



HILLCREST HIGH SCHOOL

**GRADE 10**

**ENGINEERING GRAPHICS AND DESIGN  
NOVEMBER EXAMINATIONS 2022  
PAPER 2**

**MARKS : 95  
TIME : 2 HOURS**

**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of **THREE** questions and **FIVE** pages.
2. Answer **ALL** the questions.
3. **ALL** drawings are in third-angle orthographic projection, unless otherwise stated.
4. **ALL** drawings must be prepared using pencil and instruments, unless otherwise stated.
5. **ALL** answers must be drawn accurately and neatly.
6. **ALL** the questions must be answered on the **QUESTION PAPER**, as instructed.
7. **ALL** the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the **TOP LEFT-HAND CORNER ONLY**.
8. Time management is essential in order to complete all the questions.
9. Print your name in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

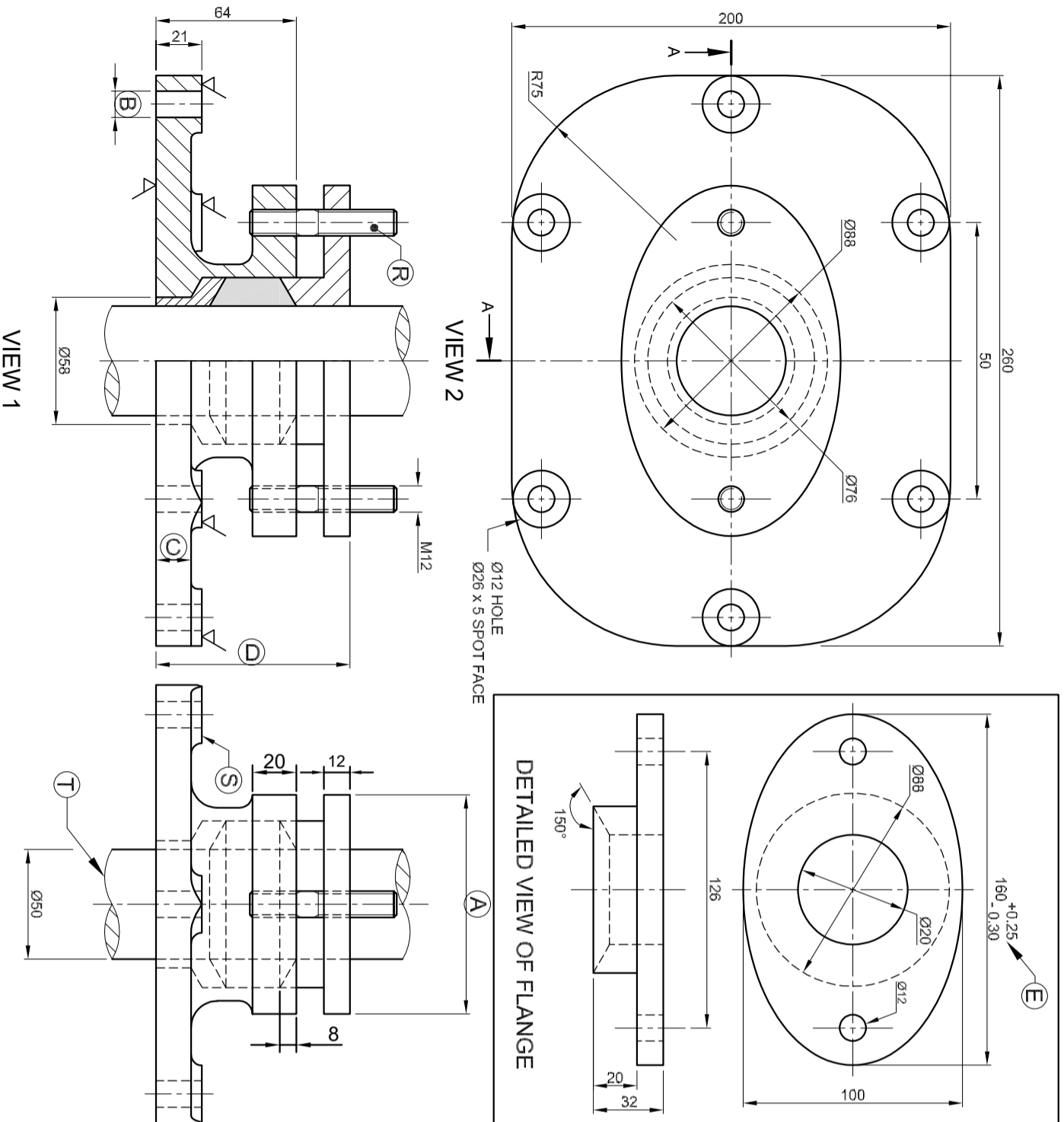
FOR OFFICIAL USE ONLY				
QUESTION	LEARNERS MARK	MODERATED MARK		
ONE		25		
TWO		21		
THREE		49		
TOTAL	9	5		

FINAL CONVERTED MARK	CHECKED BY
100	

01

**QUESTION ONE : MECHANICAL ANALYTICAL**

**GIVEN:**  
A front, top and right view of a box and gland assembly; detailed drawing of the flange; a title block and a table of questions. Note that the drawing have not been drawn to the indicated scale.  
**INSTRUCTIONS:**  
Complete the table below by neatly answering the questions, which all refer to the accompanying drawing and title panel. [25]



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	What material is used to manufacture the shaft?			1
14	What is the radius for all unspecified circles/arcs?			1
15	Give the complete dimension at A	A	B	2
16	Determine the complete dimension at: C	C	D	4
17	With reference to the tolerance, determine the maximum dimension at E.			1
18	In the space below, draw, in neat freehand, the symbol for the projection system used.			4
TOTAL:				25

**ANSWER 18**

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>PEWJJO</b> ENGINEERING 15 FABRIGIA ROAD KLUSSEVILLE KIMBERLEY 8301 051 6273 849	
<b>TITLE</b>	
<b>BOX AND GLAND</b>	

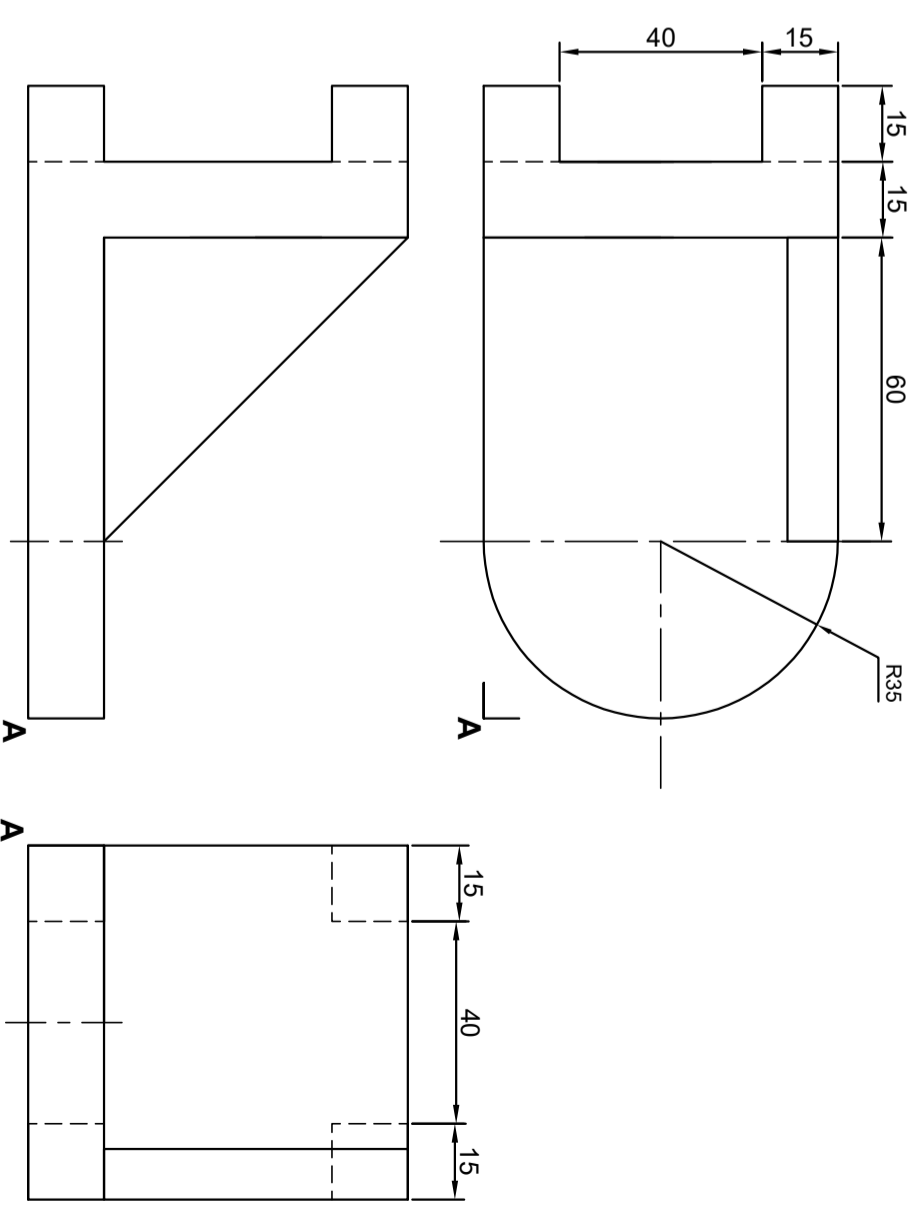
PARTS LIST			
PART	MATERIAL	QUANTITY	
1	CAST IRON	1	
2	MILD STEEL	1	2
3	MILD STEEL	2	1. INSERT SPOTFACE
4	HARDENED STEEL	1	<b>REVISIONS</b>
5	RUBBER	1	DRAWN: ALFA
6	MILD STEEL	2	CHECKED: BRAVO
7	MILD STEEL	2	APPROVED: ZERO

**QUESTION TWO: ISOMETRIC DRAWING**

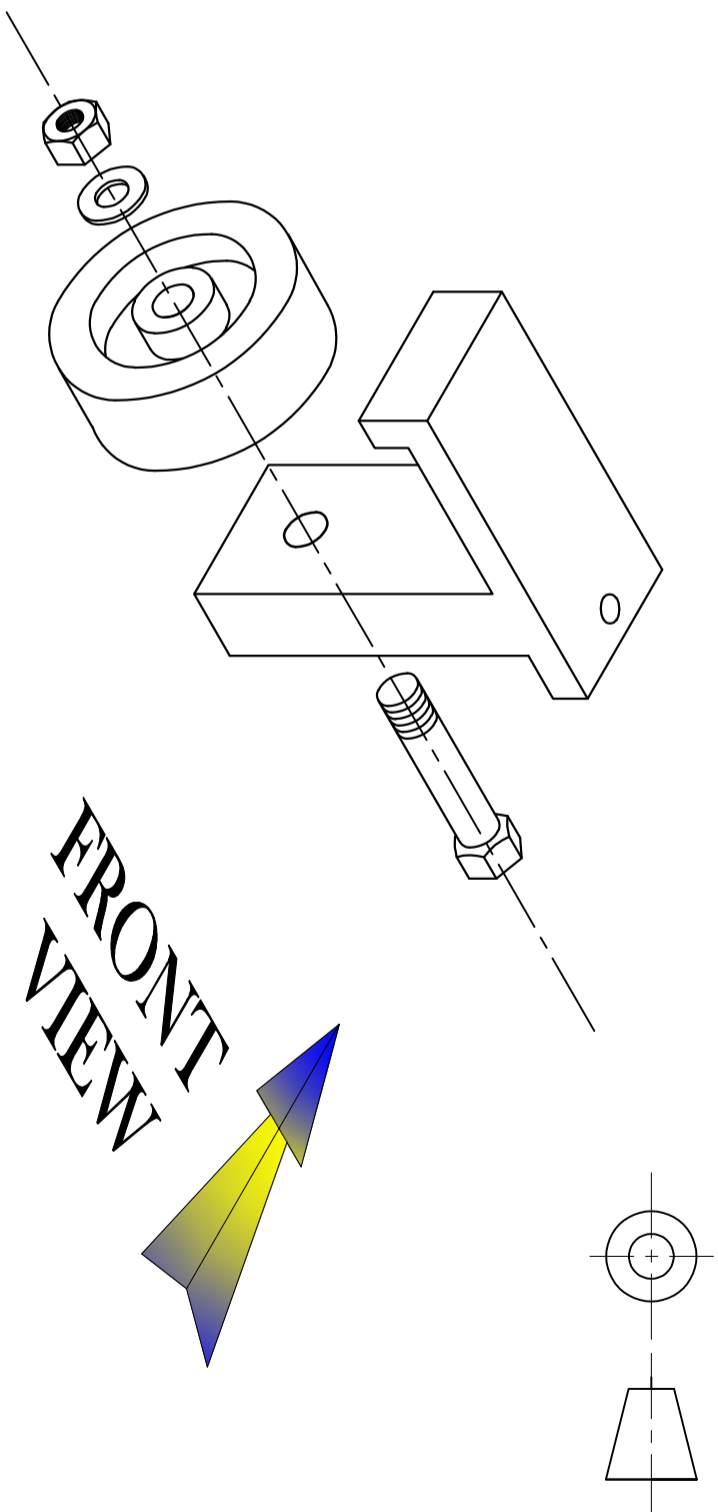
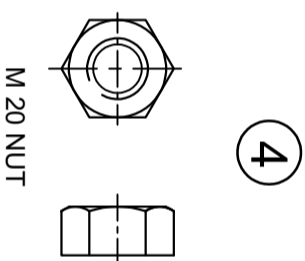
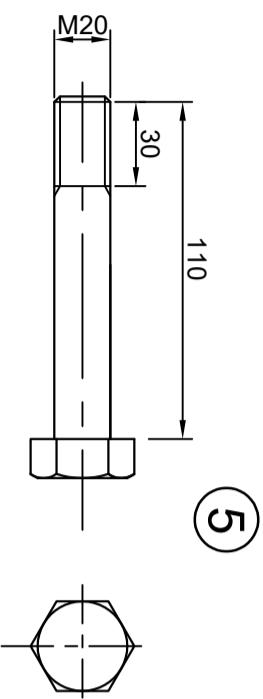
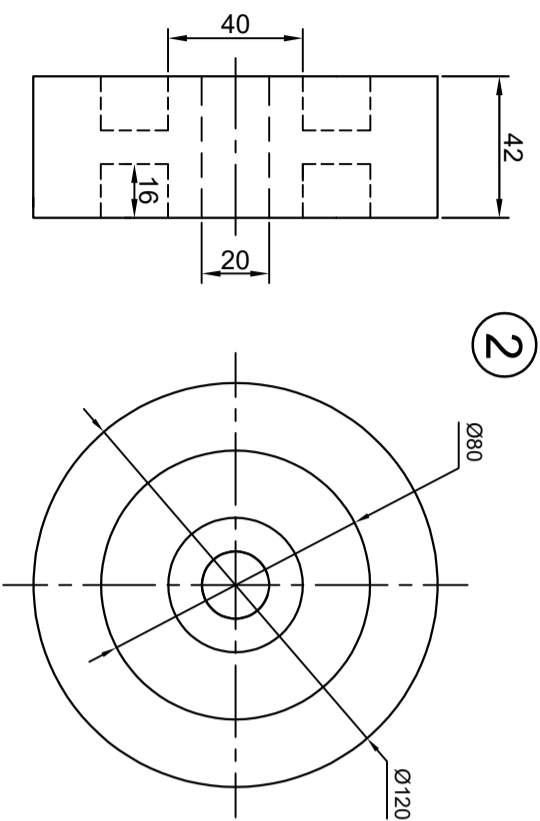
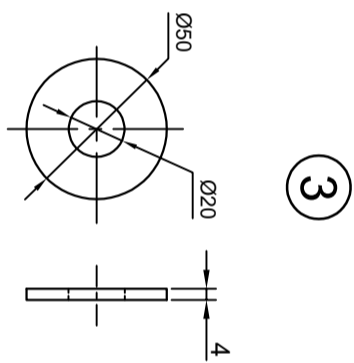
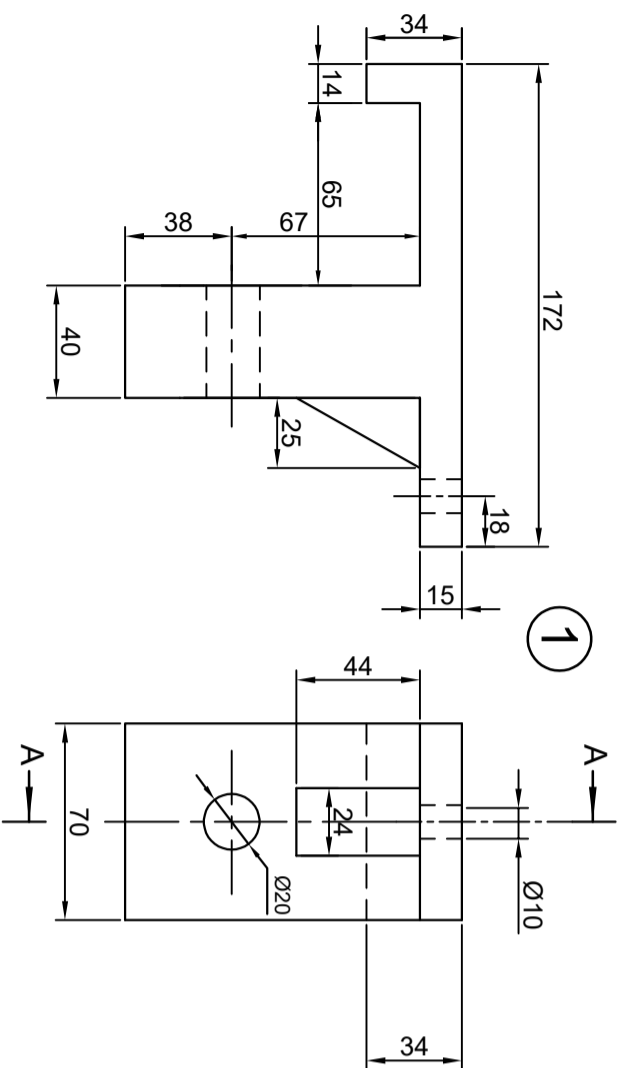
**Given:**  
The front, top and right view of a casting.

**Instruction:**  
Use the given views to produce an ISOMETRIC drawing of the block using a scale of 1:1

Make point A the lowest point of your drawing. [21]



ASSESSMENT CRITERIA			
	POSSIBLE	OBTAINED	SIGN MODERATE
1	ISOMETRIC LINES	12	
2	NON-ISOMETRIC LINES	2	
3	CIRCLE & CON. & CENTRE LINES	7	
<b>TOTAL</b>		<b>21</b>	

**QUESTION THREE: MECHANICAL ASSEMBLY**

**Given:**

- Orthographic views of each of the parts of the **PULLEY** assembly
- **EXPLODED ISOMETRIC VIEW** showing the assembly of the components

**Instructions:**

- Answer this question on page 5.
- Draw to **scale 1 : 1** the following view of the assembled parts of the **PULLEY** assembly:

**3.1 A full sectional front view** on cutting plane A-A, as indicated by the cutting plane on component 1.  
The drawing must comply with the guidelines contained in the **SANS 10111**.

**NOTE:**

- Show **THREE** faces of the bolt head and **TWO** faces of the nut.
- Show **ALL** necessary construction.
- **NO** hidden detail is required.
- Any dimensions not given may be assumed to good proportion.

[49]

PARTS LIST		NUMBER	PART	QUANTITY
1	HOUSING	1		
2	VERNIER PULLEY	1		
3	WASHER	1		
4	M20 HEX NUT	1		
5	M20 BOLT	1		

