE	1	MILD STEEL

QUESTIONS		ANSWERS	
1	On what date was the drawing first checked?		1
2	From what material are the bushes manufactured?		1
3	Which drawing method was used to create these drawings?		1
4	How many end plates are there on this assembly?		1
5	How many sets of drawings are there?		1
6	What is the tolerance allowed on the dimensions?		1
7	How many surfaces must be machined?		1
8	What does the cross at A indicate?		1
9	What is feature B called?		1
10	What is the size of angle C?		1
11	What is feature D called?		1
12	What is the size of the hole marked E?		1
13	What is the size of the arc marked F?		1
14	What type of section is shown on part 1?		1
15	Determine the dimensions at:	P	Q
16	What do the letters P.C.D. stand for?		1
17	How many bolts will be used to secure the end plate?		1
18	Draw the arrows for the cutting plane located on part 5 and label it A-A.		2
19	In the box below (ANSWER 19), draw, in neat freehand, the symbol for the projection system used.		4
20	In the box below (ANSWER 20), draw, in neat freehand, the SABS 0111 convention for part 4.		6
<b>TOTAL</b>			<b>30</b>

ALL DIMENSIONS ARE IN MILLIMETRES.	15/05/2010	MICHELLE	ANGLE OF GEARS	A
	DATE	CHANGED BY	REVISION DESCRIPTION	No
UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE ± 0,25.	DRAWN BY: JOSHUA	DRAWING SET NO. 3 OF 4		MATERIAL: VARIOUS
	DATE: 20/04/2010	FILE NAME: P-S2-B4		HEAT TREATMENT: NONE
ALL UNSPECIFIED RADII ARE R3.	CHECKED BY: KRISTY	<p style="text-align: center;"><b>LONGSTEEL</b></p> RIVER DRIVE EAST LONDON 5247 www.longsteel.co.za MANUFACTURING		
	DATE: 26/04/2010			
APPROVED BY: HOLLY				
DRAWING PROGRAM: AUTOCAD 2008	DATE: 01/05/2010	<b>WORM-GEAR ASSEMBLY</b>		
SCALE: 1 : 2				

ANSWER 19	ANSWER 20
SYMBOL	Convention for part 4
EXAMINATION NUMBER	
EXAMINATION NUMBER	





**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

Two views of an adaptor plate with a title block and a table of questions.

**Instructions:**

Complete the table below by neatly printing the answers to the questions, which all refer to the accompanying drawings and the title block. [30]

QUESTIONS		ANSWERS
1	What is the title of the drawing?	1
2	On what date was the drawing checked?	1
3	Who approved the drawing?	1
4	What is the drawing number?	1
5	If a scale of 1:5 were used, what would a dimension of 10 mm read?	1
6	How many surfaces on the component require machining?	1
7	What process must be applied to achieve the required finish?	1
8	As what type of mechanical drawing can the views of the adaptor plate be classified?	1
9	What would VIEW 2 be called?	1
10	What is the thickness of the rib marked A?	1
11	Determine the dimensions at: B C D E	4
12	What is the linear distance between holes 1 and 2?	1
13	What type of symbol is shown at 3?	1
14	What does the circle on the symbol at 4 mean?	1
15	What type of section is shown at 5?	1
16	What is the permissible tolerance on the dimensions of the component?	1
17	Determine the tolerance for the dimension at 6.	2
18	In the box below, draw, in neat freehand, the symbol for the projection system used.	4
19	In the box below, draw, in neat freehand, the SABS 0111 convention for the given internal screw thread.	5
<b>TOTAL</b>		<b>30</b>

12-06-09	MUSA	CHANGE MACHINING SPEC'	B	ALL DIMENSIONS ARE IN MILLIMETRES.
07-06-09	MUSA	DECREASE RIB THICKNESS	A	ALL SPECIFIED SURFACE FINISHES ARE: 0,05 GRINDING
DATE	CHANGED BY	REVISION DESCRIPTION	No.	
DRAWING No. Q1/DOE/10		MATERIAL: CAST ALUMINIUM		THE TOLERANCE ON DIMENSIONS IS ± 0.3, UNLESS OTHERWISE SPECIFIED.
FILE NAME: FM-P2-2010		HEAT TREATMENT: NONE		
<b>eBHAYI</b>		73 ACACIA AVENUE PORT ELIZABETH 6001		DRAWING PROGRAM: AUTOCAD 2009
ENGINEERING PTY (LTD)		041 645 7820		DRAWN BY: AB MORKEL 20/05/09
<b>ADAPTOR PLATE</b>		CHECKED BY: Z KHUMALO 25/05/09		
		APPROVED BY: PP STEYN 07/06/09		
		SCALE: 1:2		

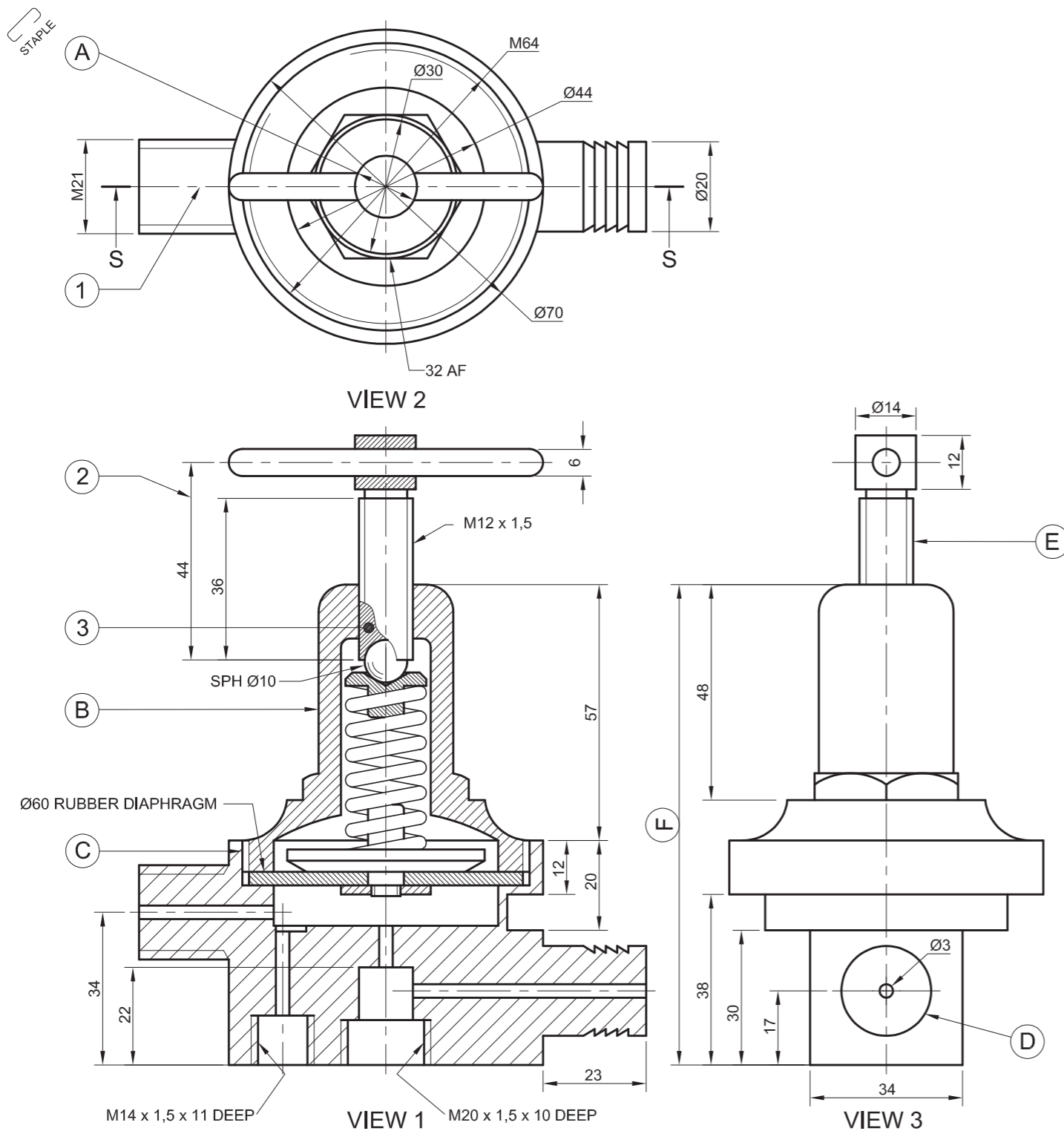
18

SYMBOL

19

SABS 0111 convention

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

The working drawings of a diaphragm regulator with a title block and a table of questions.

**Instructions:**

Complete the table below by neatly printing the answers to the questions, which all refer to the accompanying drawings and the title block. [30]

QUESTIONS		ANSWERS	
1	On what date was the revision completed?		1
2	Who checked the drawing?		1
3	What is the title of the drawing?		1
4	What scale is indicated for the drawing?		1
5	From what material are the metal components of the regulator made?		1
6	How many internal screw threads are there in the assembly?		1
7	How many parts make up the assembly?		1
8	What orthographic projection system has been used?		1
9	What would VIEW 3 be called?		1
10	What would VIEW 2 be called?		1
11	What is the outer diameter of the rubber diaphragm?		1
12	What is the diameter of the sphere?		1
13	Determine the dimensions at: A B C D E F		6
14	What drawing feature is shown at 1?		1
15	What drawing feature is shown at 2?		1
16	What type of section is shown at 3?		1
17	What does the machining symbol $\sqrt{\quad}$ mean?		2
18	In the block below, draw, in neat freehand, the simplified SABS 0111 convention for a spring.		4
19	What is the permissible tolerance on the components of the regulator?		1
20	Determine the upper limit of tolerance for a dimension of 34 mm.		2
<b>TOTAL</b>			<b>30</b>

12/05/09	MARIE	DIAMETER OF INLETS	A
DATE	CHANGED BY	REVISION DESCRIPTION	No

**DIAPHRAGM REGULATOR**

**EGD ENGINEERING**  
(SA) (PTY) LTD

188 SCHOEMAN STREET  
PRETORIA 0001  
www.egdengineering.co.za  
012 555 2345

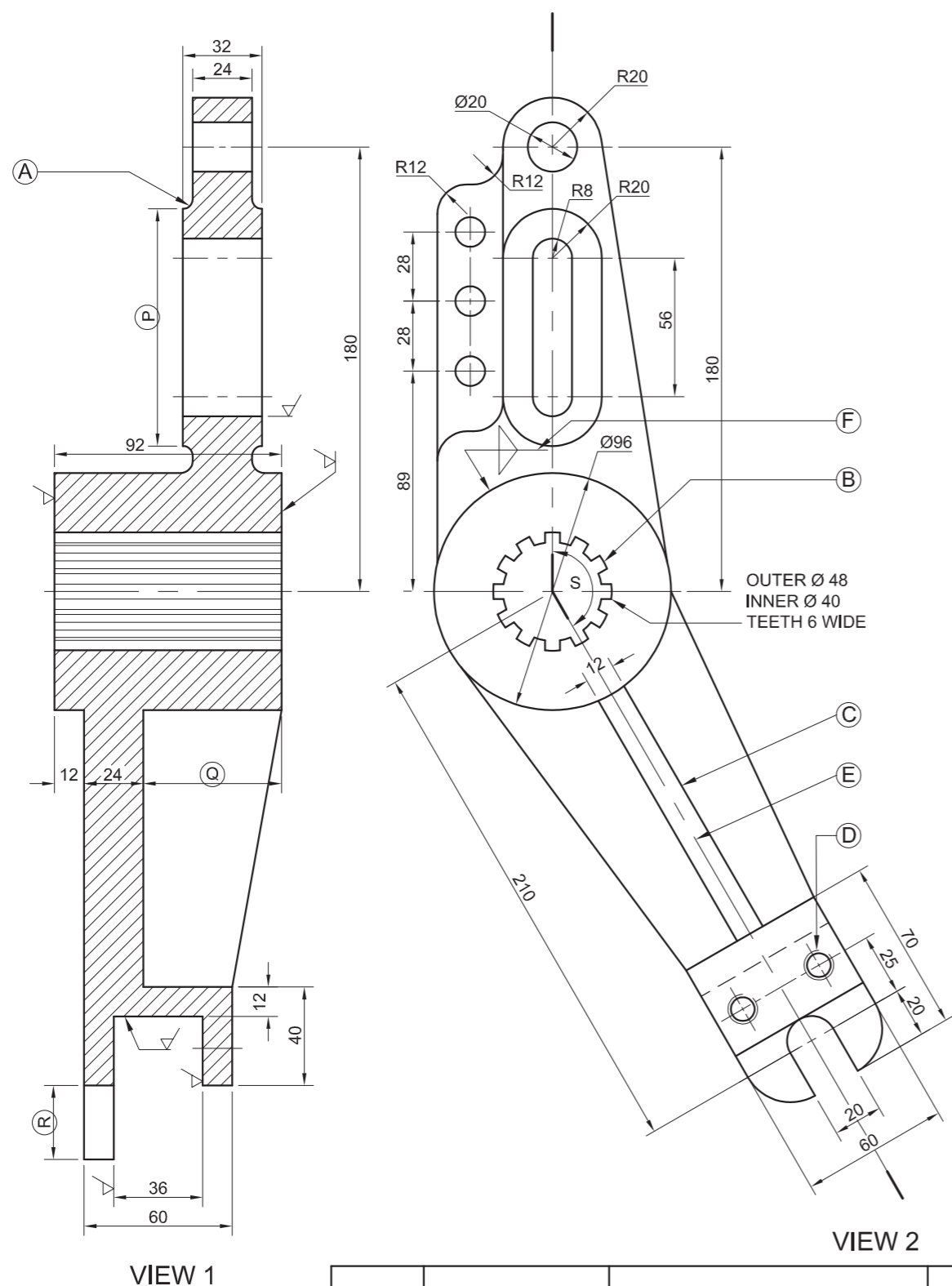
DRAWING SYSTEM: AutoCAD 2009  
DRAWING No. LFN/304/2009  
FILE NAME: D5-Y2  
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES WITH A TOLERANCE OF 0,25.  
UNLESS OTHERWISE SPECIFIED, ALL SURFACE TEXTURE FINISHES ARE  $\sqrt{\quad}$

DRAWN: MANDLA 20/03/09  
CHECKED: CARLA 29/03/09  
APPROVED: ROELF 03/04/09  
MATERIAL: BRASS  
HEAT TREATMENT: NORMALISE  
SCALE: 1:2

18.

Convention for the spring

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A table of questions and a working drawing.

**Instructions:**

Complete the table below by neatly printing the answers to the questions, which all refer to the accompanying drawings and the title block. [29]

QUESTIONS		ANSWERS
1	On what date was the drawing first completed?	1
2	What material is used to manufacture the bell crank?	1
3	What is the drawing number?	1
4	How many revisions have been made to the drawing?	1
5	Where is the manufacturing company situated?	1
6	What is the tolerance allowed on the dimensions?	1
7	How many surfaces must be machined?	1
8	What is feature <b>A</b> called?	1
9	What is feature <b>B</b> called?	1
10	What is feature <b>C</b> called?	1
11	What is feature <b>D</b> called?	1
12	Name the type of line shown at <b>E</b> .	1
13	Identify the type of symbol shown at <b>F</b> .	1
14	Name the type of section on VIEW 1.	2
15	Determine the dimensions at: <b>P</b> <b>Q</b> <b>R</b>	3
16	What is the size of angle <b>S</b> ?	1
17	What orthographic projection system has been used?	1
18	Draw the arrows for the cutting plane located on view 2 and label it A-A.	2
19	In the box below and in freehand, neatly draw the symbol for the projection system used.	4
20	In the box below and in freehand, neatly draw the SABS 0111 convention used for the feature at <b>B</b> .	3
		<b>TOTAL 29</b>

ALL DIMENSIONS ARE IN MILLIMETRES

15-10-08	KAREN	SPLINE ON MAIN HUB	A
DATE	CHANGED BY	REVISION DESCRIPTION	No

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE ± 0,25

DRAWN: COLEEN  
DATE: 20/02/08  
CHECKED: KARL

DRAWING No. S8/ED/01  
FILE NAME: S-P2-A2  
MATERIAL: CAST IRON  
HEAT TREATMENT: NORMALISE

19

20

ALL UNSPECIFIED RADII ARE R3

DATE: 26/02/08  
APPROVED: JESSIE

**CAPE STEEL**  
MANUFACTURING  
FOREST DRIVE  
GOODWOOD  
5240  
www.capesteel.co.za

DRAWING PROGRAMME: AUTOCAD 2008

DATE: 01/03/08  
SCALE: 1:2

**BELL CRANK**

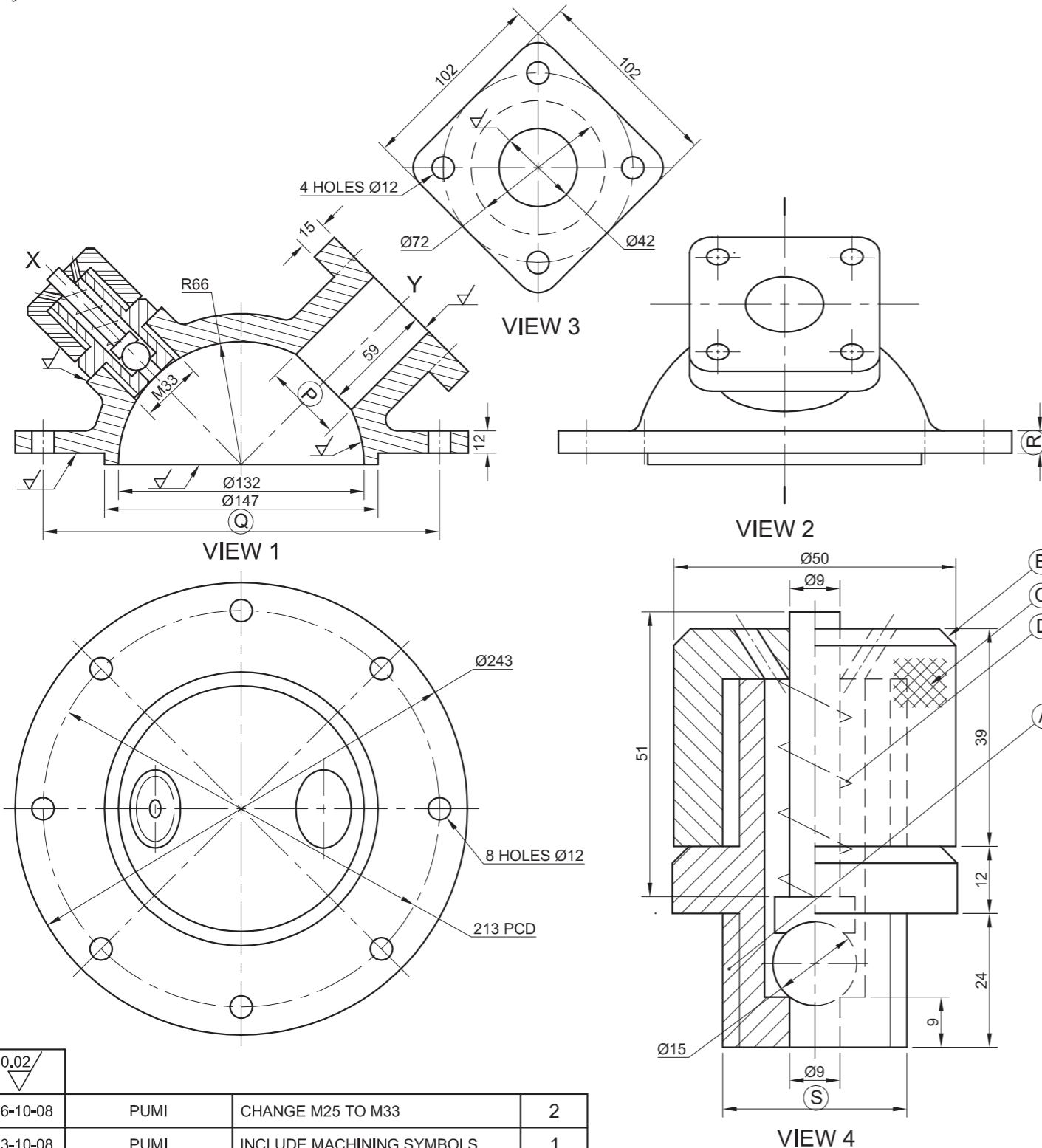
SYMBOL

Convention for feature B

EXAMINATION NUMBER

EXAMINATION NUMBER

2



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A table of questions and a set of working drawings.

**Instructions:**

Complete the table below by neatly printing the answers to the questions, which all refer to the accompanying drawings and the title block.

[26]

QUESTIONS		ANSWERS	
1	On what date was the drawing checked?	1/2	
2	In which city is the manufacturing company situated?	1/2	
3	What is the name of the drawing file?	1/2	
4	How many revisions have been made to the drawing?	1/2	
5	What is the tolerance allowed on the dimensions?	1/2	
6	How many bolts are required to secure the cylinder head to the body?	1/2	
7	How many surfaces must be machined?	1	
8	What is feature <b>A</b> called?	1	
9	What is feature <b>B</b> called?	1	
10	What is feature <b>C</b> called?	1	
11	What is feature <b>D</b> called?	1	
12	How many parts does the assembly consist of?	1	
13	What would view 3 be called?	1	
14	Name the type of section on: VIEW 1	VIEW 4	2
15	Determine the dimensions at: P Q R S		4
16	What is the angle between the holes marked <b>X</b> and <b>Y</b> on view 1?		1
17	Draw the arrows for the cutting plane located on view 2 and label it A-A.		3
18	What does the symbol $\sqrt{0,02}$ mean?		1
19	What orthographic projection system has been used?		1
20	In the box below neatly draw, in freehand, the symbol for the projection system used.		4
<b>TOTAL 26</b>			

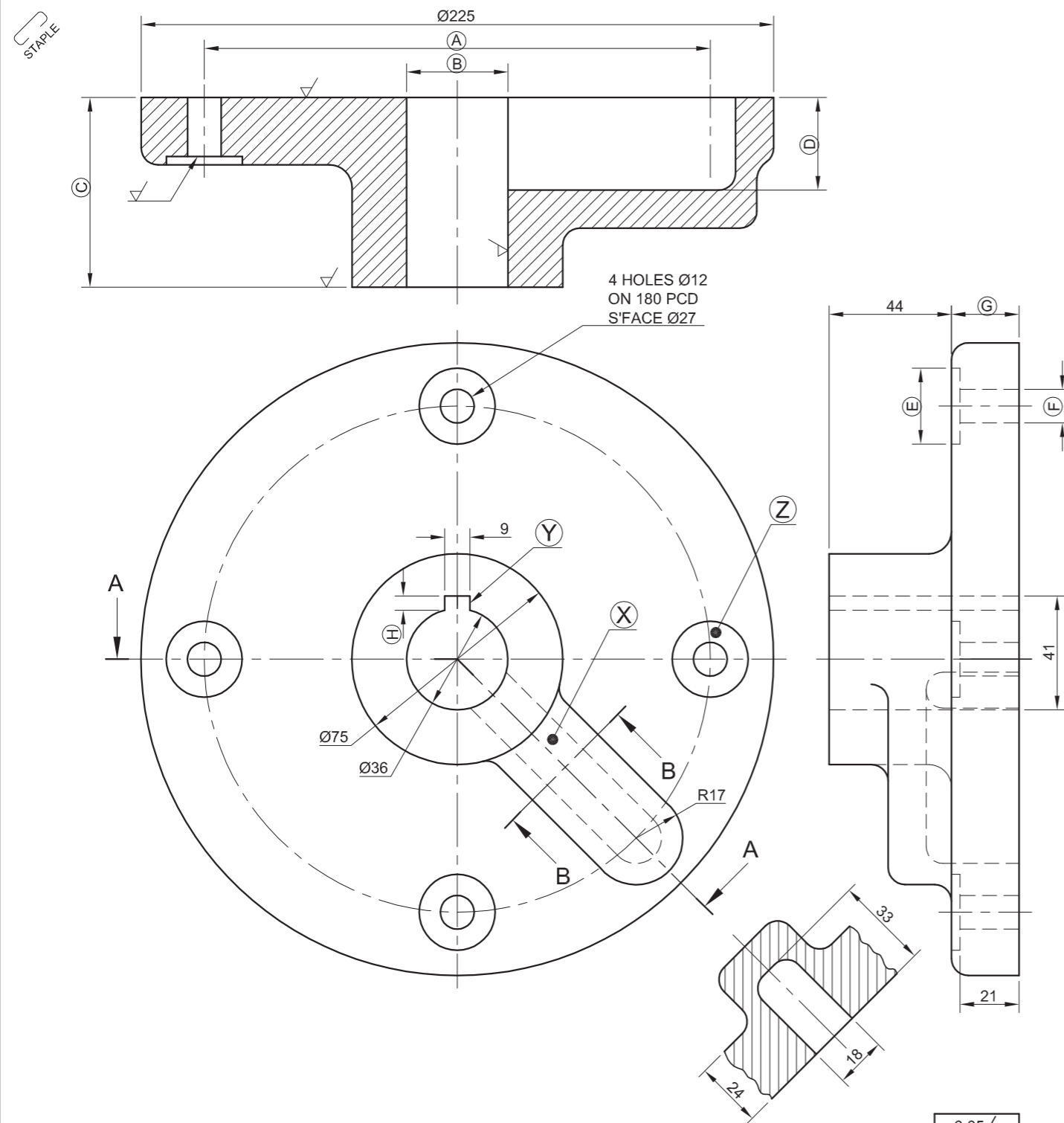
$\sqrt{0,02}$			
06-10-08	PUMI	CHANGE M25 TO M33	2
03-10-08	PUMI	INCLUDE MACHINING SYMBOLS	1
DATE	CHANGED BY	REVISION DESCRIPTION	No

ALL DIMENSIONS ARE IN MILLIMETRES

DRAWING No. N8/DOE/001	MATERIAL: CAST IRON	DRAWN: JOHAN	UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE: ± 0,05
FILE NAME: N-P2-E018	HEAT TREATMENT: NONE	DATE: 25/09/08	
	DIAS STREET EAST LONDON 5240 www.mega.co.za	CHECKED: KENNETH	ALL UNSPECIFIED RADII ARE R4
		DATE: 02/10/08	
<b>CYLINDER HEAD ASSEMBLY</b>		APPROVED: JABU	DRAWING PROGRAMME: AUTOCAD 2008
		DATE: 16/10/08	
		SCALE: 1:5	

SYMBOL

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



**QUESTION 1: ANALYTICAL (MECHANICAL)**

**Given:**

A set of working drawings and questions.

**Instructions:**

Complete the table below by answering the questions which all refer to the accompanying drawings and title block.

[25]

QUESTIONS		ANSWERS
1	On what date was the drawing first completed?	1/2
2	Who redrew the drawing?	1/2
3	What is the name of the manufacturing company?	1/2
4	What is the drawing number?	1/2
5	What dimension unit is used?	1/2
6	What tolerances are allowed on the dimensions?	1
7	What heat treatment is required?	1
8	How many surfaces must be machined?	1
9	What is the width of the slot marked X?	1
10	What is feature Y called?	1
11	What is feature Z called?	1
12	What is the maximum 'M' sized bolt that could be used to hold the crank disc in place?	1
13	If the drawing was drawn full size, what would dimension $\text{Ø}36$ read?	1/2
14	Determine the dimensions at: A B C D	4
15	Determine the dimensions at: E F G H	4
16	What type of section is created by cutting plane B-B?	1
17	What do the letters PCD stand for?	1
18	What does the symbol $\sqrt{0.05}$ mean?	1
19	Label the TWO sectioned views.	2
20	In the box below neatly draw, in freehand, the symbol for the projection system used.	2
<b>TOTAL 25</b>		

ALL DIMENSIONS IN MILLIMETRES

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE:  
 2 DECIMAL PLACES:  $\pm 0,05$   
 3 DECIMAL PLACES:  $\pm 0,005$

ALL UNSPECIFIED RADII ARE R3

DRAWING PROGRAMME: AUTOCAD 2007

SCALE: 1:2

MATERIAL: SAE 1040

HEAT TREATMENT: NORMALISE

DRAWING No. TC/DOE/0811

FILE NAME: CD-334

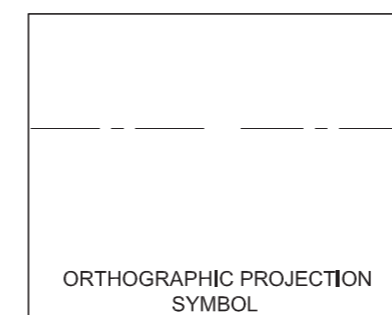
0.05

A	REDRAWN:	20/04/07	S-BU	NJUMO
ISSUE	REVISION	DATE	BY	CHECKED

**TSIMBI CORPORATION**

TSHEDZA STREET  
 THOHAYANDOU  
 0950  
 www.tsimbi.co.za

**CRANK DISC**



EXAMINATION NUMBER	
EXAMINATION NUMBER	2