

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

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P2
SEPTEMBER 2014
PREPARATORY EXAMINATIONS

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

1. The paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1:1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every answer sheet.
8. All answers must be drawn accurately and neatly.
9. Any details or dimensions not given must be estimated in good proportion.

FOR OFFICIAL USE ONLY				
				MODERATED MARK
1				
2				
3				
4				
TOTAL				
	2	0	0	

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE



+c

QUESTION 2: HELIX

Given:

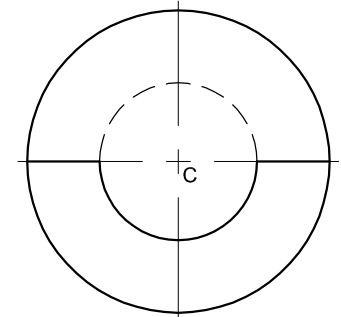
- The complete top view of a helical square screw thread.
- The centre point, C, of the top view.

Specification:

- Right-handed
- One and a half revolutions
- Outside diameter = 100 mm
- Core diameter = 52 mm
- Pitch = 48 mm

Instructions:

- Using the given information, copy the top view and draw a front view with $1\frac{1}{2}$ turns of a helical square screw thread.
- Show the centre lines.
- Show ALL necessary construction.
- NO hidden detail is required in the front view. **[37]**



ASSESSMENT CRITERIA				
1	TOP VIEW + C'LINES + DIVISIONS + CONSTR PITCH	7		
2	PLOTTING POINTS & OUTSIDE CURVE	19		
3	PLOTTING POINTS & INSIDE CURVE	6		
4	SHAFT + SIDES	5		
	TOTAL	37		
EXAMINATION NUMBER				
EXAMINATION NUMBER				
EXAMINATION NUMBER				3



QUESTION 3: ISOMETRIC DRAWING

Given:

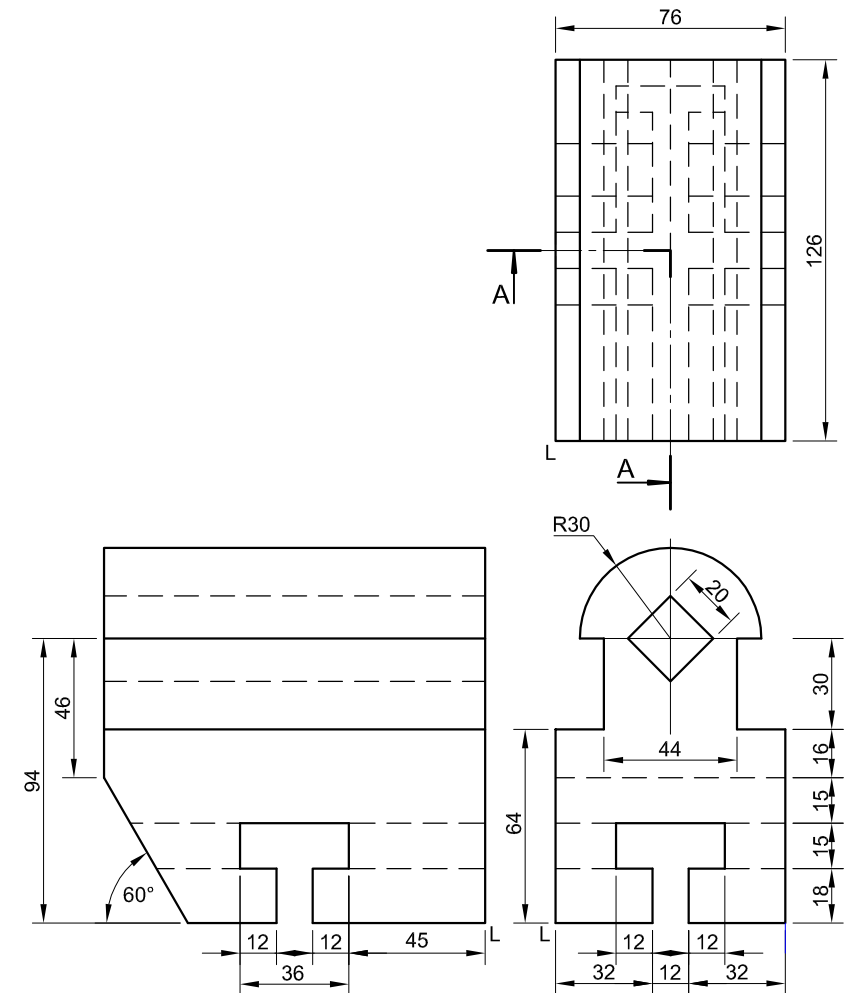
- The front view, left view and top view of a sliding guide
- The position of point L on the drawing sheet

Instructions:

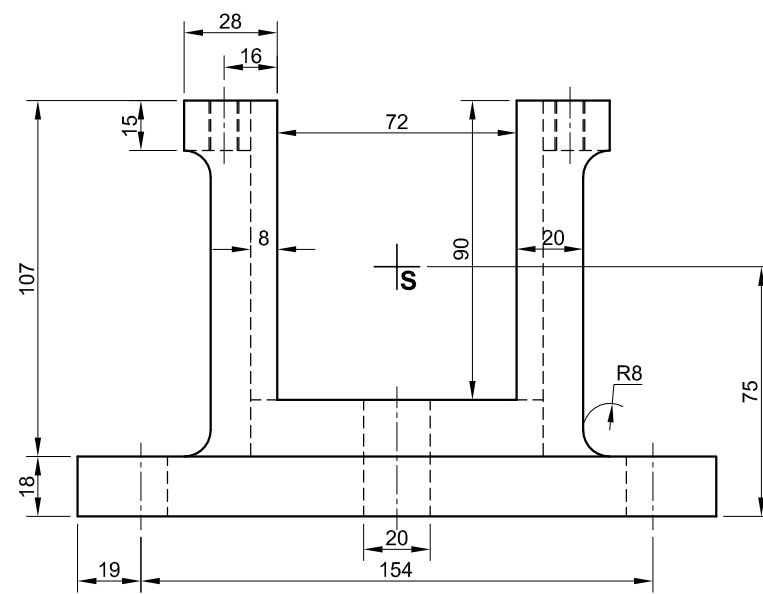
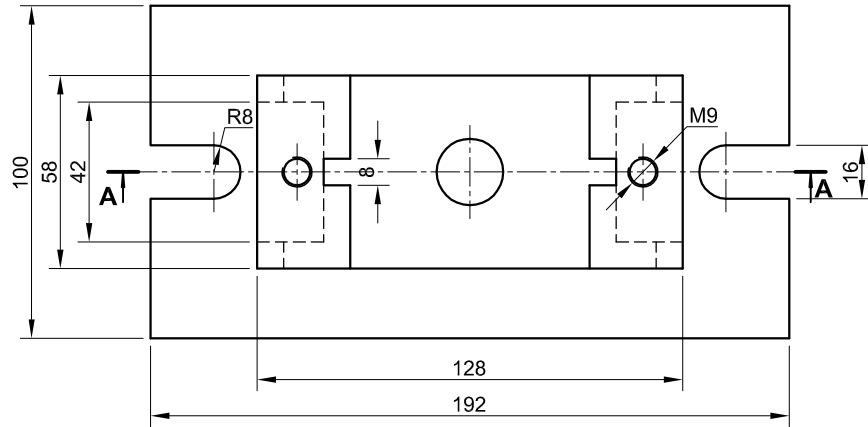
Using scale 1 : 1, convert the orthographic views of the sliding guide into a sectional isometric drawing on cutting plane A-A.

- Make L the lowest point of the drawing.
- Show ALL necessary constructions.
- NO hidden detail is required.

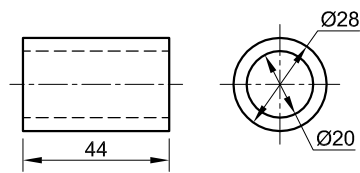
[41]



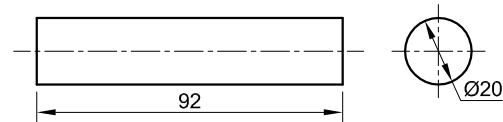
ASSESSMENT CRITERIA				
1	AUX' VIEWS + PLACING	3		
2	ISO' LINES	23½		
3	NON ISO' LINES	5		
4	CIRCLE + CONSTR	6½		
5	SECTIONING	3		
TOTAL		41		
EXAMINATION NUMBER				
EXAMINATION NUMBER				
EXAMINATION NUMBER				4



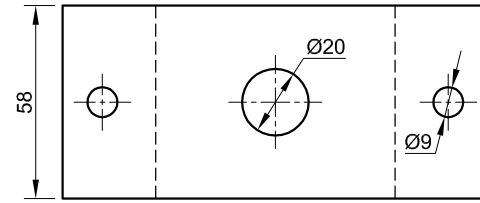
BASE



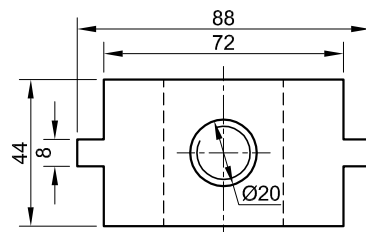
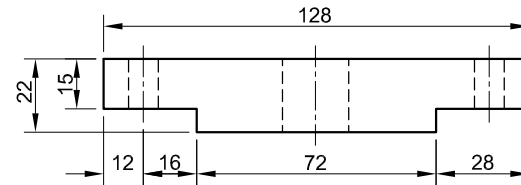
BUSH



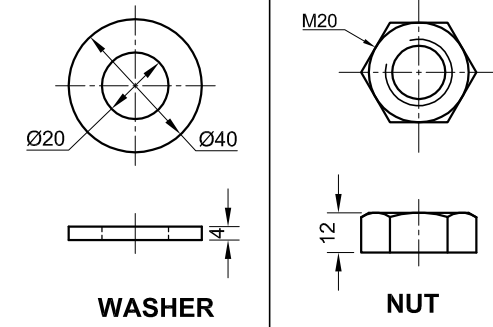
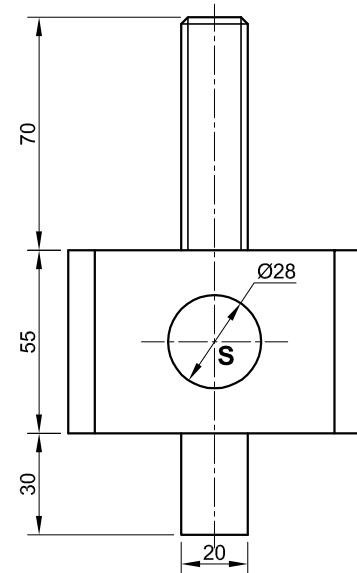
SHAFT



COVER

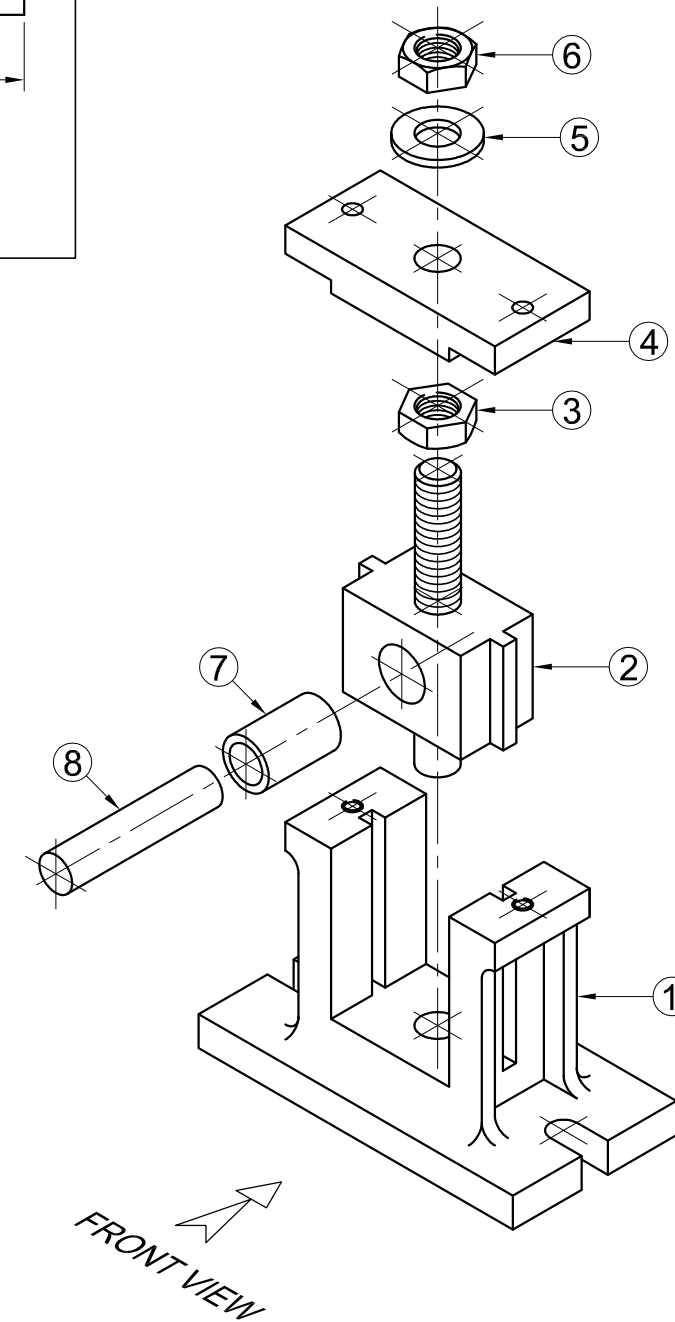


SLIDING BLOCK



WASHER

NUT



EXPLODED ISOMETRIC DRAWING

QUESTION 4: MECHANICAL ASSEMBLY

Given:

- The exploded isometric drawing of the parts of a shaft support assembly, showing the position of each part relative to all the others.
- Orthographic views of each of the parts of the shaft support assembly.
- Point S on the answer sheet.

Instructions:

- Answer this question on page 6.
- Draw, to scale 1 : 1 and in third-angle orthographic projection, the following views of the assembled parts of the shaft support assembly:
 - 4.1 **A sectional front view** on cutting plane A-A, as seen from the direction of the arrow shown on the exploded isometric drawing. The cutting plane, which passes vertically through the centre of the assembly, is shown on the top view of the base (part 1).
 - 4.2 **The right view.**
- ALL drawings must comply with the guidelines contained in the SABS 0111.

NOTE:

- Align point S on the sliding block with point S on the base.
- Show THREE faces of the nuts in the front view and ALL necessary construction.
- NO hidden detail is required.

Insert the following features on the drawing:

- The cutting plane A-A

[92]

PARTS LIST

PART	QUANTITY	MATERIAL
1. BASE	1	CAST IRON
2. SLIDING BLOCK	1	CAST IRON
3. NUT	1	MILD STEEL
4. COVER	1	CAST IRON
5. WASHER	1	MILD STEEL
6. NUT	1	MILD STEEL
7. BUSH	1	BRASS
8. SHAFT	1	MILD STEEL

IBAYHI STEEL
MANUFACTURING

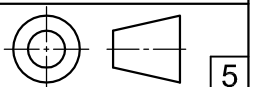
OLD CAPE ROAD
GREENBUSHES
6025
www.ibayhisteel.co.za

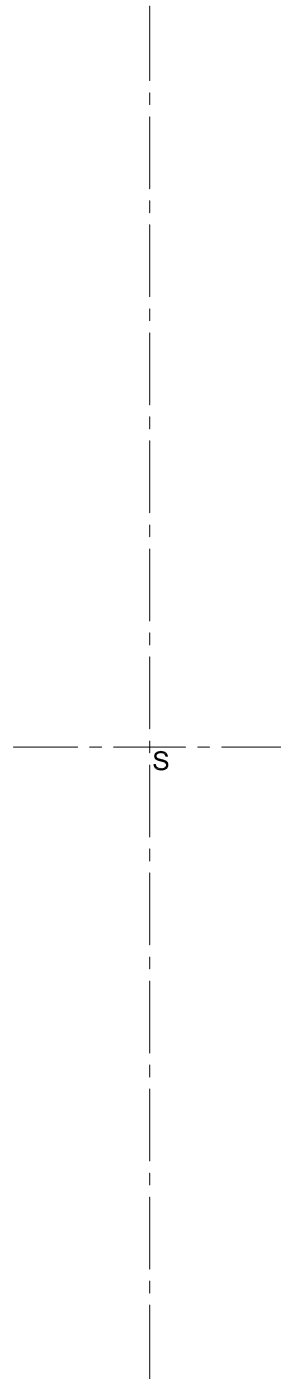
TITLE

SHAFT SUPPORT

ALL DIMENSIONS ARE IN MILLIMETRES.

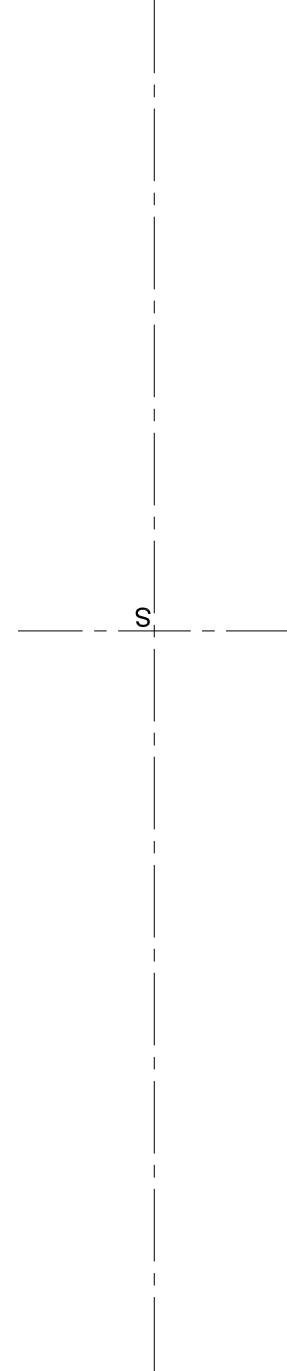
ALL UNSPECIFIED RADII ARE R3.

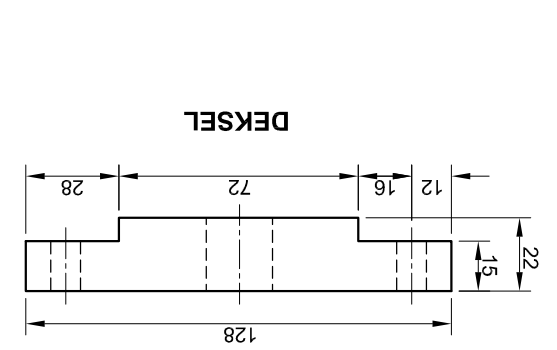
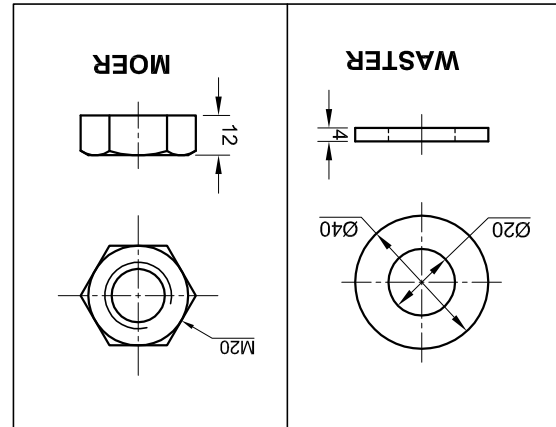
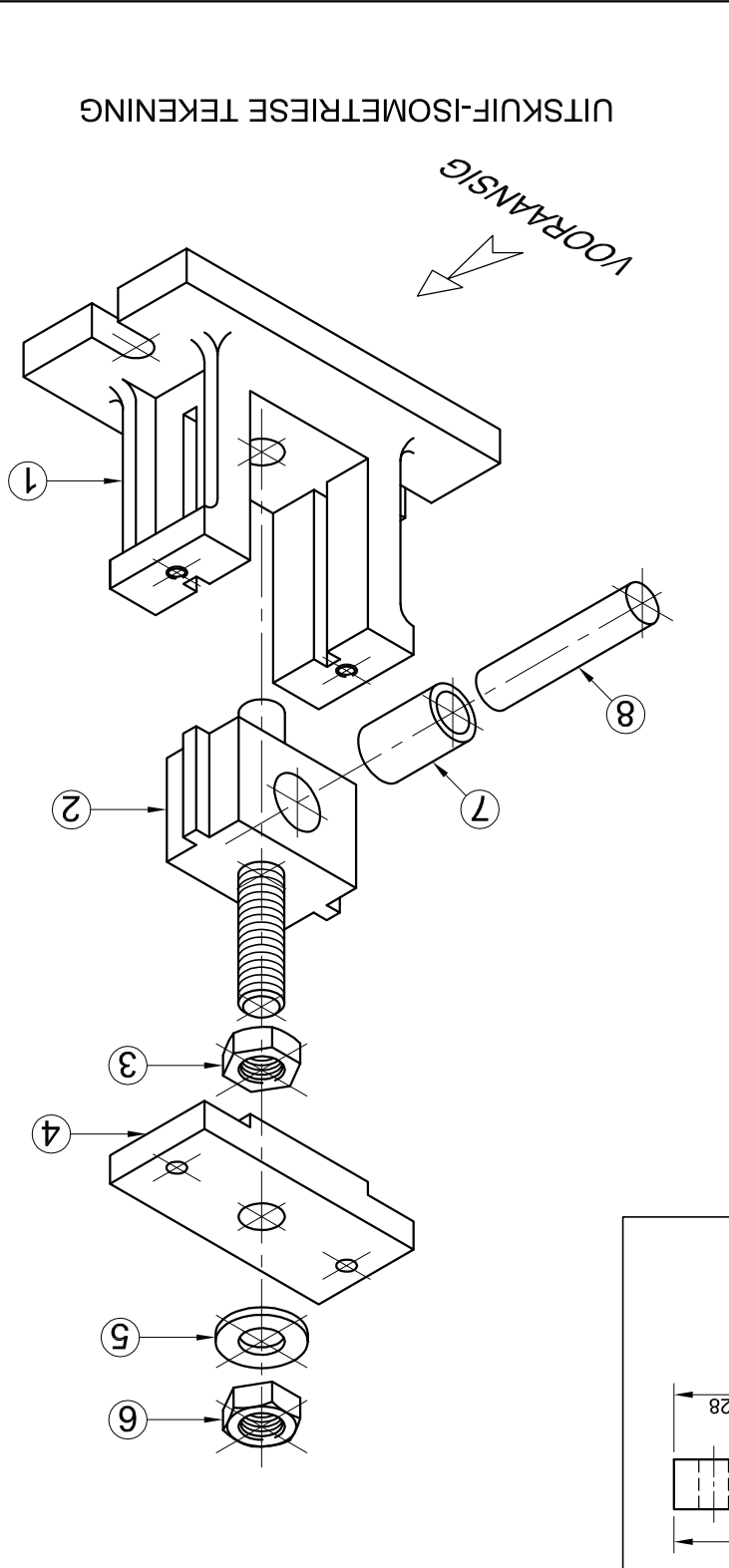
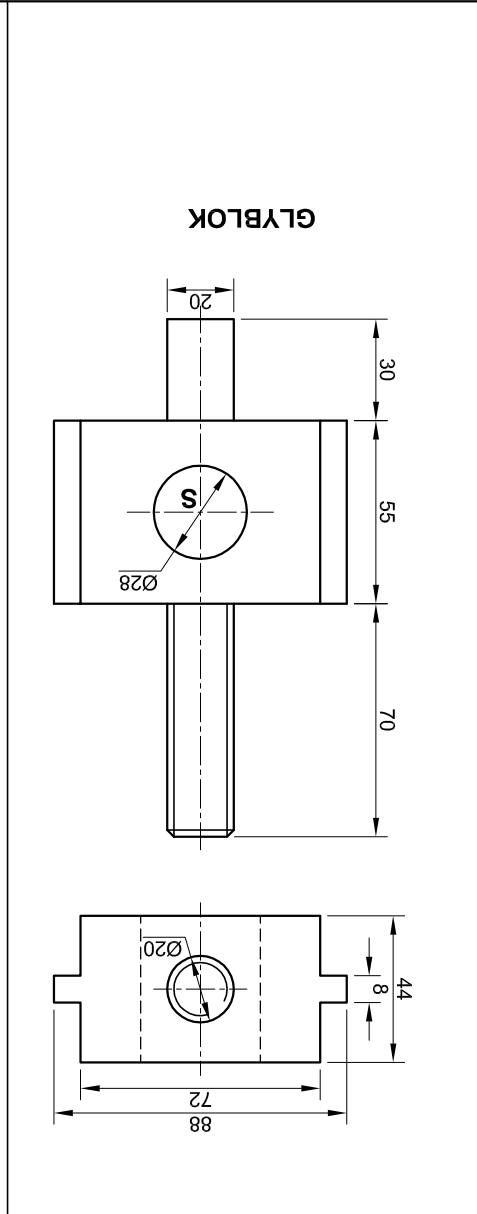
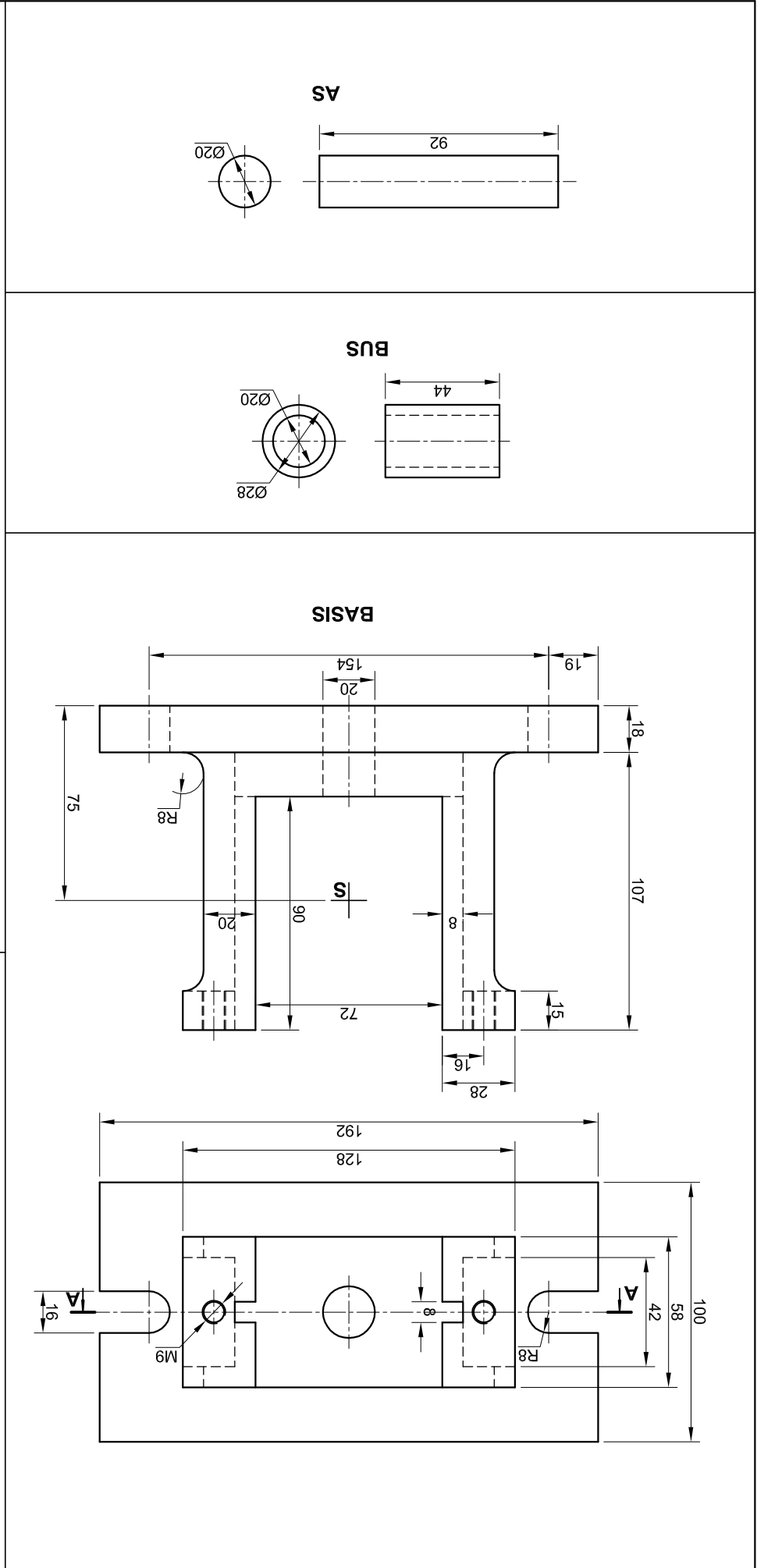




ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	BASE	15½		
2	SLIDING BLOCK	8½		
3	NUT	5		
4	COVER	5		
5	WASHER	1½		
6	NUT	5		
7	BUSH	1		
8	SHAFT	1		
H	HATCHING	16		
SUBTOTAL		58½		
RIGHT VIEW				
1	BASE	7½		
2	COVER	½		
3	WASHER	1½		
4	NUT	3		
5	SLIDING BLOCK	5		
6	SHAFT	3		
SUBTOTAL		20½		
GENERAL				
1	C' LINES + AA	6		
2	ASSEMBLY	7		
SUBTOTAL		13		
TOTAL		92		
EXAMINATION NUMBER				
EXAMINATION NUMBER				6

ASSESSERINGSKRITERIA			
SNITVOORAANSIG			
1	BASIS	15½	
2	GLYBLOK	8½	
3	MOER	5	
4	DEKSEL	5	
5	WASTER	1½	
6	MOER	5	
7	BUS	1	
8	AS	1	
H	ARSERING	16	
SUBTOTAL		58½	
REGTERAANSIG			
1	BASIS	7½	
2	DEKSEL	½	
3	WASTER	1½	
4	MOER	3	
5	GLYBLOK	5	
6	AS	3	
SUBTOTAL		20½	
ALGEMEEN			
1	SLYNE + AA	6	
2	SAMESTELLING	7	
SUBTOTAL		13	
TOTAAL		92	
EKSAMENNUMMER			
6			





ONDERDEEL		ONDERDEEL	MATERIAAL
1. BASIS	1	1	GIETYS TER
2. GLYBLOK	1	1	GIETYS TER
3. MOER	1	1	WEEKSTAAL
4. DEKSEL	1	1	GIETYS TER
5. WASTER	1	1	WEEKSTAAL
6. MOER	1	1	WEEKSTAAL
7. BUS	1	1	KOPER
8. AS	1	1	WEEKSTAAL

ONDERDEELYS		ONDERDEEL	MATERIAAL
1. BASIS	1	1	GIETYS TER
2. GLYBLOK	1	1	GIETYS TER
3. MOER	1	1	WEEKSTAAL
4. DEKSEL	1	1	GIETYS TER
5. WASTER	1	1	WEEKSTAAL
6. MOER	1	1	WEEKSTAAL
7. BUS	1	1	KOPER
8. AS	1	1	WEEKSTAAL

VRAAG 4: MEGANIËSE SAMESTELLING

Gegee:

- Die uitskuif-isometriese tekening van die onderdele van 'n asversterker, wat die posisie van elke onderdeel relatief tot al die ander toon.
- Ortografiese aansigte van elke onderdeel van die asversterkersamestelling.
- Punt S op die antwoordblad.

Instrukies:

- Beantwoord hierdie vraag op bladsy 6.
- Teken, volgens skaal 1 : 1 en in derdehoekse ortografiese projeksie, die volgende aansigte van die saamgestelde onderdele van die asversterker-samestelling:
- 4.1 'n **Deurnee-vooraansig** volgens snyvlak A-A, soos gesien vanuit die rigting van die pyl wat in die uitskuif-isometriese tekening getoon word. Die snyvlak, wat vertikaal deur die sentryn van die samestelling gaan, word op die boaansig van die basis (onderdeel 1) getoon.
- 4.2 **Die regterbovensig**
- ALLE tekene moet voldoen aan die riglyne vervat in die SABS 0111.

LET WEL:

- Rig punt S op die glyblok met punt S op die basis.
- Toon DRIE vlakke van die moere, in die vooraansig, en ALLE nodige konstruksies.
- GEEN verborge besonderhede word verlang nie.

Voeg die volgende kenmerke by die tekening: [92]

- Die snyvlak A-A

ALLE AFMETINGS IS IN MILLIMETER.

ALLE ONGESPEKIFISEERDE RADIUSSE IS R3.

5

TITEL

ASVERSTERKER

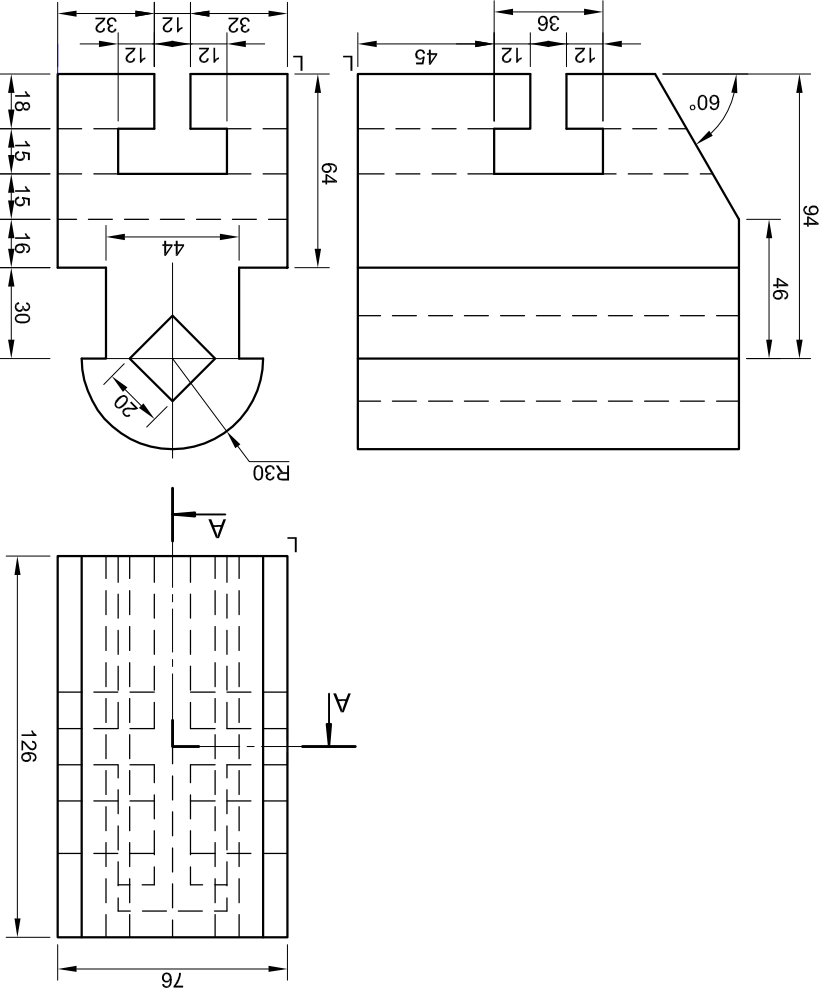
OU KAAPWEG
GROENBOSSIES
6025
www.ibayhsteel.co.za

VERVAARDIGERS

IBAYHI STAAL

Blaai om asseblief

ASSESSERINGSKRITERIA	
1	HULPAAANSIGTE + PLASING 3
2	ISO'LYNE 23½
3	NIE ISO'LYNE 5
4	SIRKEL + KONSTR 6½
5	ARSERING 3
TOTAAL 41	
EKSAMENNUMMER	
4	



VRAAG 3: ISOMETRIESE TEKENING

Geggee:

- Die vooraansig, boaansig en linkeraansig van 'n glystuk
- Die posisie van punt L op die tekenvel

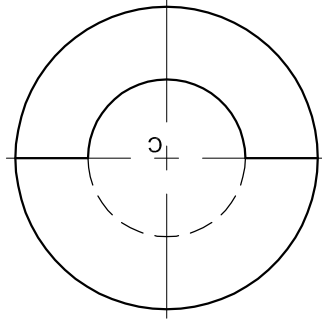
Instrukies:

Deur skaal 1 : 1 te gebruik, omskep die ortografiese aansigte van die glystuk tot 'n deursnit isometriese tekening op snyvlak A-A.

- Maak L die laagste punt van die tekening.
- Toon ALLE nodige konstruksies.
- GEEN verborge besonderhede word verhang nie. [41]



ASSESSERINGSKRITERIA			
1	BOANSIG + SLYNE + VERDELING + KONSTR	7	
2	UITSTIPPING & BUTTE KURWE	19	
3	UITSTIPPING & BINNE KURWE	6	
4	SKAG + KANTE	5	
TOTAL		37	
EKSAMENNUMMER			
EKSAMENNUMMER			
3			



+c

- VRAAG 2: HELIKS**
- Gegee:**
- Die volledige boansig van 'n heliese vierkantige skroefrad.
 - Die middelpunt, C, van die boansig.
- Spesifikasie:**
- Regterhandse beweging
 - Een en 'n halwe omwenteling
 - Butediameter = 100 mm
 - Kerndiameter = 52 mm
 - Steek = 48 mm
- Instruksie:**
- Deur gebruik te maak van die gegewe inligting, kopieër die boansig en teken die vooraansig met $\frac{1}{2}$ omwentelinge van 'n heliese vierkantige skroefrad.
 - Toon die sentriëne.
 - Toon ALLE nodige konstruksie.
 - GEEN verborge besonderhede word verlang in die vooraansig nie.
- [37]

VRAAG 1: ANALTIES (MEGANIES)

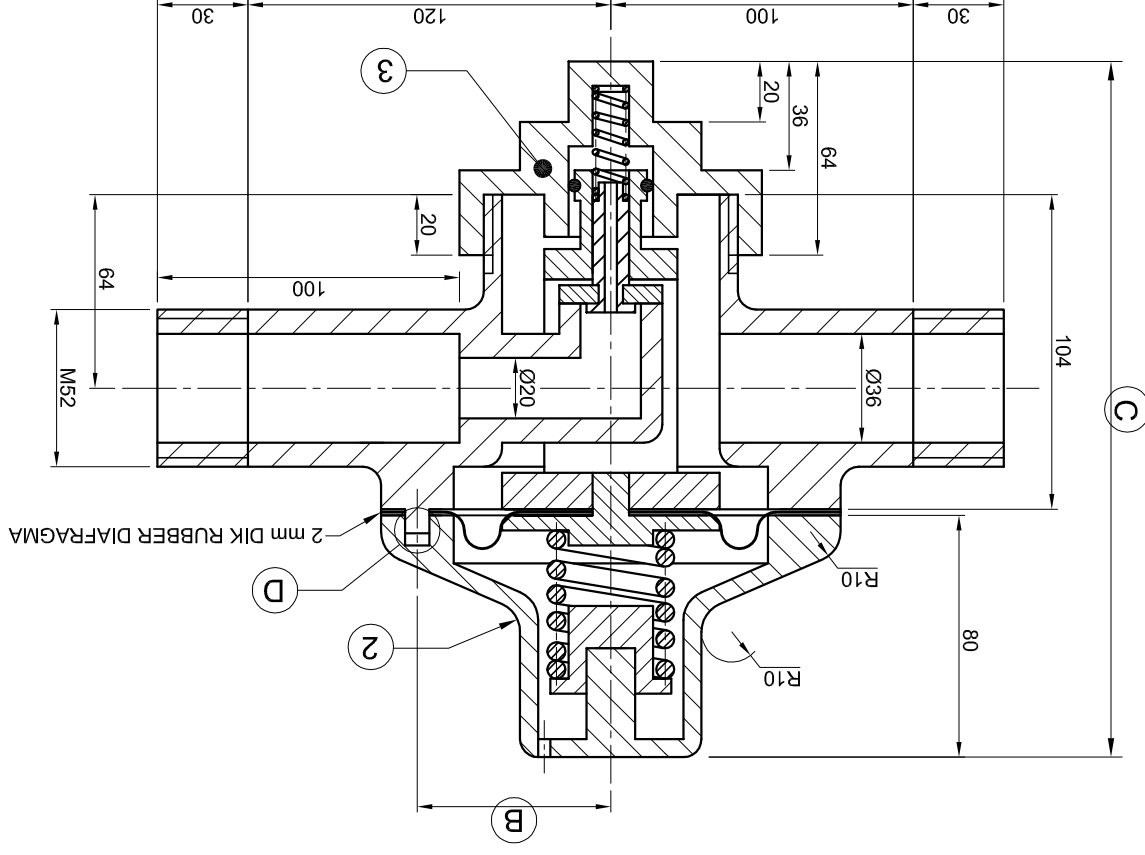
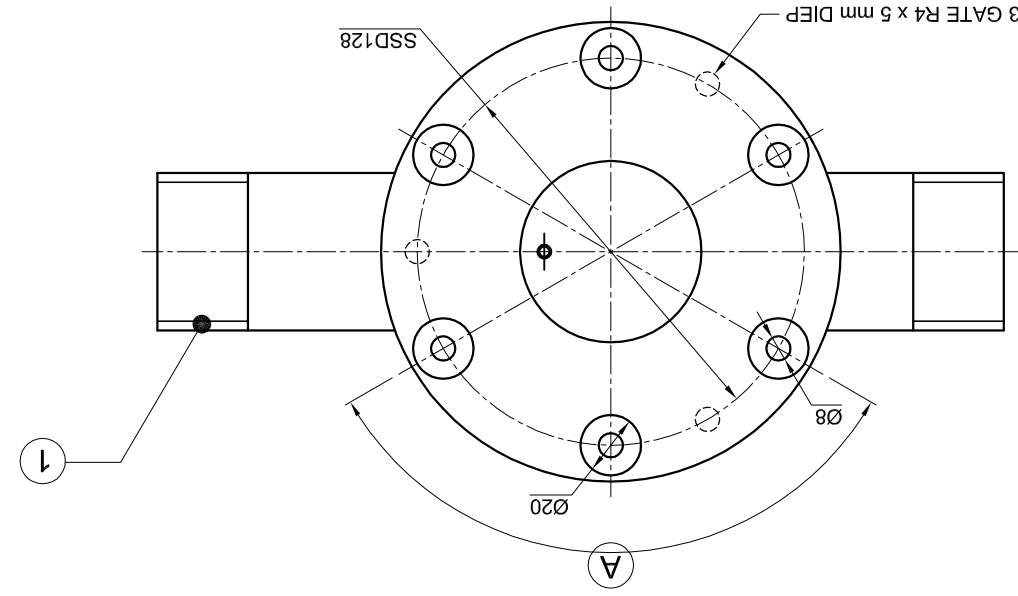
Gegee:
Gedetailleerde tekeninge van die onderdele van 'n veiligheidsreguleerder, 'n titelblok en 'n tabel met vrae. Die tekene is nie volgens die aangetoonde skaal voorberei nie.

Instrukties:
Voltooi die tabel hieronder deur die vrae, wat almal na die bygaande tekene en titelblok verwys, netjies te beantwoord. [30]

VRAE

ANTWOORDE

1	Op watter datum is die tekening die eerste keer nagesien?	1
2	Wat is die titel van die tekening?	1
3	Watter tekenmetode is gebruik om hierdie tekene te skep?	1
4	Hoeveel veiligheidsreguleerders moet vervaardig word?	1
5	Hoeveel stelle tekene is daar?	1
6	Wat is die toelaatbare toleransie op die afmetings?	1
7	Wat is die skaal wat vir die tekening aangetoon word?	1
8	Uit hoeveel onderdele bestaan die samestelling?	1
9	Wat word kenmerk 1 genoem?	1
10	Wat word kenmerk 2 genoem?	1
11	Wat word kenmerk 3 genoem?	1
12	Wat is die grootte van die gat gemerk D?	1
13	Van watter materiaal is die diafragma vervaardig?	1
14	Watter tipe snit word getoon?	1
15	Bepaal die afmetings by: A) B) C)	4
16	Wat stel die letters S,S,D. voor?	1
17	Hoeveel ekstern skroefdrade is daar in die samestelling?	1
18	Voltooi die snylak op die boansig en benoem dit A-A.	3
19	In die blok hieronder (ANTWOORD 19), teken, in netjiese vyhand, die simbool vir die projeksisstelsiem wat gebruik word.	4
20	In die blok hieronder (ANTWOORD 20), teken, in netjiese vyhand, die SABS 0111-skematiese konvensie vir 'n veer.	3
TOTAAL		30



DATUM	HERSIENER	BESKRYWING VAN HERSIENING	Nr
12/11/13	PETER	DIAMETER VAN INVOER	1

TEKENSTEL: 3 VAN 5	TEKENPROGRAM: AutoCAD 2014	TEKENING Nr: VALVE/101/2014	LEÛRNAM: valve10.dwg
TEKENAAR: IGNUUS	10/10/13	NASIENER: JOHN	15/10/13
GOEDGEKUR: SUSAN	12/12/13	MATERIAAL: GEELKOPER	HITTEBEHANDELING: GEEN
SKAAL: 1:2	HOEVELLHEID: 1500		

VEILIGHEIDSREGULEERDER

AQUA WATER
INGENIEURS
(SA) (Ed) BPK
KERKSTRAAT 72
GRAAFF-REINET
6280
www.aqua.co.za
049 898 2345

TENSY ANDERS VERMELD IS ALLE AFMETINGS IN MILLIMETERS MET 'N TOLERANSIE VAN: 0,15
OPPERLAK AFWERKINGS:
TENSY ANDERS VERMELD IS ALLE

ANTWOORD 20

Konvensie vir die veer.

EKSAMENNUMMER

EKSAMENNUMMER

2

