STAPEL

education

Department of Education
FREE STATE PROVINCE

PROVINCIAL PAPER

GRADE 11

ENGINEERING GRAPHICS AND DESIGN P2

JUNE 2018

MARKS: 100
TIME: 3 HOURS

This paper consists of 6 pages.

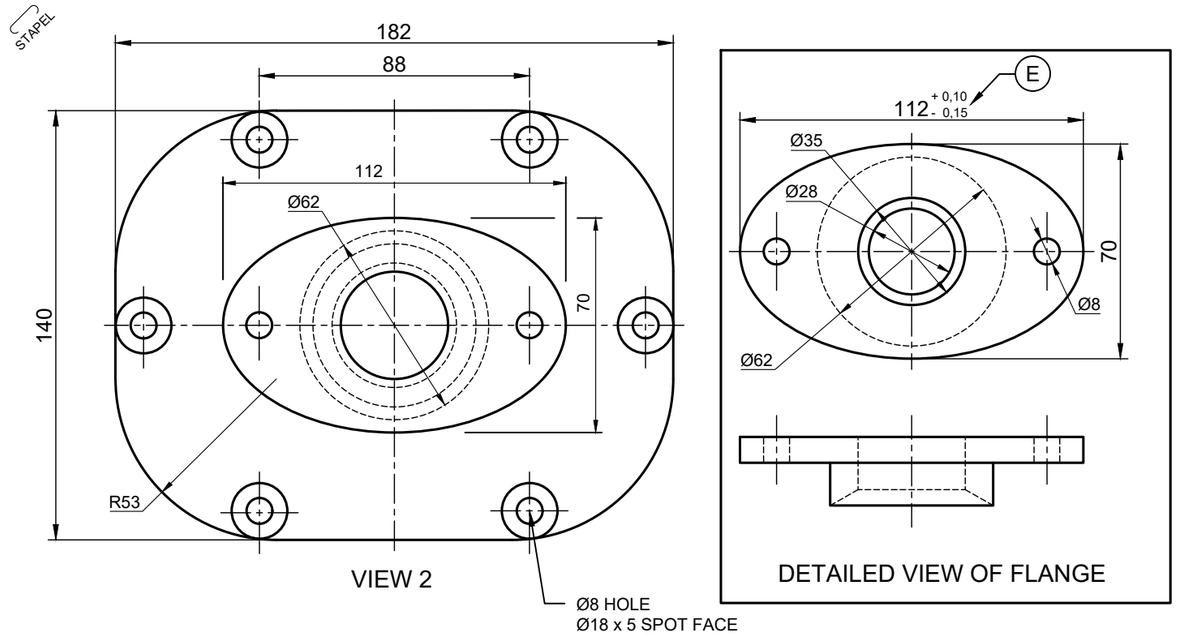
INSTRUCTIONS AND INFORMATION

1. This question paper consist of FOUR questions
2. Answer ALL the questions.
3. ALL drawings are in third-angle orthographic projection, unless stated otherwise.
4. ALL drawings must be drawn to scale 1:1, unless stated otherwise.
5. ALL questions must be answered on the DIAGRAM SHEETS, as instructed.
6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted or not.
7. Time management is essential in order to complete all the questions.
8. Print your name and surname as well as the grade in the space provided on each page.
9. ALL answers must be drawn accurately and neatly.
10. ALL necessary construction and projection lines must be shown.
11. Plan each drawing carefully from the given position, which is indicated on the diagram sheets.
12. Any details or dimensions not given must be assumed in good proportion.

FOR OFFICIAL USE ONLY								
QUESTION	MARKS OBTAINED			½	MODERATED			½
1								
2								
3								
4								
TOTAL								
	2	0	0		2	0	0	

FINAL CONVERTED MARK	CHECKED BY
100	

NAME & SURNAME _____ GRADE 11 1



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 drawing has not been prepared to the indicated scale

Instructions:
Complete the table below by neatly answering the question, which all refer to the accompanying drawings and the title block. **[26]**

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	Why was the revision done?		1		
7	What is the drawing number?		1		
8	What would VIEW 3 be called?		1		
9	What type of section is shown in VIEW 1?		1		
10	What part is used to protect the flange surface when the nut is being tightened?		1		
11	Name the part at R.		1		
12	Name the feature at S.		1		
13	Name the feature at T.		1		
15	Give complete dimensions at:	A: B:	2		
16	Determine the complete dimensions at:	C: D:	4		
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 T.A.O.P. symbol.		4		
		TOTAL	26		

ANSWER 20

ALL DIMENSIONS ARE IN MILLIMETERS	SCALE : 1 : 2
DRAWING PROGRAM: AUTOCAD 2018	FINISH: POLISHED
FILE NAME: JBT22018	QUANTITY: 325 UNITS
DRAWING No. JB040118	MACHINING: MILLING

UNLESS OTHERWISE SPECIFIED, ALL TOLERANCE ON DIMENSIONS ARE ±0,15. ALL UNSPECIFIED RAIDII ARE R3.

ZANBIE
ENGINEERING

24 FABRICIA ROAD
INDUSTRIAL
BLOEMFONTEIN
8001

TITLE
BOX AND GLAND

REVISIONS	DATE
2.	
1. INSERT SPOT FACE	05/03/2018
DRAWN: DIRK	30/02/2018
CHECKED: JAN	10/03/2018
APPROVED: PIETER	17/04/2018

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

DIAGRAM SHEET 1 ENGINEERING GRAPHICS AND DESIGN P2 FS DoE - JUNE 2018

NAME & SURNAME

GRADE 11 2

Turn page over for next question

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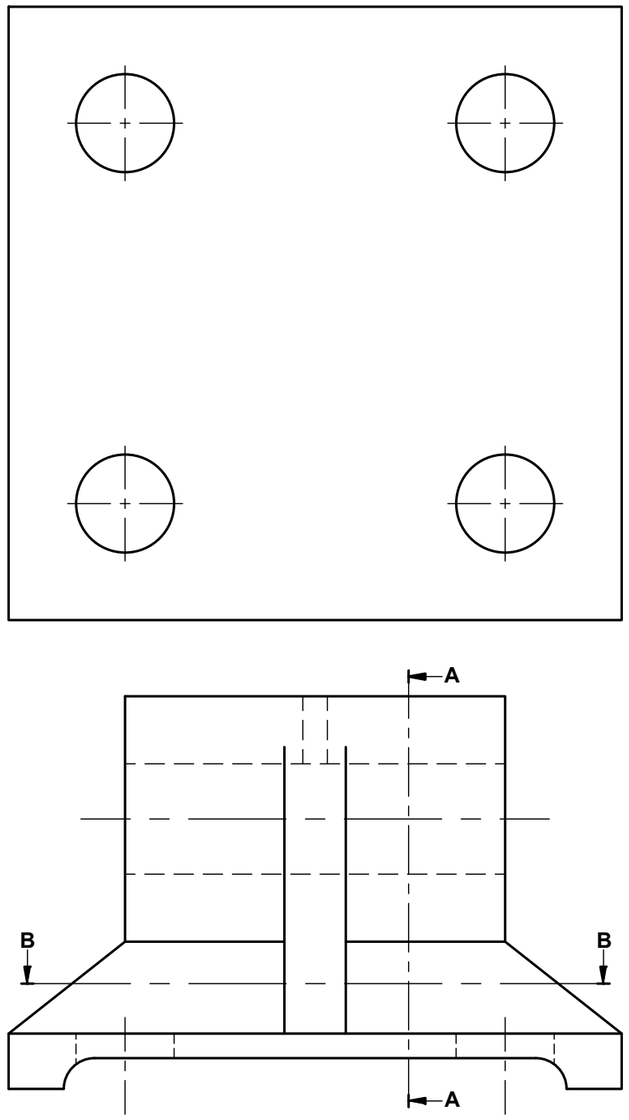


QUESTION 2: MECHANICAL SECTION

Given:

- The incomplete top view.
- The complete front view.
- The complete isometric view.

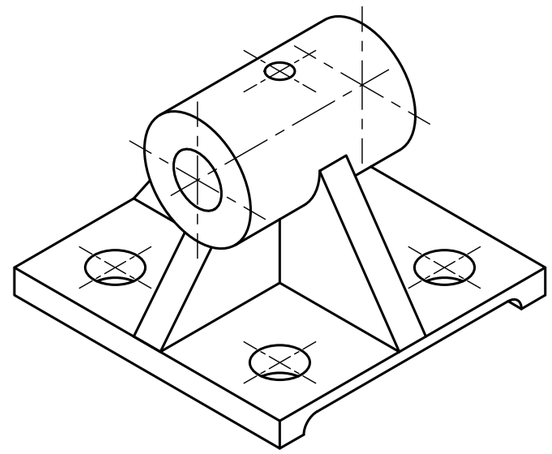
Instructions:

Complete, according to scale 1:1, the following:

2.1 A complete sectional top view according to cutting plane B-B. Hidden detail is required.

2.2 A sectional right view according to cutting plane A-A.

[38]



ASSESSMENT CRITERIA				
1	TOP VIEW	18		
2	RIGHT VIEW	20		
	TOTAL	38		

Turn page over for next question

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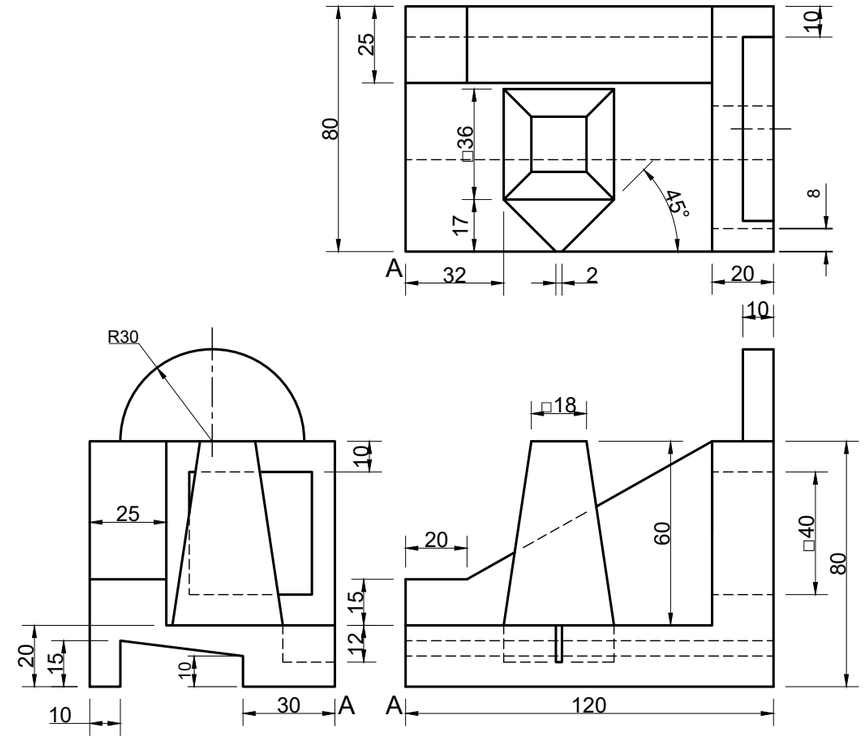
QUESTION 3: ISOMETRIC DRAWING

Given:
The front view, top view and left view of a casting.
The position of point A on the diagram sheet 3 (page 4).

Instructions:
Use scale 1:1 and convert the orthographic view of the casting into an isometric drawing.

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

[37]

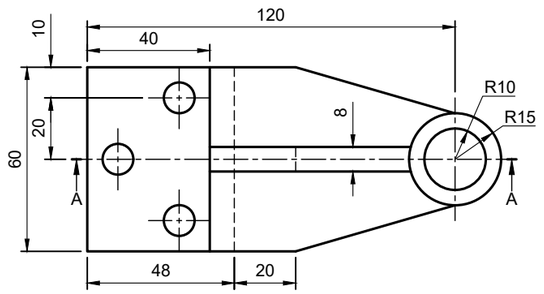


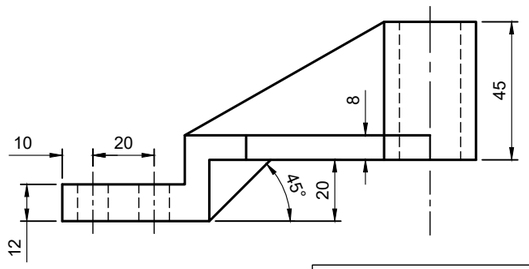
A

ASSESSMENT CRITERIA				
1	PLACEMENT	2		
	ISO. LINES + NON-ISOMETRIC LINES	26½		
2	CIRCLE + CONST	5½		
	CENTER LINES	1		
3	AUXILIARY VIEW or CORRECT PLACEMENT	2		
	TOTAL	37		

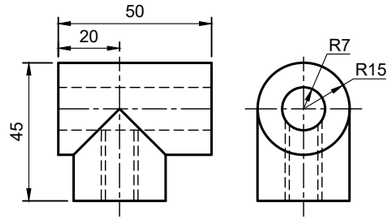
Turn page over for next question

STAPEL

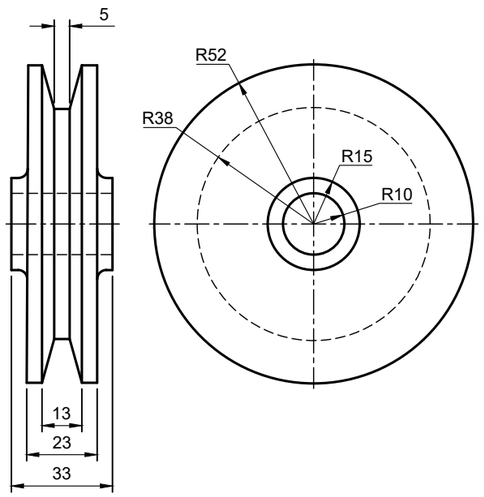




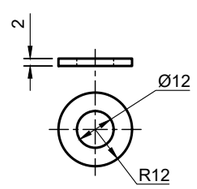
1 - PEDESTAL



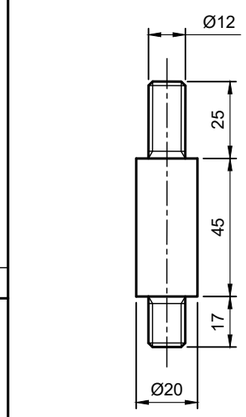
3 - SWIVEL HEAD



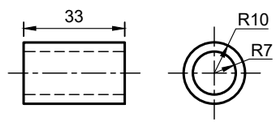
5 - V-PULLEY



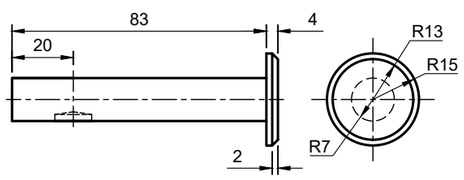
7 - WASHER



2 - STUD



6 - V-PULLEY BUSH



4 - PEN

PARTS LIST			
	PART	QUANTITY	MATERIAL
1	PEDESTAL	1	CAST IRON
2	STUD	1	MILD STEEL
3	SWIVEL HEAD	1	CAST IRON
4	PEN	1	MILD STEEL
5	V-PULLEY	1	MILD STEEL
6	V-PULLEY BUSH	1	MILD STEEL
7	WASHER	1	MILD STEEL
8	M12 NUT (NOT SHOWN)	1	MILD STEEL

QUESTION 4: MECHANICAL ASSEMBLY

Given:

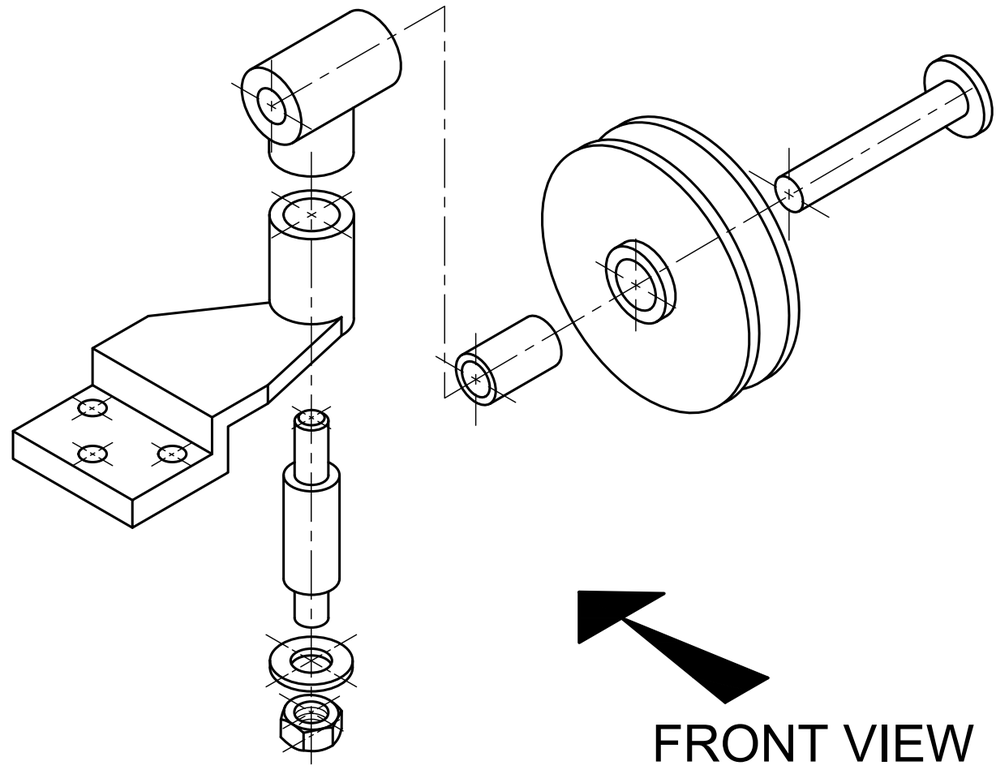
- Orthographic views of each of the parts of a swivel pulley.
- The exploded isometric drawing of the parts of the swivel pulley, showing the position of each part relative to all others.

Instructions:

- Answer this question on diagram sheet 5 (page 6).
- Use the given views and draw, to scale 1 : 1 and in third-angle orthographic projection, the following views of the assembled parts of the swivel pulley.
  - 4.1 **A sectional front view** on cutting plane A-A show the section, as seen from the direction of the arrow shown on the exploded isometric drawing. The cutting plane is shown on the top view of the pedestal (part 1).
  - 4.2 **The right view.**

NOTE:

- Planning is essential.
- ALL drawings must comply with the guidelines as contained in the *SANS 10111*.
- Make use of a auxiliary view to construct the M12 nut and show the construction lines.
- Show three (3) sides of the M12 nut in the sectional front view.
- Show two (2) sides of the M12 nut in the right view.
- Add cutting plane A-A.
- Supply the sectioned view with a title.
- Show a partly sectioned area on the pen to show how the stud is joined with the pen to keep the pen in position.
- Show ALL center lines in the correct position for this drawing.
- NO hidden details are required.
- Show the projection symbol of the system used for this drawing.
- Supply the drawing with a title and scale in the title block provided. **[99]**



FRONT VIEW

Turn page over for next question

STAPEL

HULPAANSIG VAN M12-MOER

DEURSNEE-VOORAANSIG OP AA

ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	PEDESTAL ($\frac{24}{2}$)	12		
2	STUD ($\frac{19}{2}$)	9½		
3	SWIVEL HEAD ($\frac{6}{2}$)	3		
4	PEN ($\frac{10}{2}$)	5		
5	V-PULLEY ($\frac{22}{2}$)	11		
6	V-PULLEY BUSH ($\frac{4}{2}$)	2		
7	WASHER ($\frac{4}{2}$)	2		
8	M 12 NUT ($\frac{16}{2}$)	8		
	SUB TOTAL	52½		

ASSESSMENT CRITERIA				
RIGHT VIEW				
1	PEDESTAL ($\frac{10}{2}$)	5		
2	STUD ($\frac{8}{2}$)	4		
3	PEN (4)	4		
4	V-PULLEY (2)	2		
	WASHER ($\frac{3}{2}$)	$1\frac{1}{2}$		
5	M12-NUT ($\frac{10}{2}$)	5		
	SUB TOTAL	21½		

ASSESSMENT CRITERIA				
GENERAL				
9	CENTER LINES (5)	5		
10	SECTION LINE A-A (6)	6		
11	TITLE + SCALE (2)	2		
12	PROJECTION SYMBOL (6)	3		
13	AUXILIARY VIEW (7)	7		
14	TITLE - SECTIONED VIEW (2)	2		
	SUB TOTAL	25		
	TOTAL	99		
	PENALTIES (-)			
	GRAND TOTAL			

TITLE & SCALE
PROJECTION SYMBOL

DIAGRAM SHEET 5 ENGINEERING GRAPHICS AND DESIGN P2 FS DoE - JUNE 2018 NAME & SURNAME GRADE 11 6