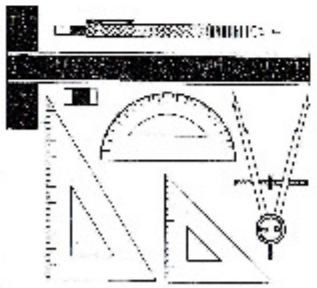
HILLCREST HIGH SCHOOL
TRIALS EXAMINATION
ENGINEERING, GRAPHICS & DESIGN

GRADE 12
2015
PAPER 2

MARKS: 200 **TIME**: 3 HOURS



INSTRUCTIONS TO CANDIDATES

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

QUESTION	SECTION	MARK	MAXIMUM
1	MECHANICAL ANALYTICAL		25
2a	LOCI: CIRCULAR SPRING		20
2b	LOCI: MECHANISM		20
3	ISOMETRIC PROJECTION		40
4	MECHANICAL ASSEMBLY		95
TOTAL			200
SYMBOL			100

NAME

Craven Week ENGINEERING

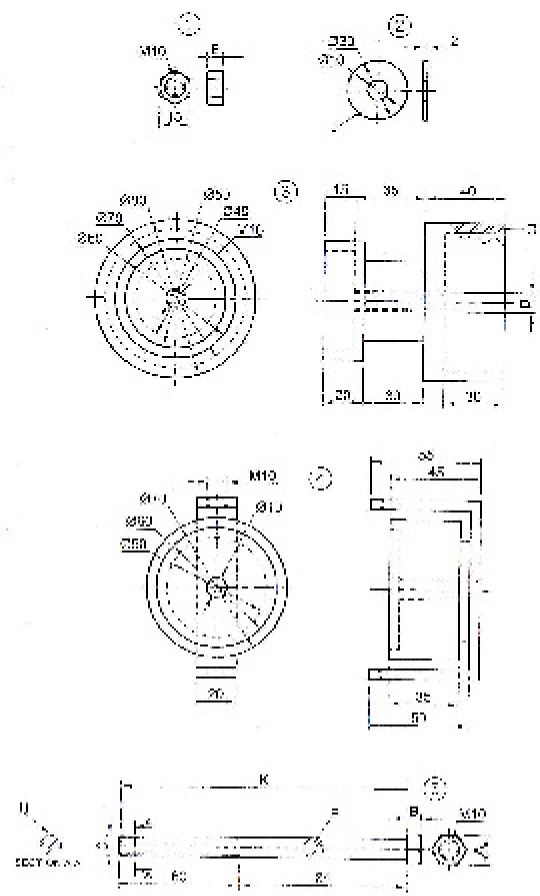
Where champions are made

est. 2000, Stellenbosch

DRAWN BY:	Baker Pretorius
CHECKED BY:	Victor Foster
APPROVED BY:	Min Sethla
DRAWING NO:	2012 - 8897
MUNICIPAL: Ref James Twiller	MACHINING COMPANY: M.I.S PTY

MACHINING: 0,01 MILLED 0.1

WELDING



REFER TO THE INFORMATION GIVEN AND ANSWER THE FOLLOWING QUESTIONS

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 type of welding process is shown in the welding symbol?

1.6 Who from the municipality referenced the drawing?

1.7 What is the dimension A on Part 3?

1.8 What is the dimension B on Part 5?

1.9 What is the dimension C on Part 3?

1.10 What is the dimension D on Part 3?

1.11 What is the dimension E on Part 1?

1.12 What type of sectioning is shown by F on Part 3?

1.13 What type of sectioning is shown by G on Part 3?

1.14 What type of sectioning is shown by H on Part 4?

1.15 What is the dimension K on Part 5?

1.16 What is the Twitter Hash Tag of the company?

1.17 What email address would you use to contact the company?

1.18 Identify Part 2?

1.19 Which of the following welding symbols represents: a FILLET weld?

A B C

1.20 Which of the following machining symbols represents: a CIRCULAR machining lay?

A B C

1.21 What is the area of surface J (shaded surface) on Part 2? (2)

1.22 Give 3 describing aspects of the given welding symbol?

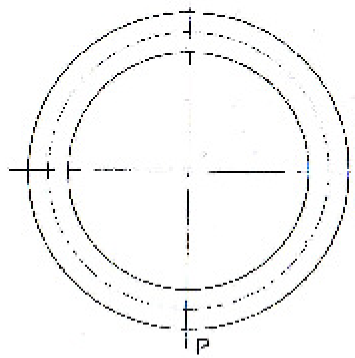
ANSWER SHEET 1

NAME

NOVEMBER 2013
GRADE 12 EGD

QUESTION 2
20 MARKS

HELIX



The following details relate to a circular spring:

SPECIFICATIONS:
- Right-Handed
- One revolution
- Spring width = 15m
- Third Angle Orthographic Projection
- Pitch = 90mm

GIVEN:
- Top View of Circular Spring
  Outer Circle, Centre Circle, Inner Circle
  Starting point P for the spring

REQUIREMENTS:

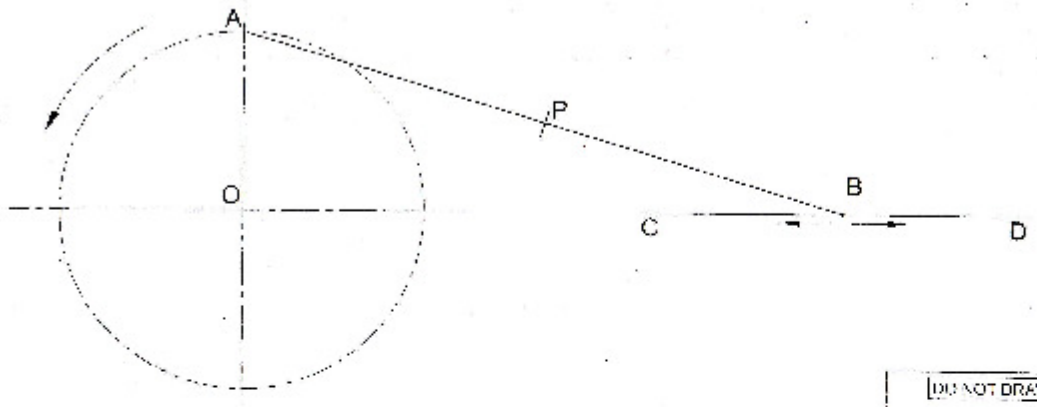
2a.1. Draw the Front View of the Circular Spring.
2a.2. Draw a neat and accurate locus.
2a.3. Show all construction.
2a.4. Start in the correct position.
2a.5. Ensure that the spring is right-handed.

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

• draw the centre circles	6
• draw a neat/accurate locus	6
• complete the front view	2
• draw the centre line	1
• show all construction	2
• start in the correct position	2

NAME

ANSWER SHEET 2a



The figure shows a STEAM ENGINE mechanism.

SPECIFICATIONS:
- Rod AB is attached to the wheel at A.
- P is a point on rod AB.
- Part B of rod AB slides along the CD.
- Anticlockwise movement.

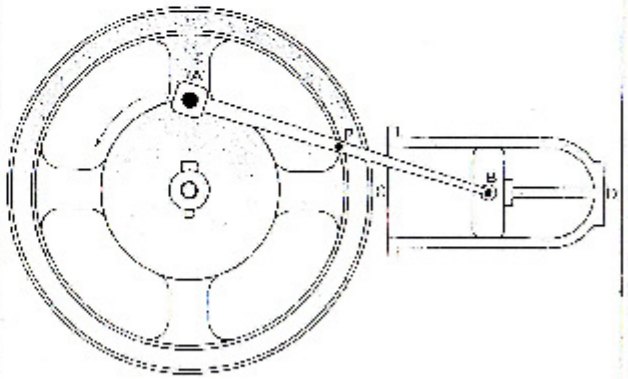
REQUIREMENTS:
2b.1. Draw the locus of point P as the rod moves according to the rotation of the wheel.
2b.2. Show all construction.

ASSESSMENT CRITERIA

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

• plot the points for the locus	11
• show all construction	6
• draw a neat locus	3

DO NOT DRAW ON THIS DIAGRAM



NAME

ANSWER SHEET 2b

PAGE 5 OF 7

[illegible] 2016 [illegible]

QUESTION 3 [illegible] MARKS

ISOMETRIC PROJECTION

The figure below shows the front view and top view of a Casting, drawn in third angle orthographic projection. The Casting is cut by a cutting plane A-A.

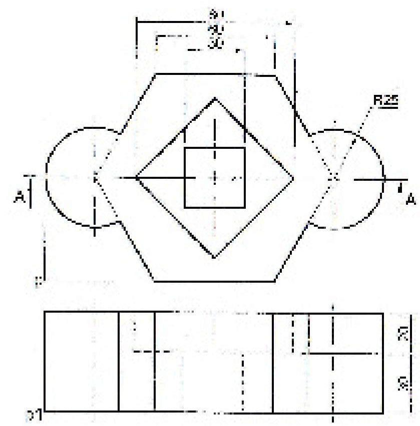
REQUIREMENTS:

- Use your instruments to draw a Sectional Isometric view of the casting, on the cutting plane A-A.
- Do NOT show hidden details
- Show all construction
- X-Hatch all the sectional areas
- Use scale 1:1.
- Make point P your lowest point on the drawing

ASSESSMENT CRITERIA

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

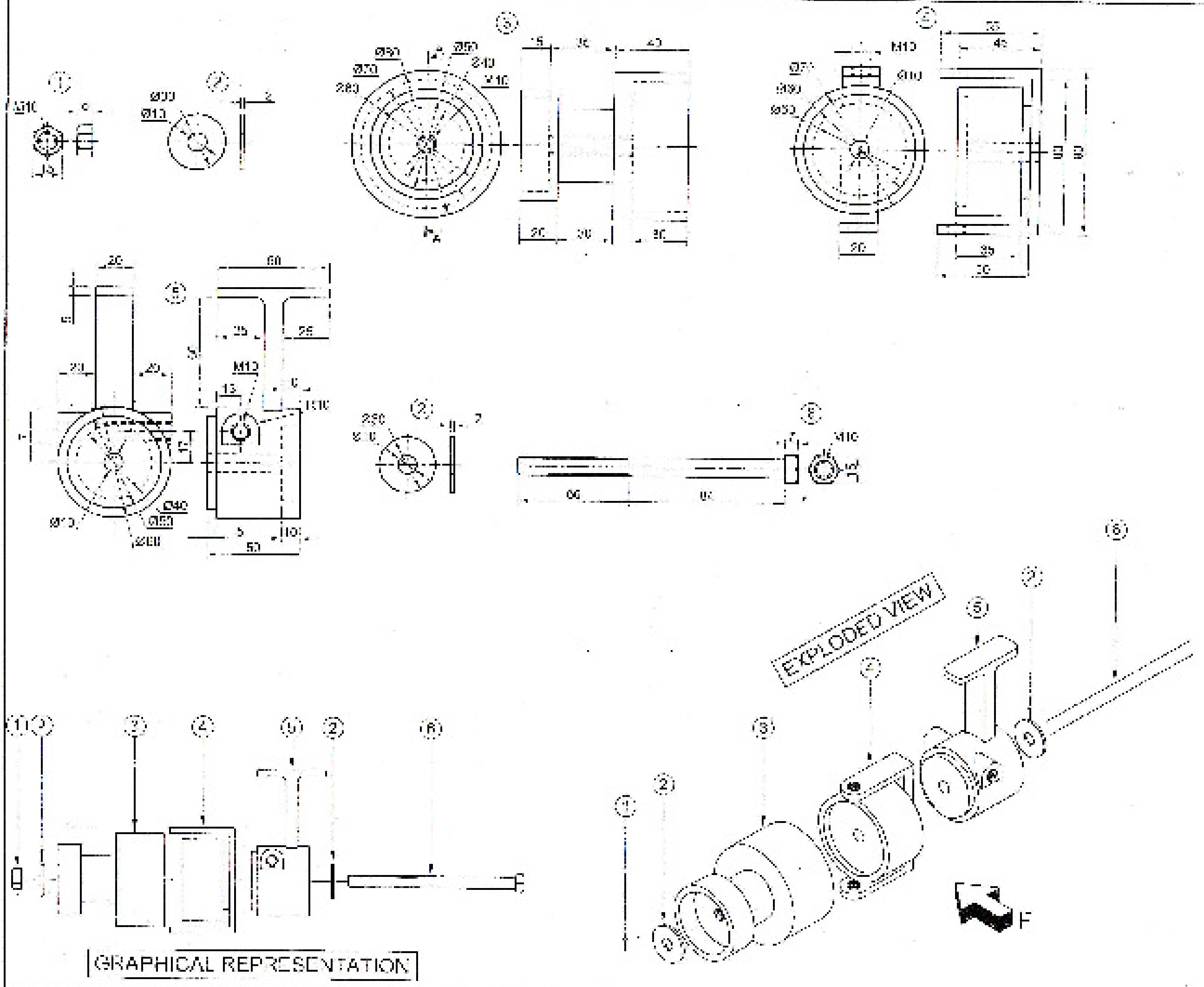
- draw the sectional view [illegible] 22
- draw the isometric circle [illegible] 6
- draw the [illegible] construction 3
- draw all centre lines 2
- draw the construction for hexagon & [illegible] 3
- X-Hatch all sectional areas 4
- X-hatch at the appropriate angle



NAME

ANSWER SHEET 3

PLEASE TURN OVER



NALS 2015
QUESTION 4
MECHANICAL ASSEMBLY

Answer this question on ANSWER SHEET 4

The figure shows the multi views of components of a FISHING REEL ASSEMBLY, drawn in third angle orthographic projection.

Draw to a scale 1:1 the following:

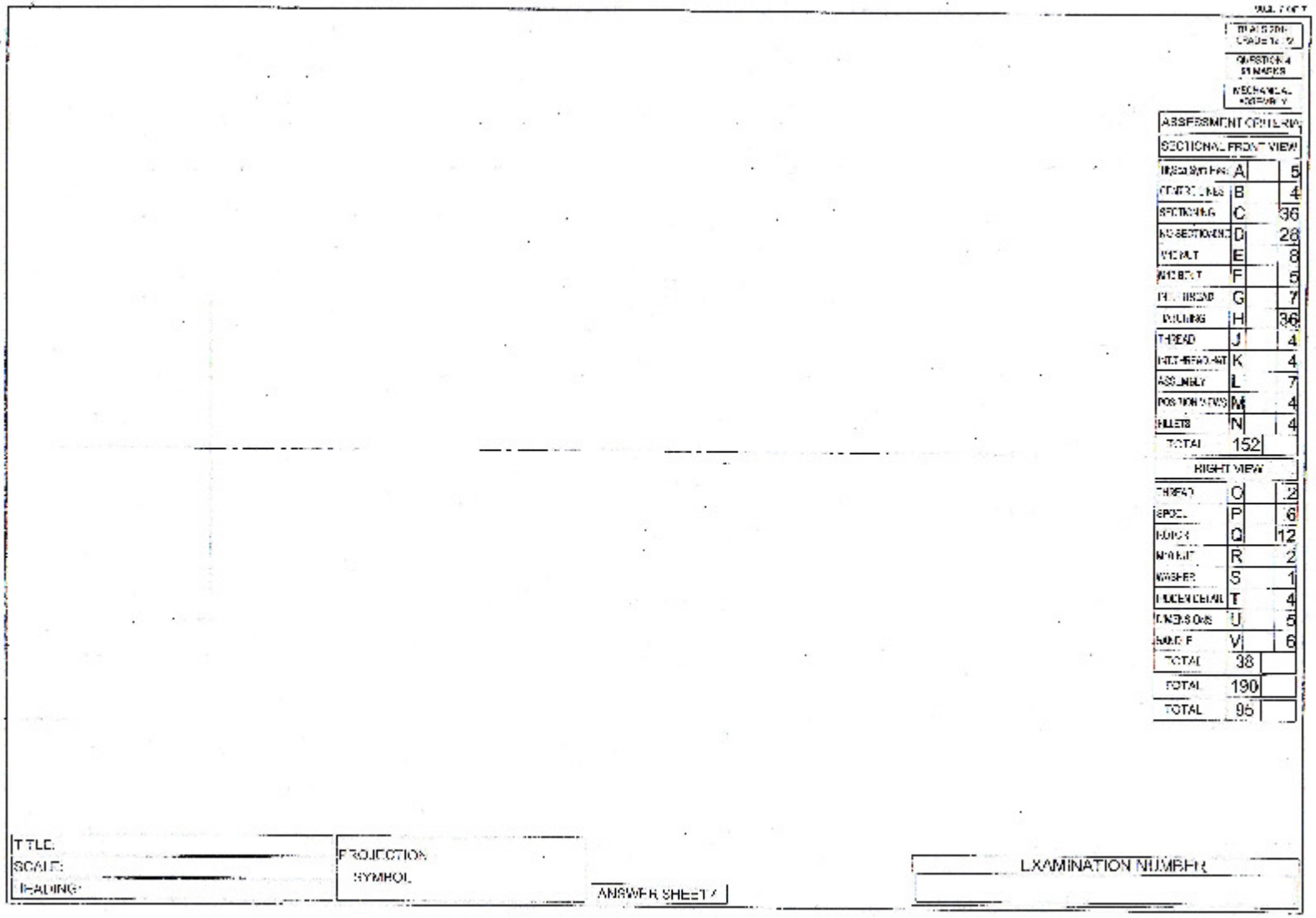
4.1 A Sectional Front View, on the cutting plane A-A, of the assembled components, as seen in the direction of F.

4.2 An Outside Left View of the assembled components. Show hidden detail for the SPOOL only, in this view.

4.3 Draw any 5 functional dimensions.

- All fillets/rounds not given are R5
- Print the title, scale and labelling in the space provided
- Draw the projection symbol in the space provided
- Show 3 faces for the M10 hexagonal nut.
- Show 2 faces for the M10 hexagonal bolt.
- Use the given centre lines to position your views.

COMPONENT LIST		
No	PART	Quantity
1	M10 HEXAGONAL NUT	1
2	WASHER	3
3	SPOOL	1
4	MOTOR	1
5	HANDLE	1
6	M10 HEXAGONAL BOLT	1



ASSESSMENT CRITERIA		
SECTIONAL FRONT VIEW		
[illegible]	A	5
[illegible]	B	4
[illegible]	C	36
[illegible]	D	28
[illegible]	E	8
[illegible]	F	5
[illegible]	G	7
[illegible]	H	36
THREAD	J	4
[illegible]	K	4
[illegible]	L	7
[illegible]	M	4
[illegible]	N	4
TOTAL	152	
RIGHT VIEW		
[illegible]	O	2
[illegible]	P	6
[illegible]	Q	12
[illegible]	R	2
[illegible]	S	1
[illegible]	T	4
[illegible]	U	5
[illegible]	V	6
TOTAL	38	
TOTAL	190	
TOTAL	95	

TITLE:
SCALE:
READING:

PROJECTION
SYMBOL

ANSWER SHEET

EXAMINATION NUMBER