



education

Department of
Education
FREE STATE PROVINCE

PROVINCIAL PAPER

GRADE 12

ENGINEERING GRAPHICS AND DESIGN

MARCH 2019

MARKS: 100
TIME: 1 HOUR

This paper consists of 3 pages.

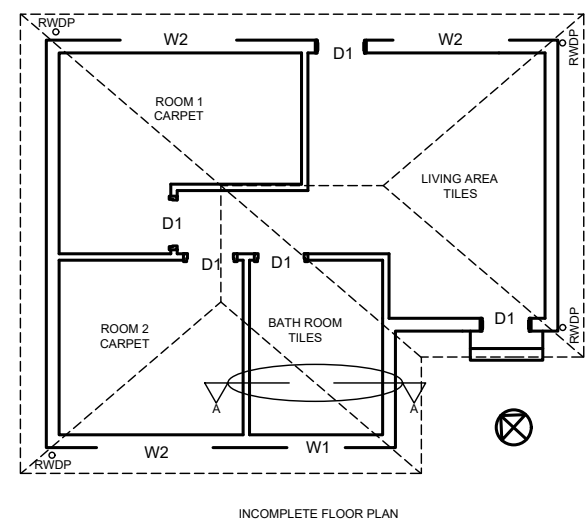
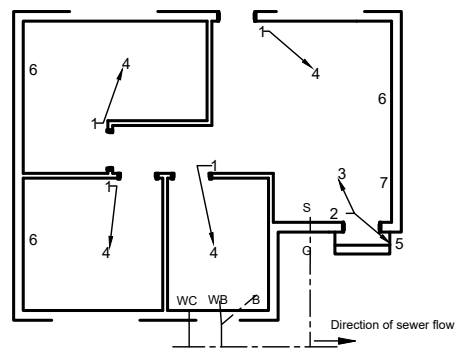
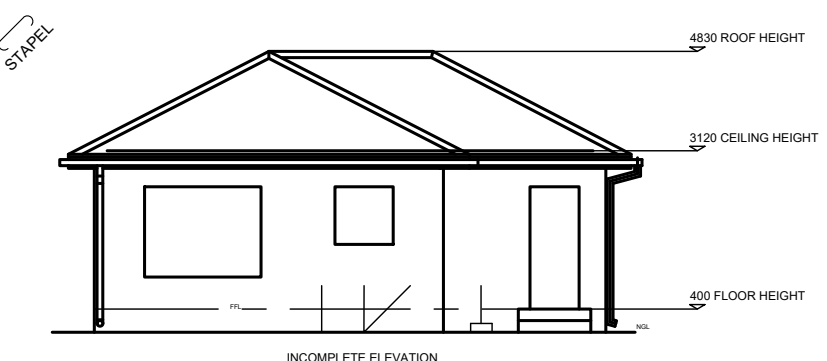
INSTRUCTIONS AND INFORMATION

1. This question paper consists of ONE question.
2. ALL drawings are in first angle orthographic projection, unless stated otherwise.
3. The drawing must be drawn to the requested scale.
4. The questions must be answered on the DIAGRAM SHEETS, as instructed.
5. ALL the pages must be stapled in numerical sequence, 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 and surname as well as the grade in the space provided on each page.
8. ALL answers must be drawn accurately and neatly.
9. ALL necessary construction and projection lines must be shown.
10. Plan the drawing carefully from the given position, which is indicated on the diagram sheet.
11. Any details or dimensions not given must be assumed in good proportion.

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

FINAL CONVERTED MARK	CHECKED BY
60	

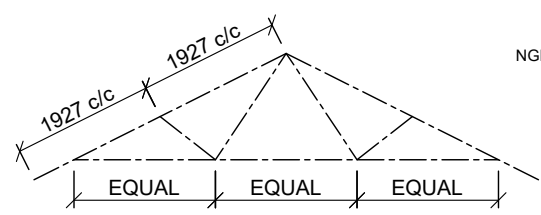
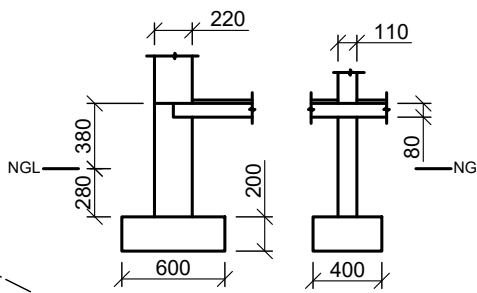
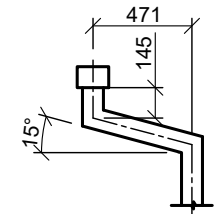
NAME & SURNAME		GRADE	12	1
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- FEATURES**
D1 DOOR
W1 WINDOW
W2 WINDOW
- FIXTURES**
WC TOILET
WB WASH BASIN
B BATH
S SINK
G GULLY

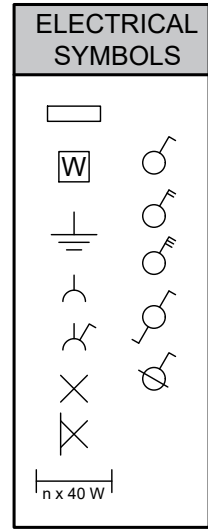
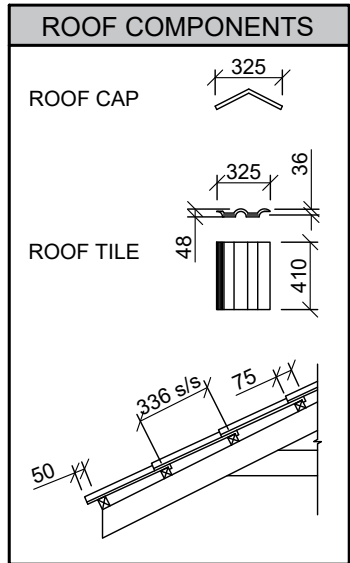
- ELECTRICAL FITTINGS**
 1. ONE-WAY SWITCH - SINGLE POLE
 2. ONE-WAY SWITCH - DOUBLE POLE
 3. FLUORESCENT LIGHT 2 x 40 W
 4. CEILING LIGHT
 5. WALL-MOUNTED LIGHT
 6. SWITCH SOCKET OUTLET
 7. DISTRIBUTION BOARD

NOTE:
 THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.



SCHMATIC DIAGRAM OF A ROOF TRUSS

- ROOF NOTES:**
 ROOF PITCH: 27°
 ROOF TRUSSES: 114 x 38 mm
 WALL PLATES: ON 114 x 38 mm
 ROOF OVERHANG TO END OF ROOF TRUSSES: 500 mm
- DOUBLE ROMAN CONCRETE TILE:
 • BATTEN: 38 x 38 mm
 • BATTEN END: 38 x 50 mm
 • BATTEN DISTANCE @ 336 mm c/c
- FASCIA BOARD: 200 x 20 mm
 GUTTER: 150 x 100 mm
 RAINWATER DOWN-PIPES: Ø100
- CEILING BOARD: 10 mm
 BRANDERING STRIPS: 38 x 38 mm
 BRANDERING STRIPS @ 460 c/c



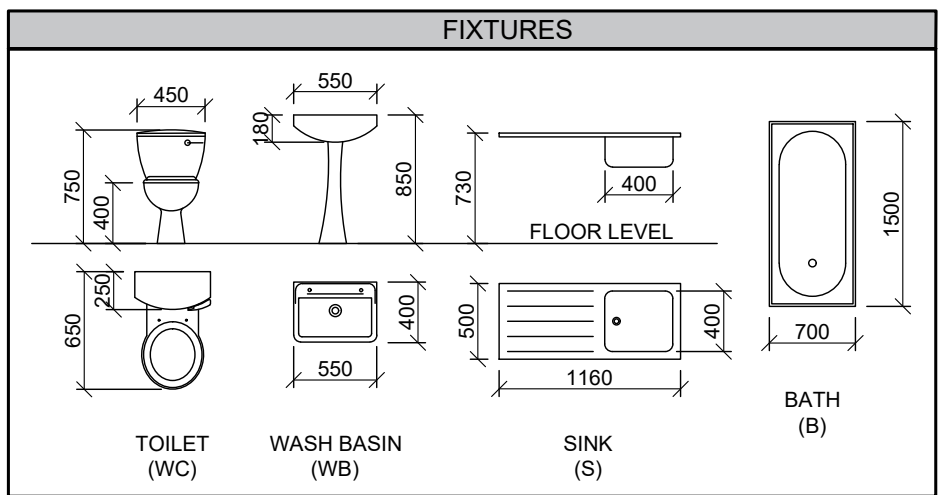
DOOR AND WINDOW SCHEDULE

TO FIT 50
 2100
 DOOR FRAME AND DOOR (D1)

1000
 1000
 500
 WINDOW (W1)

2000
 1100
 500 500
 WINDOW (W2)

WINDOW NOTES:
 • As seen from outside
 • A = OPENING SIDE
 • B = FIXED PANEL
 • ALL FRAMES 40 mm
 • 150 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS



QUESTION 4: CIVIL DRAWING

GIVEN:

- The incomplete elevation of a dwelling showing the walls, door and window openings, the drainage, the roof and gutters and notes.
- The incomplete floor plan showing the walls, position of the doors, windows, room designations, floor finishes and section line A-A.
- A schematic diagram of a roof truss and roof notes.
- The incomplete detail of the foundations.
- The designation of the fixtures, drainage and the electrical layout.
- A table of electrical symbols
- A door and window schedule
- A table of roof components
- A table of fixtures
- The incomplete floor plan and elevation of a dwelling, drawn to scale 1:60, and the incomplete foundation, walls and break line of the detailed section, drawn to scale 1:30, on diagram sheet 2 (page 3).

INSTRUCTIONS:

Answer this question on diagram sheet 2 (page 3).

- Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1:60, the following views of the dwelling:

A. THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

- All doors and windows
- The fixtures as indicated by the abbreviations
- The drainage (rod eye and inspection eyes).
- All electrical fittings as indicated by the numbers
- All hatching detail

B. THE COMPLETE ELEVATION

Show the following features on the drawing:

- The walls, door and window detail
- The drainage
- The roof detail, including the roof cap, fascia board, gutter and rainwater down-pipe.
- The finished floor level

- Using the incomplete foundation, walls and break line on diagram sheet 2 (page 3), draw, to scale 1:30, a **DETAILED SECTION DRAWING** 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 detail of the walls for the bathroom
- The window and fixtures detail
- The roof truss detail, including the fascia board, gutter and down pipe and the bottom 3 tiles of the roof
- All hatching detail. ONLY the substructure hatching may be drawn in neat freehand

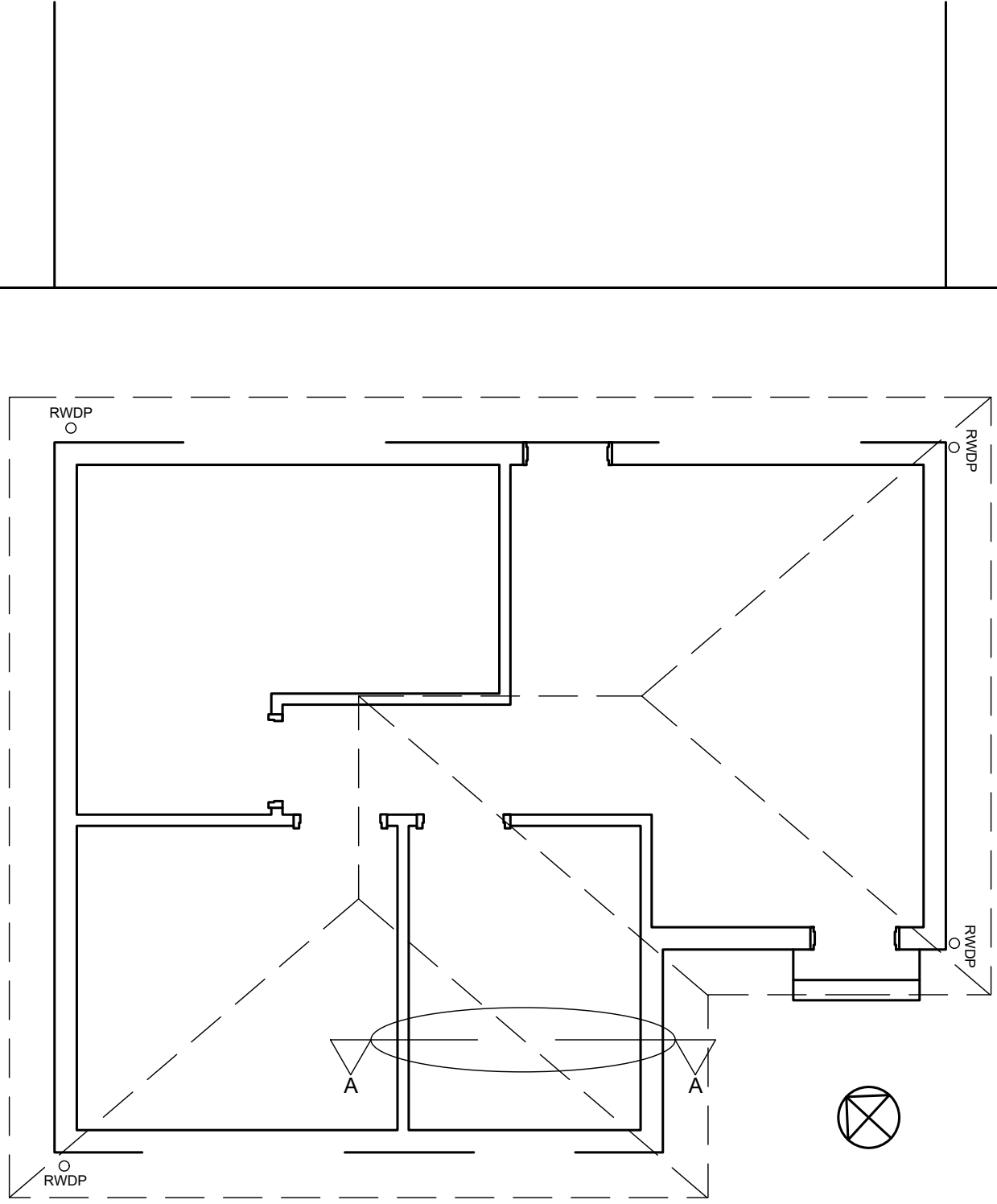
Label the following:

- The correct name of the elevation
- The room designations and floor finishes
- Ground level, finished floor level and damp proof course (use the correct abbreviations and show them on ALL the relevant views)

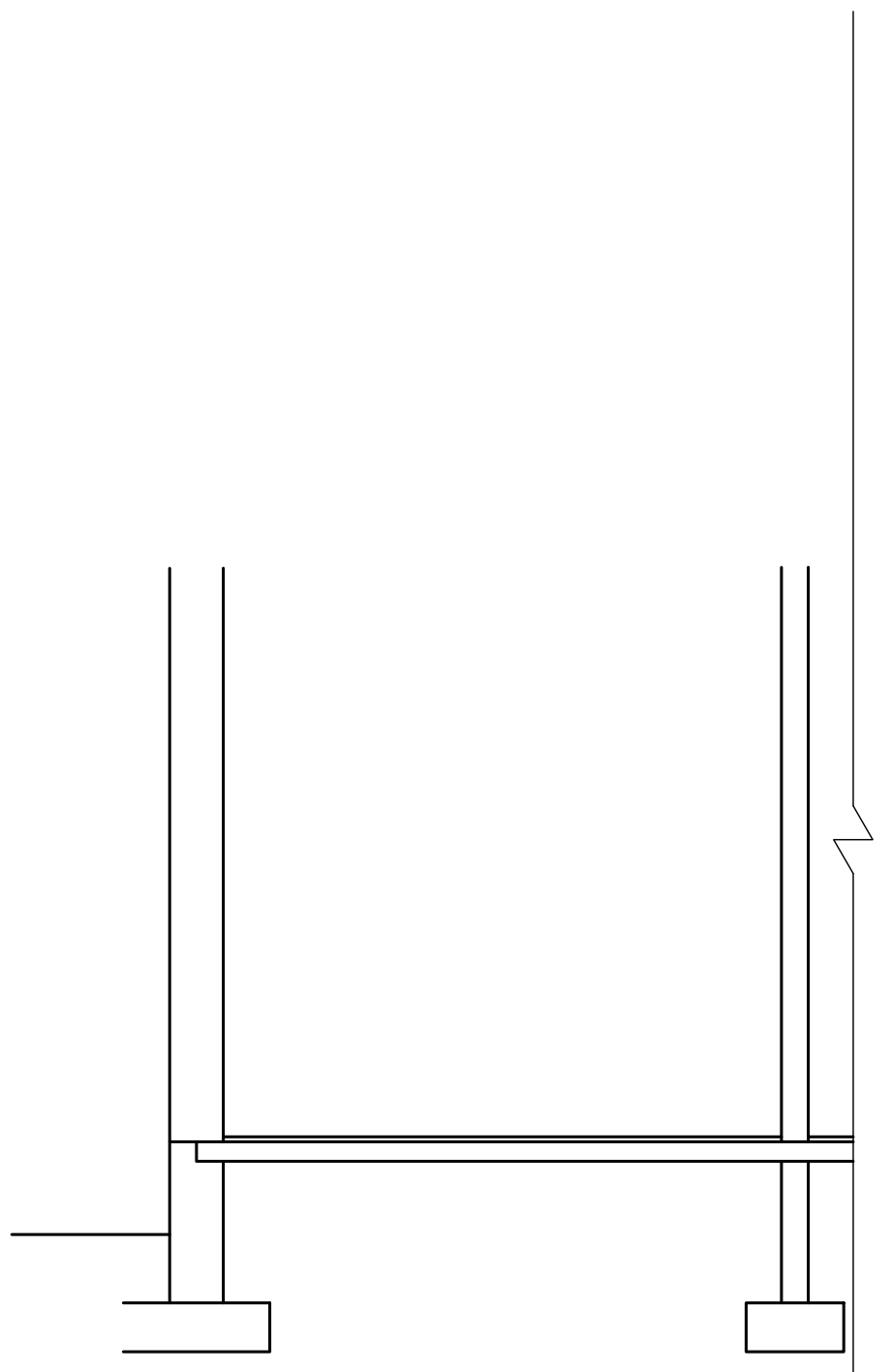
NOTE:

ALL drawings must comply with the guidelines and graphical symbols as contained in the SANS 10143

STAPEL



FLOOR PLAN
SCALE 1:60



SECTIONAL ELEVATION ON A-A
SCALE 1:30

ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS & WINDOWS ($\frac{28}{2}$)	14		
2	FIXTURES ($\frac{14}{2}$)	7		
3	DRAINAGE ($\frac{7}{2}$)	3.5		
4	ELECTRICAL ($\frac{21}{2}$)	10.5		
5	HATCHING ($\frac{8}{2}$)	4		
6	LABLES ($\frac{8}{2}$)	4.5		
SUBTOTAL 1		43.5		
ELEVATION				
1	ROOF & RWDP ($\frac{17}{2}$)	8.5		
2	WALLS, FFL & STAIRS ($\frac{6}{2}$)	3		
3	WINDOW & DOOR ($\frac{22}{2}$)	11		
4	DRAINAGE ($\frac{6}{2}$)	3		
5	LABELS ($\frac{3}{2}$)	1.5		
SUBTOTAL 2		27		
DETAILED SECTION				
1	ROOF & WALLS ($\frac{26}{2}$) + 3	16		
2	WINDOW & FIXTURES ($\frac{13}{2}$)	6.5		
3	HATCHING ($\frac{12}{2}$)	6		
4	LABELS ($\frac{3}{2}$)	1		
SUBTOTAL 3		29.5		
GRAND TOTAL		100		