HILLCREST HIGH SCHOOL

MID-YEAR EXAMINATION

ENGINEERING, GRAPHICS & DESIGN

GRADE 12

2014

PAPER 2

MARKS: 100 **TIME**: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **5 pages** including the cover page and **3 questions**.
2. All questions must be answered.
3. Unless specified otherwise, all questions are in **Third Angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. All answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All **construction work** must be shown, even if a stencil was used.
7. Print your **NAME** neatly on each page.
8. Use only the **drawing sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.

QUESTION	SECTION	MARK	MAXIMUM
1	MECHANICAL ANALYTICAL		20
2	SECTIONED ISOMETRIC		50
3	MECHANICAL ASSEMBLY		130
TOTAL			200
SYMBOL			100

NAME:

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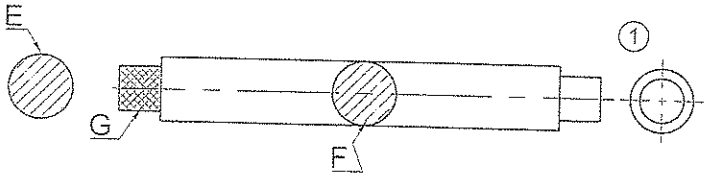
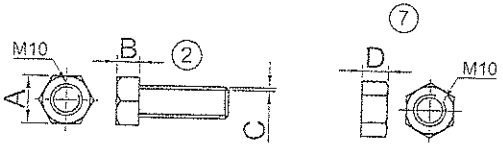
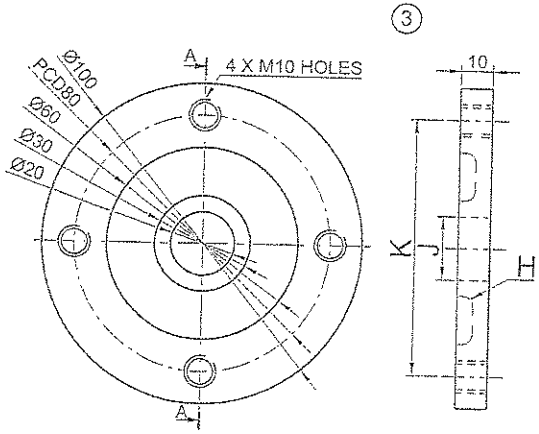
DRAWING NO:	2012 - SSE
REFERENCE NO:	SSE/12

MACHINING	WELDING
MILLED 0,03 / 0,1 C	W, Y
MACHINING COMPANY: D.O.E PTY	







1.1 Describe the machining lay on the machining symbol?	
1.2 What is the roughness value on the machining symbol?	
1.3 What is the machining allowance on the machining symbol?	
1.4 What is the production method on the machining symbol?	
1.5 What is the welding symbol W?	
1.6 What is the welding symbol Y?	
1.7 What is the dimension A on Part 2?	
1.8 What is the dimension B on Part 2?	
1.9 What is the dimension C on Part 2?	
1.10 What is the dimension D on Part 7?	
1.11 What is the type of sectioning shown at E?	
1.12 What is the type of sectioning shown at F?	
1.13 What feature is shown at G on Part 1?	
1.14 What feature is shown at H on Part 3?	
1.15 What does PCD stand for?	
1.16 How deep are the M10 holes on Part 3?	
1.17 What is the dimension K on Part 3?	
1.18 What is the dimension J on Part 3?	
1.19 Who checked the drawing?	
1.20 In what suburb would you find this engineering company ?	

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QUESTION 1
MECHANICAL ANALYTICAL

The adjacent details refer to the drawing of Ventress, Tluczek & Jones, Kloof South Africa:

SPECIFICATIONS:

- as per given drawing.

REQUIREMENTS:

1.1. Refer to the drawing and the given information answer the questions in the table.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- recall, process, comprehend and calculate the given information and drawing

20 MARKS

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QUESTION 2
ISOMETRIC PROJECTION

The following details refer to a BOTTLE OPENER:

SPECIFICATIONS:

- Given front view and top view drawn in third angle orthographic projection.
- Use point P as your lowest point. Use the given starting point for point P.
- Use the cutting plane A-A for the section.
- The two holes are based on the construction of a hexagon.

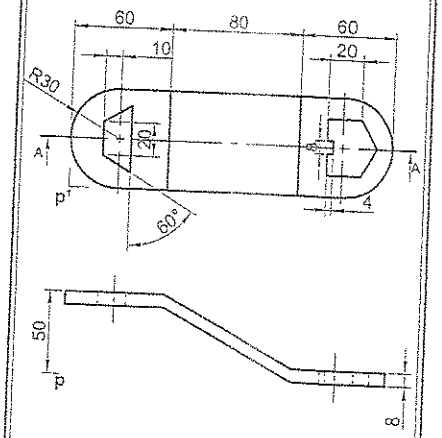
REQUIREMENTS:

2.1. Draw the sectional isometric projection drawing of the BOTTLE OPENER.
2.2. Show all construction.
2.3. Draw all centre lines.
2.4. X-Hatch all sectioned areas.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

• draw the isometric projection drawing	(32)
• draw the isometric arcs	(4)
• show the isometric arc construction	(2)
• X-Hatch all sectioned areas	(5)
• X-Hatch at 60°	(1)
• show the construction of the hexagon	(2)
• draw all centre lines	(2)
• position the drawing correctly using point P	(2)



50 MARKS

NAME:

P

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QUESTION 3
MECHANICAL ASSEMBLY

The following details refer to a BEARING HOUSING:

SPECIFICATIONS:

- the views are drawing in third angle orthographic projection.
- scale 1:1
- the component list component views, graphical representation and the exploded views of the assembly are given.
- all fillets and rounds not given are R4.
- M10 hexagonal nut has 3 visible faces in front view
- M10 hexagonal stud has 2 visible faces in front view

REQUIREMENTS:

3.1. Draw the sectional front view of the BEARING HOUSING assembly on the cutting plane A-A, as seen in the direction of arrow F.

3.2. Draw the outside left view of the assembled components.

3.3. Draw the bearing according to the SABS SANS Code of Practice 0111-1.

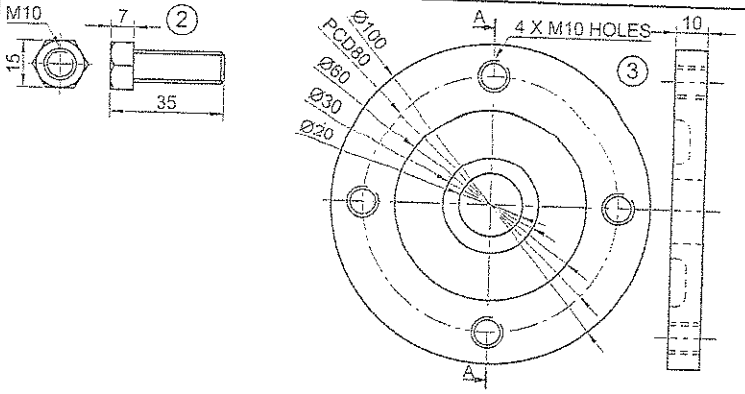
3.4. Do not show any hidden detail in both views

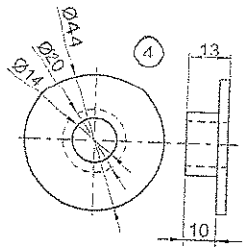
3.5. Draw all centre lines.

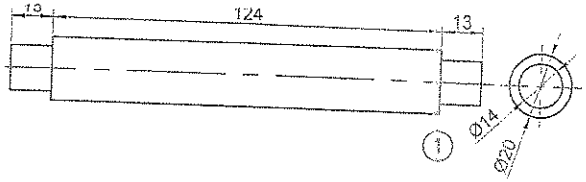
3.6. Print the title, heading and the scale.

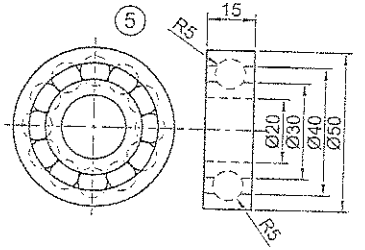
3.7. Draw the projection symbol

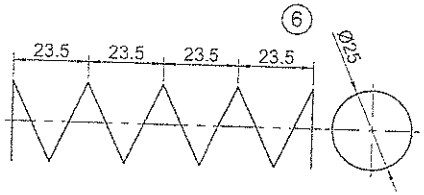
3.8. Answer this question on page 5, using the given centre lines to space the views.

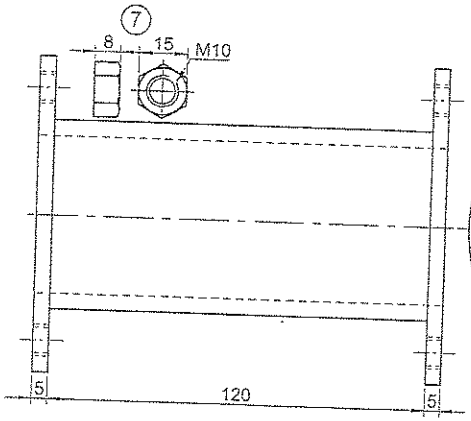


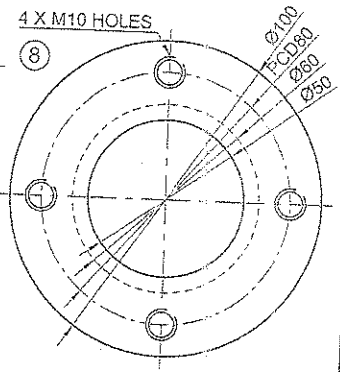


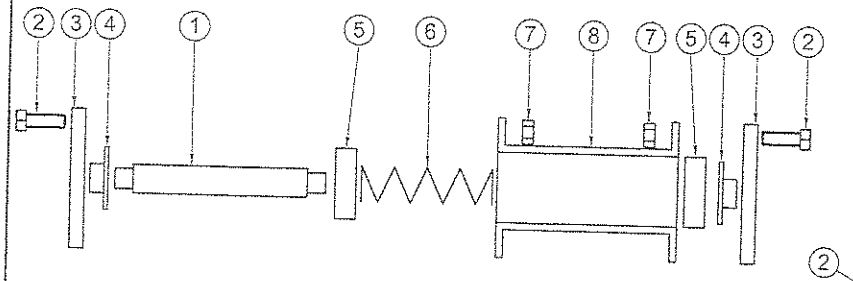




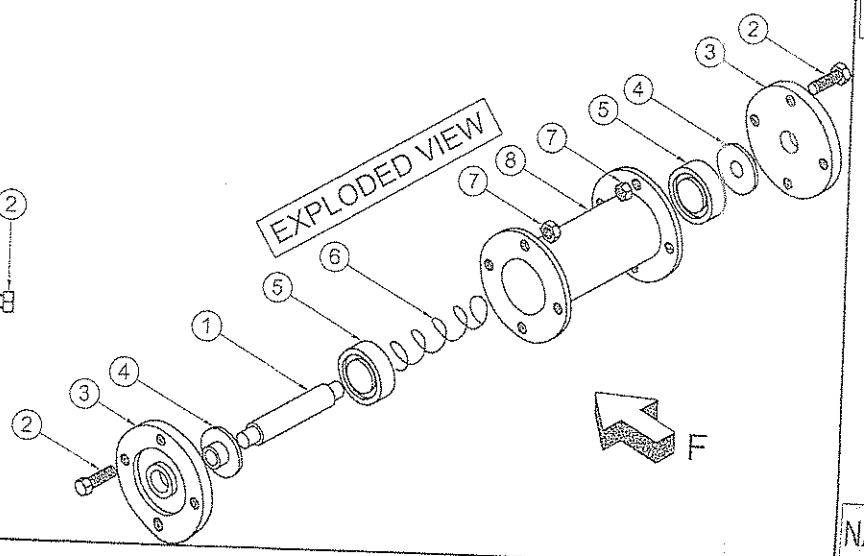








GRAPHICAL REPRESENTATION



COMPONENT LIST		
No	PART	Quantity
1	SHAFT	1
2	M10 HEX. STUD	2
3	HOUSING COVER	2
4	BUSH	2
5	BALL BEARING	2
6	SPRING	1
7	M10 HEXAGONAL NUT	2
8	BEARING HOUSING	1

130 MARKS

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QUESTION 3
MECHANICAL ASSEMBLY

ASSESSMENT CRITERIA

SECTIONAL FRONT VIEW		
Title,Scale,Symbol,Heading	A	4
CENTRE LINES	B	4
SECTIONING	C	38
NO SECTIONING	D	16
M10 STUD	E	6
M10 STUD Construct	F	1
M10 NUT	G	8
M10 NUT Construct	H	1
FILLETS	J	8
SPRING	K	8
EXTERNAL THREAD	L	6
INTERNAL THREAD	M	4
ASSEMBLY	N	12
OUTSIDE LEFT VIEW		
CENTRELINES	P	2
HOUSING	Q	3
M10 STUD	R	2
M10 STUD THREAD	S	2
INTERNAL THREAD	T	3
BUSH	U	2
TOTAL	130	

130 MARKS

NAME: