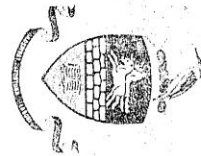
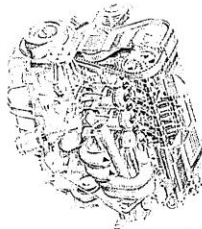
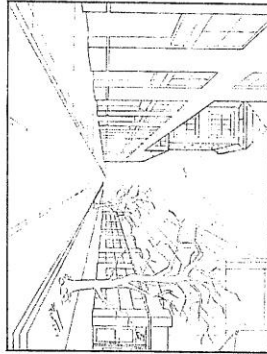


**HILLCREST HIGH SCHOOL
ENGINEERING GRAPHICS AND DESIGN EXAM
TRIALS EXAM**



GRADE 12
2019
PAPER 1

TIME: 3 hours
Examiner: Mrs Tonkin

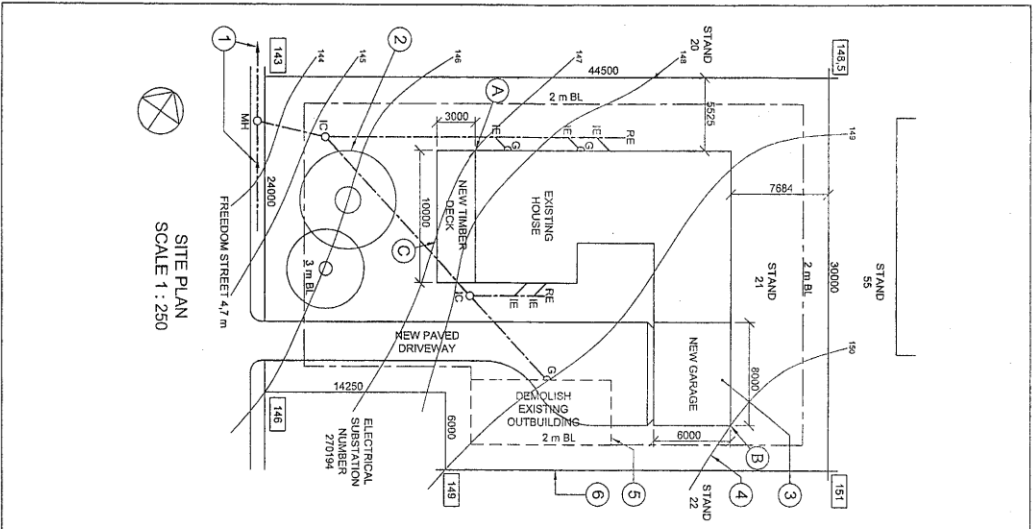
MARKS: 200
Moderator: Mr Victor

NB: READ THE INTRUCTIONS

1. This paper consists of 6 pages including the cover page and 4 questions.
2. Answer ALL questions.
3. Take note of the mark allocation in each question.
4. The questions must be answered on the answer sheets provided.
5. All the answer sheets must be re-stapled in **NUMERICAL** sequence and handed in irrespective of whether the question was attempted or not.
6. 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 assumed in good proportion.

| QUESTION | SECTION | MARK | MODERATE | MAXIMUM |
|----------|------------------|------|----------|---------|
| 1 | CIVIL ANALYTICAL | | | 30 |
| 2 | INTERP-ETRATION | | | 35 |
| 3 | PERSPECTIVE | | | 39 |
| 4 | CIVIL DRAWING | | | 96 |
| TOTAL | | | | 200 |
| SYMBOL | | | | 100 |

NAME: _____
TEACHER: _____



SITE PLAN
SCALE 1 : 250

NOTE: Candidates must verify all dimensions and annotations on the site plan. Candidates must verify all dimensions and annotations on the site plan. Candidates must verify all dimensions and annotations on the site plan.

ANSWER 20
In the space below, draw, in neat freehand, the front view and top view of the SAMS 10/143 graphical symbol for a BATH.

CLIENT'S SIGNATURE _____
ARCHITECT'S SIGNATURE _____

KEY ARCHITECTS
96 Protea Street
ROITCHERSTROOM
083 130 2201
key@webmail.co.za

PRINTED BY ILM PRINTERS
DRAWING TITLE SITE PLAN
DATE OF PRINT 2015-02-13

PROJECT PROPOSED NEW GARAGE AND TIMBER DECK FOR MRS SCHULTE ON STAND 21, FREEDOM STREET.

PROJECT NUMBER AFSR-2015
DRAWING NUMBER VG 002

DATE 2015-01-10
DRAWN AD
CHECKED BC
SCALE 1 : 250

REFERENCE CODE QIP/N2015

| QUESTION | ANSWERS |
|--|---------|
| 1 What is the project number? | 1 |
| 2 How many signatures are required? | 1 |
| 3 How many revisions have been made to the drawing? | 1 |
| 4 Who is the client? | 1 |
| 5 On what date was the site plan printed? | 1 |
| 6 How many new additions are indicated on the site plan? | 1 |
| 7 What does the abbreviation /C stand for? | 1 |
| 8 What is indicated by the arrows on the line at 1? 2 | 1 |
| 9 Name the feature at 2. | 1 |
| 10 In what colour should the feature at 3 be shown? | 1 |
| 11 What does the broken line at 4 indicate? | 1 |
| 12 What does the broken line at 5 indicate? | 1 |
| 13 What is the length of the boundary line at 6 in metres? | 1 |
| 14 What is the width of Freedom Street in millimetres? | 1 |
| 15 What is the difference in ground level height between corner A and corner B of the buildings in metres? | 2 |
| 16 On which side of the existing house is the new timber deck? | 2 |
| 17 Which municipal service is found on the land adjacent to stand 21? | 2 |
| 18 In the space below, determine the perimeter of the existing house in metres. | 3 |
| 19 In the space below, determine the combined total area of the existing house and the new garage in square metres. | 3 |
| 20 In the space provided in the title panel, draw, in neat freehand, the front view and top view of the SAMS 10/143 graphical symbol for a BATH. | 4 |
| TOTAL 30 | |

ANSWER 18 Show ALL calculations.

ANSWER 19 Show ALL calculations.

Please turn over **2**

QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

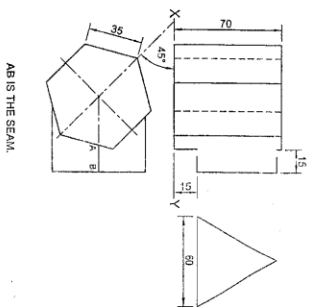
- The incomplete front view and top view of an equilateral triangular prism that has been slanted to fit around a right regular hexagonal prism. The axes of both prisms lie in a common vertical plane.
- An auxiliary view of the triangular prism.

Instructions:

Draw, to scale 1 : 1, the following:

- 2.1 The given top view
 - 2.2 The complete front view clearly showing the curve of interpenetration
 - 2.3 The complete right view
 - 2.4 The development of the surface of the triangular prism
- Make AB the seam.

- Show ALL hidden detail.
- Show ALL necessary construction. [35]



AB IS THE SEAM.

| ASSESSMENT CRITERIA | | | |
|---------------------|-------------|-----------|--|
| 1 | TOP VIEW | 6 | |
| 2 | FRONT VIEW | 11 | |
| 3 | RIGHT VIEW | 7 | |
| 4 | DEVELOPMENT | 11 | |
| PENALTIES (s) | | | |
| TOTAL | | 35 | |

Please turn over **3**

QUESTION 3: PERSPECTIVE

Given:

Three views of a wooden deck with a hexagonal pool and the information needed to draw a two-point perspective drawing.

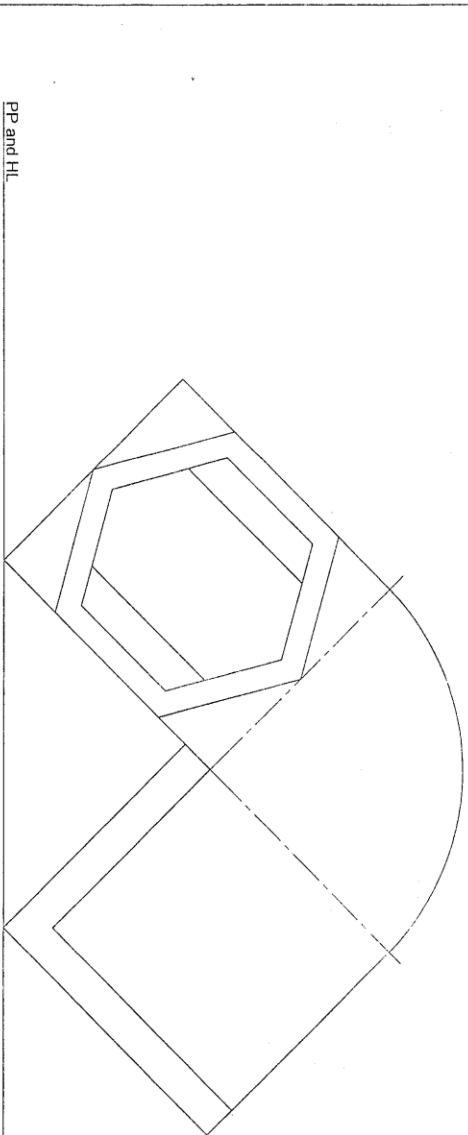
FP – Front-point perspective drawing
 HI – Horizon plane
 GL – Ground line
 SP – Station point

Instructions:

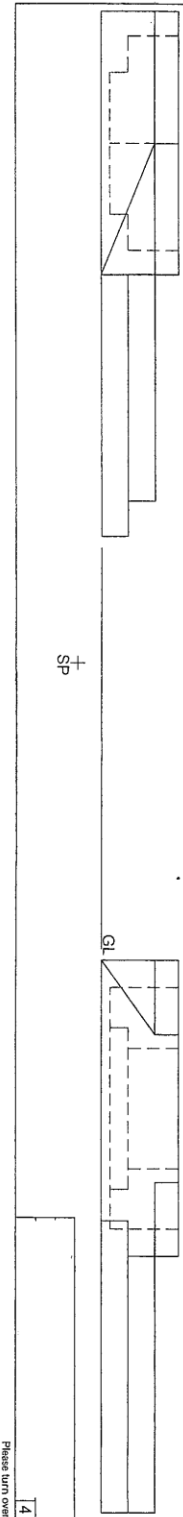
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL)
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

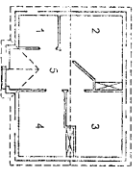
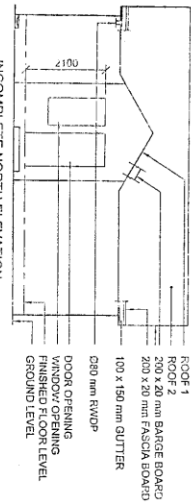
[39]



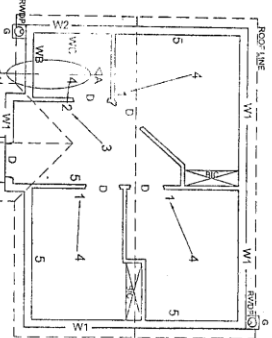
| ASSESSMENT CRITERIA | | | | | |
|---------------------|--------------------|-----|--|--|--|
| 1 | CONSTRUCTION - vPs | 6 | | | |
| 2 | BASE + STAIRS | 12½ | | | |
| 3 | POOL | 13½ | | | |
| 4 | CIRCULAR ARC | 7 | | | |
| PENALTIES (-) | | | | | |
| TOTAL | | 39 | | | |



Please turn over **4**

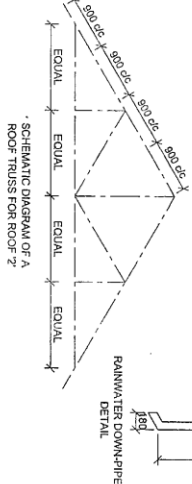


- FLOOR FINISHES**
- 1 TOILET
 - 2 TILE
 - 3 CARPET
 - 4 CARPET
 - 5 TILE



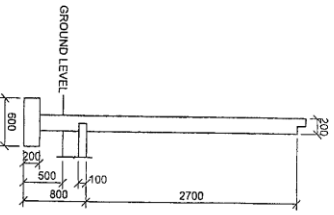
- FEATURES**
- D DOOR
 - W1 WINDOW
 - W2 WINDOW
- FIXTURES**
- WC TOILET
 - WB WASH BASIN
- ELECTRICAL FITTINGS**
1. SINGLE POLE
 2. ONE-WAY SWITCH - DOUBLE POLE
 3. FLUORESCENT LIGHT 2 x 40 W
 4. CEILING LIGHT
 5. SWITCHED SOCKET OUTLET
- NOTE:**
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

INCOMPLETE FLOOR PLAN

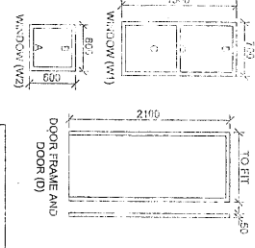


- ROOF NOTES:**
- ROOF PITCH 30°
 - 200 x 20 mm FASCIA BOARD ON ALL SIDES GABLED ENDS
 - ROOF COVER 15 mm FIBRE CEMENT SHEETING ON 75 x 50 mm FURINS SPACED ACCORDING TO SCHEMATIC DIAGRAMS
 - 114 x 38 mm ROOF TRUSSES ON 114 x 38 mm WALL PLATES
 - 9 mm CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 600 mm PC
 - 100 x 150 mm GUTTER ON ALL SIDES

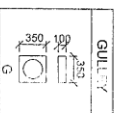
INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL



WINDOW AND DOOR SCHEDULE

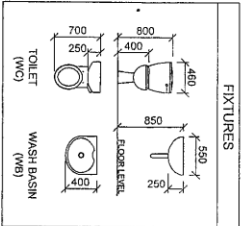


- WINDOW NOTES:**
- D = SHINED SIL
 - C = FIXED PANEL
 - 150 x 25 mm FIBRE CEMENT SIL UNDER ALL WINDOWS



| ROOF COMPONENTS | |
|-------------------------------------|------------------------|
| <input checked="" type="checkbox"/> | 38 x 38 mm BRANDERING |
| <input checked="" type="checkbox"/> | 114 x 38 mm WALL PLATE |
| <input checked="" type="checkbox"/> | 75 x 50 mm PURLINS |

| ELECTRICAL SYMBOLS | |
|--------------------|---|
| | ○ |
| | ○ |
| | ○ |
| | ○ |
| | ○ |
| | □ |
| | □ |
| | ○ |
| | ○ |



QUESTION 4: CIVIL DRAWINGS

Given:

- The incomplete north elevation of new consulting rooms, showing the walls, the door and window openings, the roof and eaves.
- The incomplete floor plan, showing the walls, positions of the doors, window fixtures and electrical layout.
- The incomplete foundation and external wall detail.
- Room designations and floor finishes.
- The rainwater down-pipe detail.
- Schematic diagrams of the two types of roof trusses and roof nodes.
- A window and door schedule.
- The gully detail.
- A table of roof components.
- A table of electrical symbols.
- A table of fixtures.
- The incomplete floor plan of the new consulting rooms, drawn to scale 1:50, on page 5.

Instructions:

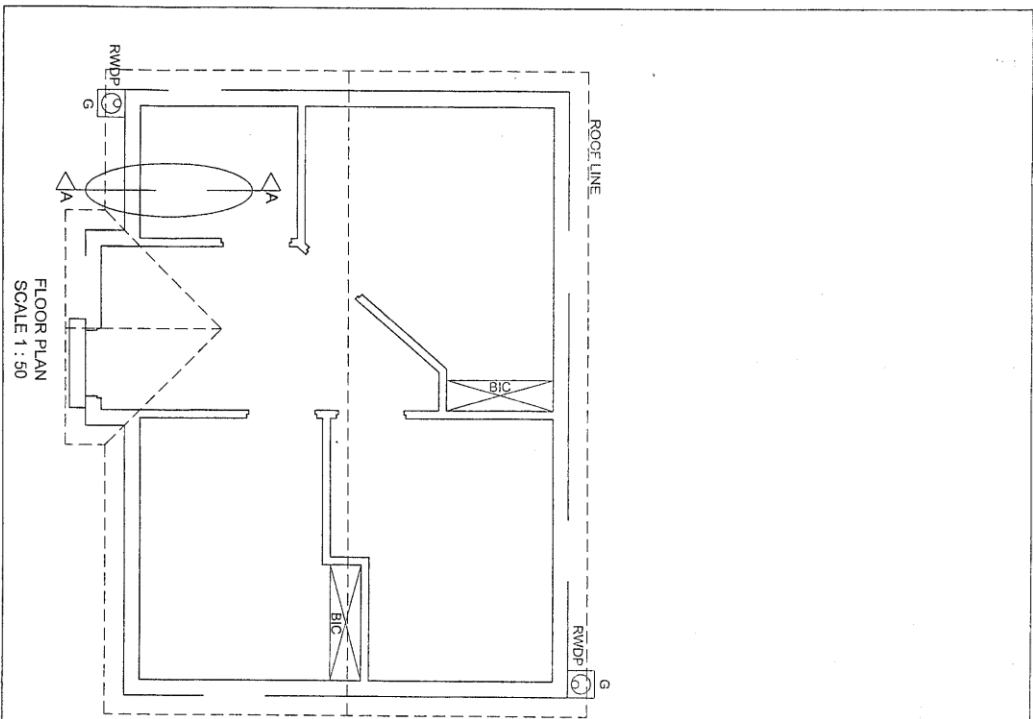
- Answer this question on page 5.
- Using the given incomplete floor plan, draw in first-angle orthographic projection and to scale 1:50, the following views of the new consulting rooms:
 - 4.1.1 THE COMPLETE FLOOR PLAN
 - 4.1.1.1 Add the following features to the drawing:
 - All doors and windows
 - All fixtures as indicated by abbreviations
 - All electrical fittings as indicated by numbers
 - All hatching detail
 - 4.1.2 THE COMPLETE NORTH ELEVATION
 - 4.1.2.1 Show the following features on the drawing:
 - The outside walls, door and window detail
 - The roof detail, including the fascia boards, barge boards, gutters, rainwater down-pipe and gully
 - The finished floor level
 - 4.1.2.2 In the space provided, draw, to scale 1:20, a DETAIL ED SECTION on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan. Show the following features on the drawing:
 - The complete foundation and external wall detail
 - The roof detail, including the fascia board and gutter
 - All features and fixtures to the left of the section
 - All hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

- The north elevation
- The room designations and floor finishes
- Using the correct abbreviations, label the following features in the correct view: ground level, damp-proof course and the finished floor level

NOTE:

- Planning is essential.
- All drawings must comply with the guidelines and graphical symbols as contained in the SANS 10142: 1991



FLOOR PLAN
SCALE 1 : 50

DETAILED SECTION ON A-A
SCALE 1 : 20

FOR OFFICIAL USE ONLY

| | | | | | | | | | | | |
|-------------------------------|--|--|--|--|--|--|--|--|--|--|--|
| INCORRECT SCALES | | | | | | | | | | | |
| NON-ALIGNMENT OF VIEWS | | | | | | | | | | | |
| FEATURES DRAWN IN PERSPECTIVE | | | | | | | | | | | |
| TOTAL PENALTIES (c) | | | | | | | | | | | |

MARK ALLOCATION FOR SECTION OF ROOF (4.2 No. 1)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|

ASSESSMENT CRITERIA

| FLOOR PLAN | | POSSIBLE | OBTAINED | SCORE | MODERATE |
|------------|-----------------|----------|----------|-------|----------|
| 1 | DOORS + WINDOWS | 15 | | | |
| 2 | ELECTRICAL | 9 | | | |
| 3 | FIXTURES | 4 | | | |
| 4 | HATCHING | 4 | | | |
| 5 | LABELS | 5 | | | |
| SUBTOTAL | | 37 | | | |

NORTH ELEVATION

| | | | | | |
|----------|----------------------------|-----|--|--|--|
| 1 | ROOF | 8% | | | |
| 2 | WALLS + RWDP + FFL + GULLY | 6% | | | |
| 3 | DOORS + WINDOWS | 6 | | | |
| 4 | LABELS | 1% | | | |
| SUBTOTAL | | 22% | | | |

DETAILED SECTION

| | | | | | |
|---------------------|--|-----|--|--|--|
| 1 | ROOF DETAIL | 11 | | | |
| 2 | FOUNDATION + GULLY + RWDP + LINE BREAK | 11 | | | |
| 3 | WINDOW + WC + WB | 9% | | | |
| 4 | HATCHING | 4 | | | |
| 5 | LABELS | 1 | | | |
| SUBTOTAL | | 36% | | | |
| TOTAL | | 96 | | | |
| TOTAL PENALTIES (c) | | | | | |
| GRAND TOTAL | | | | | |