Province of the
EASTERN CAPE
EDUCATION

EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE
Home of Examinations and Assessment, Zone 6, Zwelitsha, 5600
REPUBLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za

2022 NSC CHIEF MARKER'S REPORT

SUBJECT	**ENGINEERING GRAPHICS AND DESIGN**		
QUESTION PAPER	**1**	2	3
DURATION OF QUESTION PAPER	**3 HOURS**		
PROVINCE	**EASTERN CAPE**		
DATES OF MARKING	**8 – 22 NOVEMBER 2022**		

SECTION 1: (General overview of Learner Performance in the question paper as a whole)

Learners performed poorly. Only 1 percent of learners achieved a level 7 and 38 percent achieved a level 1. The lower order of the paper was attempted by all learners. The middle and higher order questions were poorly answered or not attempted at all. The learners focus on question 1 and 4, then question 3 and 2.

SECTION 2: Comment on learners' performance in individual questions

QUESTION 1

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

GENERAL COMMENTS:

Although line work and line quality is not assessed, the learners ignore line types. Line types are the language of EGD and must be adhered to. Neatness is integral to EGD, neat work is easier to read and benefits the learners.
Time management is a challenge. To complete the paper a candidate must do 1.1 marks per minute.

QUESTION 1: ANALYTICAL

The question was attempted by all learners, the lower order was well answered, and middle and higher order was poorly answered.

QUESTION 2: SOLIDS

A large number of learners did not attempt the question at all. The question was answered very poorly.

QUESTION 3 : PERSPECTIVE

Most learners attempted the question, the vanishing points could be determined by most learners, however the rest of the question was poorly answered.

QUESTION 4: CIVIL

All learners attempted this question the floorplan was answered by all learners although not well, many learners left out the elevation. In the section there were many attempts, many of those left out the roof detail.

(a) Why the question was poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

QUESTION 1: ANALYTICAL

Questions 1.1 – 1.7 were lower order. All learners attempted these questions, the data was not found on the drawing, and therefore some learners answered the questions poorly.

Questions 1.8 – 1.16 & 1.19 were middle order. These are knowledge and application questions, learners expressed themselves poorly, not using the correct technical terminology, SANS 10143 symbols and perimeter calculations.

Question 1.17, 1.18 & 1.20 were higher order. Cannot interpret compass directions, SANS 10143 symbols, converting from mm to m and calculating area of a building. Although reasonable, most learners struggled with it.

The sub-sections which the learners found difficult to answer were ...

Question 1.14 - 1.16: To express them self correctly.

Question 1.18: To draw the graphical symbol of the staircase. Not drawing in freehand.

Question 1.19 & 1.20: Like previous years - to calculate and convert the perimeter and area to the required unit.

QUESTION 2: SOLIDS

This question was difficult for the learners. Learners found it difficult to draw the right view and true shape. Most learners only managed to draw the two given views, the front and top views.

The correct placing of the drawing was essential. The learners had to think in advance (do some planning) to make sure the whole drawing fits on the page. Learners found it difficult to do the sectioning of the right view. Many learners did not make an attempt to draw the right view and the true shape.

In an analysis of 1200 scripts the following was found:

			AVERAGE	%
1	FRONT VIEW	7	4.0	57%
2	SECTIONAL TOP VIEW	13	4.0	32%
3	SECTIONAL RIGHT VIEW	10	0.6	6%
4	TRUE SHAPE	6.5	0.2	4%
5	CORRECT HATCHING	1	0.1	5%
TOTAL		37	8.8	24%

The percentages for learners that did not obtain any marks from the sample:

			%
1	FRONT VIEW	7	4%
2	SECTIONAL TOP VIEW	13	5%
3	SECTIONAL RIGHT VIEW	10	21%
4	TRUE SHAPE	6.5	23%
5	CORRECT HATCHING	1	24%
TOTAL		37	

From the sample it is clear that the section on solids needs attention in the classroom. Learners do not project accurately. First and third angle is mixed within one drawing. The method for determining the true shape is problematic. The rules for hatching are not adhered to.

QUESTION 3: PERSPECTIVE
Most learners did the basics right by constructing the VP's correctly. They struggled with the more difficult concepts, finding the correct position for the window and door openings, the construction of the circle and to draw the roof accurately. Although the roof was based on the 2022 PAT the learners still struggled. Candidates create new HL, SP and GL, they do not use the given detail. The height line as reference for the drawing of the perspective is not correctly applied.

QUESTION 4: CIVIL
Learners who spent too much time on the other three questions ran out of time in this question.

The floor plan
Learners lost many marks on the floor plan for using incorrect symbols for sanitary fixtures, light fittings and incorrect dimension for the doors and windows. They forfeit marks by not hatching all the walls in the floor plan. Windows were fitted in the space provided and not to given dimensions. Window frames are not in the middle of the walls. Window sills extend more than 50 mm (1mm) Electrical symbols are not to SANS 10143 guidelines. The electrical wiring is joined to the flag of the switch and not to the circle. The give electrical symbols on the data sheet is not used, or the learners cannot identify the symbols. The doors are not hinged on the correct position on the doorframe. Labels are left out and not placed below the room label. Fixtures drawn in freehand. Adding detail not on SANS10143 symbols.

The elevation
Learners struggled with the heights of the roof. Reason for the latter was the wrong angles and/or for not completing the roof lines in the floor plan. It may be a lack of knowledge, how to apply the given information correctly. They also forfeited marks by not drawing the chimney and the door.

The detailed section.
Learners struggled to draw the different elements of the roof to the correct size. The dimension of the chimney and door was also a problem. The angle of the roof was incorrect. Very few learners completed the facia and the gutter. Only a few learners made an attempt to draw the chimney and door. Learners do not know how to measure and recalculate dimensions from a scale 1 : 50 to 1 : 20. Many learners did not draw the door and chimney. Hatching the substructure in freehand is not done neatly. The wrong pattern is used. Hatching substructure with instrument is wasting drawing time. The hatching of the earth is poorly done.
Labels: unnecessary features are labelled. The roof is placed on the wrong side of the wall that indicates that the candidates do not apply FAOP to the civil drawing.

(b) Provide suggestions for improvement in relation to Teaching and Learning

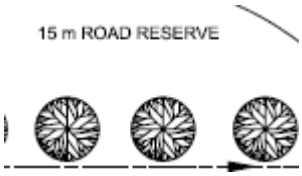
GENERAL COMMENTS:

First teach the concepts, use examples, let the learners do the concept under your supervision. Do regular small class tests. Plan your term that the learners can write larger tests. Plan your year that learners can write examinations in June.

QUESTION 1: ANALYTICAL

Questions 1.1 – 1.7 are lower order. The information for the answers are on the site plan and the title block. It requires careful reading to find the answers. The answer should be copied exactly as it is given. Question 1.6 is an example where, although lower order the answer requires some thinking.

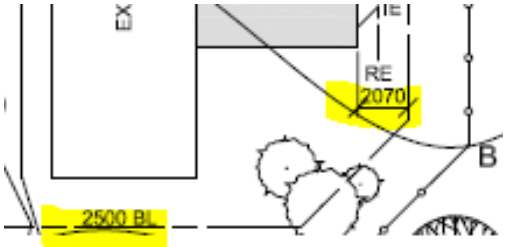
6	How wide is the road reserve in millimetres?



15 m x 1000 = 15 000 mm

Questions 1.8 – 1.16 & 1.19 are middle order. These are knowledge and application questions. The theory that is tested in these questions are from textbooks and the SANS10143. Take care not to use information from other subjects as the SANS 10143 is very specific to EGD and MUST be adhered to. The questions may refer to features and information on the drawings.

10	Which corner of STAND 3414 is the highest?
11	Determine the shortest distance from the proposed new extension to boundary line AB in metres.



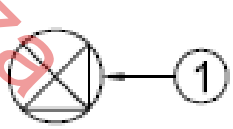
CORNER HEIGHTS IN METRES	
A	1600
B	1600
C	1599
D	1599
E	1601

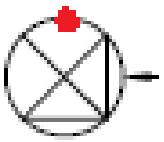
In the case of Q1.11 the dimensions should be converted to meters then added: 2,5 + 2,07 = 4,57 m FIRST

Question 1.17, 1.18 & 1.20 are higher order. These answers require analysis and application of knowledge among other skills.

17	Which elevation of the existing house faces the N3 national road?

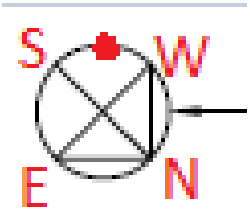
The N3 is above the NORTH POINT; on the symbol mark the position with a dot



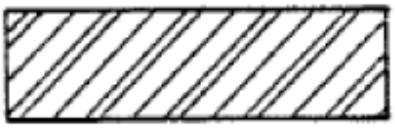


Write in the compass directions

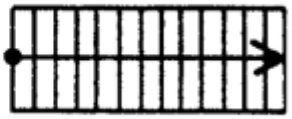
The write the answer South West or SW



Q1.18 is directly from SANS 10143

face brick	

Take care when drawing the symbols and conventions in free hand, freehand is not scribbling it MUST be neat.

Staircase *	

Q1. 19 (middle order) and Q1.20 (higher order) **FIRST CONVERT THE DIMENSIONS TO METERS**

ANSWER 19
Show ALL calculations.
APPLYING CORRECT FORMULA & (MINUS GATE) ✓

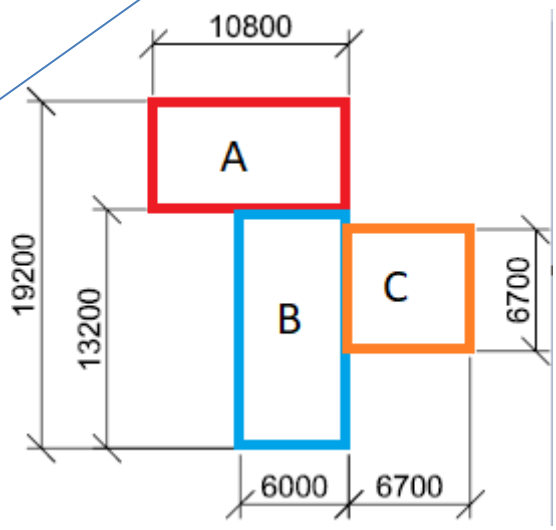
P = AB + BC + CD + DE (- GATE)
= 24,23 + 8,37 + 18,38 + 31,2 - 3,6
= 78,58 ✓ ANSWER IN METRES ✓

ANSWER 20
Show ALL calculations.
APPLYING CORRECT FORMULA ✓

A = L x B
= (10,8 x 6) + (13,2 x 6) + (6,7 x 6,7)
= 64,8 + 79,2 + 44,89
= 188.89 ✓ m^2

✓ ANSWER IN SQUARE METRES

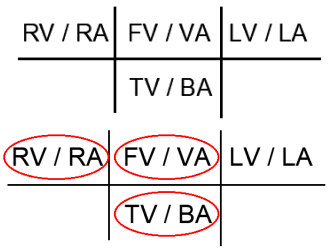
For Q1.20 the building is divided into rectangles



QUESTION 2: SOLIDS

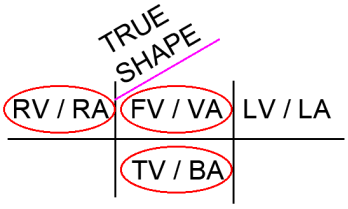
In gr 10 learners are introduced to solids and sectioning as well as true shapes, the objects are place perpendicular, at angles and inclines, cutting planes are perpendicular and inclined. This question is two grade 10 exercises. The learners should be able to do each one separately.

The use of FAOP only is very important. The page layout is as shown.



The learners should sketch the diagram near the question before they read the details of the question. (planning the answer)

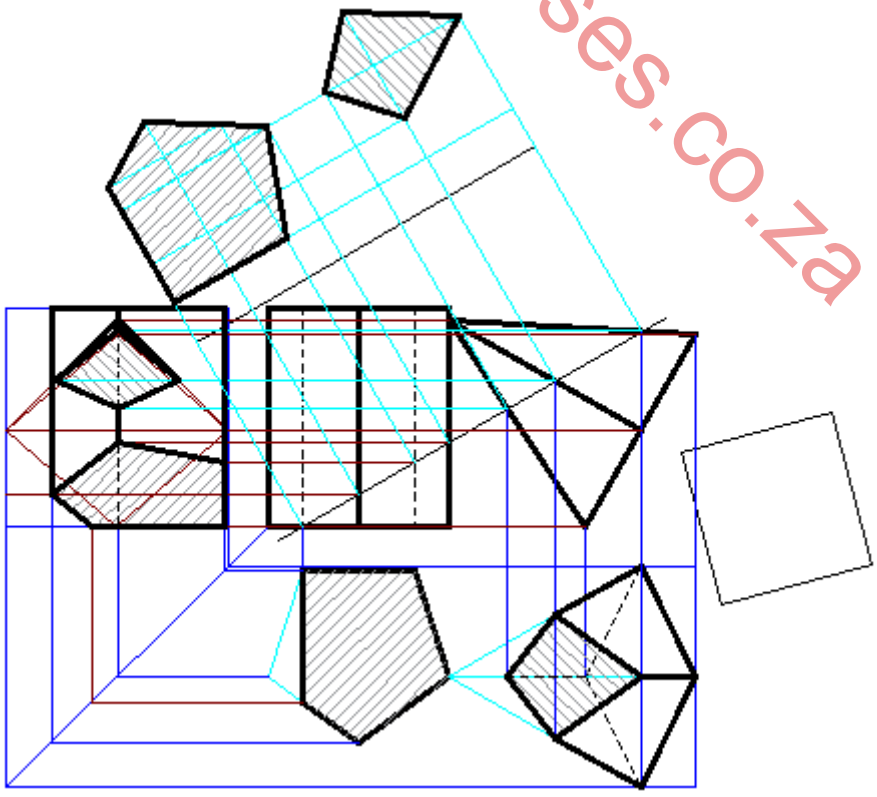
As they read the question sections they indicate what is required of them.



The true shape can be indicated on the planning diagram. **The method the learner prefers will differ therfore the TS can be where the method will determine. In this exaple the rabbet method is used.**

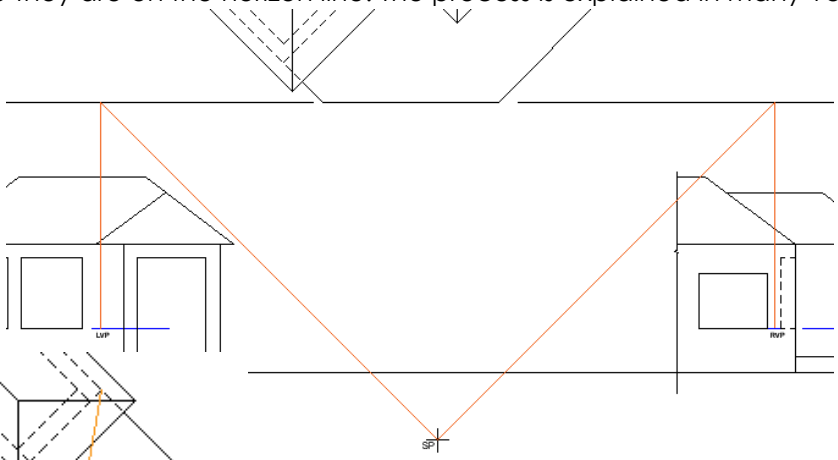
The next step is to draw the base of the solid, starting with the pentagon, either construction or use 72º (360º / 5) in the top view. Label the corners. Project to the FV then the RV. Project the WHOLE object in construction lines. Place the cutting plane in the front view. Draw the section of the solid. Determine the position for the base of the pyramid in the front view, draw auxiliary plane parallel to the base and draw the square base. Label the base and project back to the FV. Complete the pyramid in the FV and project to the TV and RV (the whole solid) Use the cutting plane and complete the sections. Draw the hidden lines and outlines and hatch each section (use mechanical hatching and each part in opposite directions) The True Shape can then be constructed to the method that the learner chooses. The hatching should be 45º to the XY that the learner uses. NO CONSTRUCTIONS MUST BE ERASED.

The use of projection lines and labelling of the corners is very important.

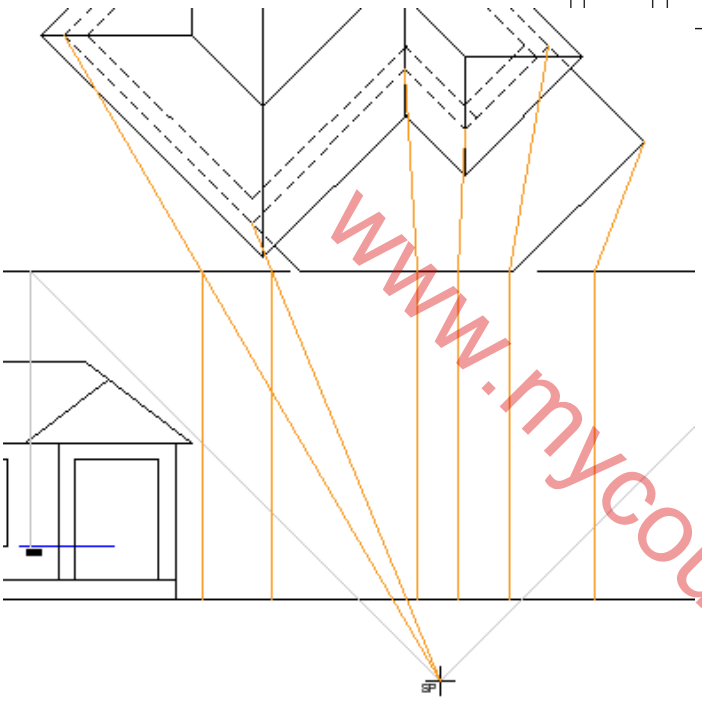


QUESTION 3 : PERSPECTIVE

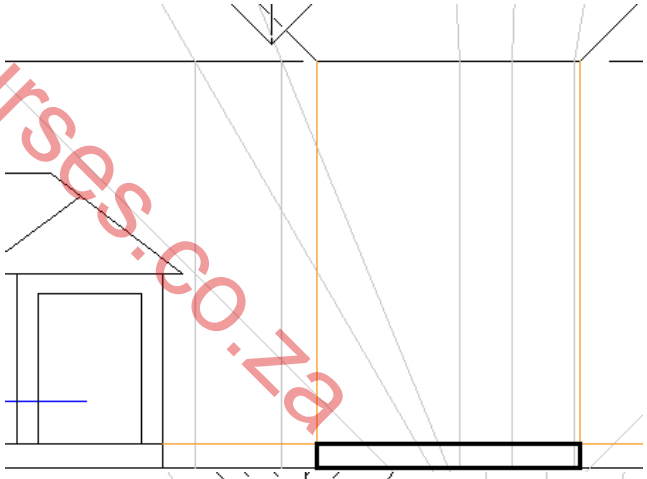
Although many learners could determine the VP's there are still many who could not do this. The VP's should be labelled close to where they are on the horizon line. The process is explained in many YouTube videos and support material to the textbooks. In short: from the SP parallel to the sides of the building draw lines to the PP. From the PP perpendicular to the HL draw lines and label as LVP and RVP.

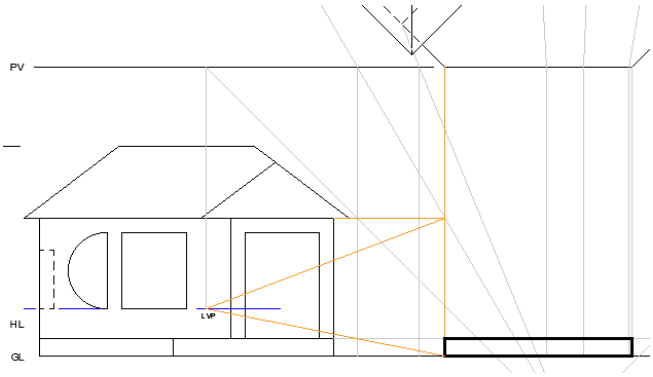


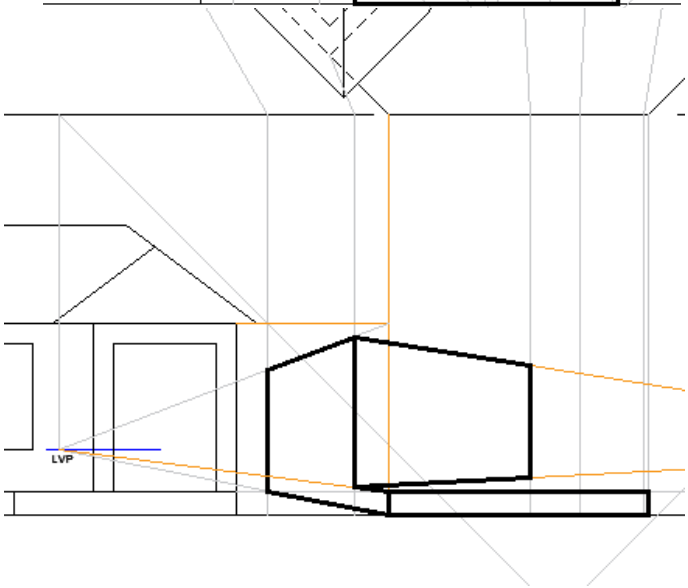
The next step is from the corners top view to the SP draw lines that stop on the PP. From these points on the PP perpendicular lines are drawn to determine the corners of the object. These steps count for 6 marks. There are two methods for drawing the features of the object: i.e. the block method for the features such as walls and openings and the height line method for features such as roofs.



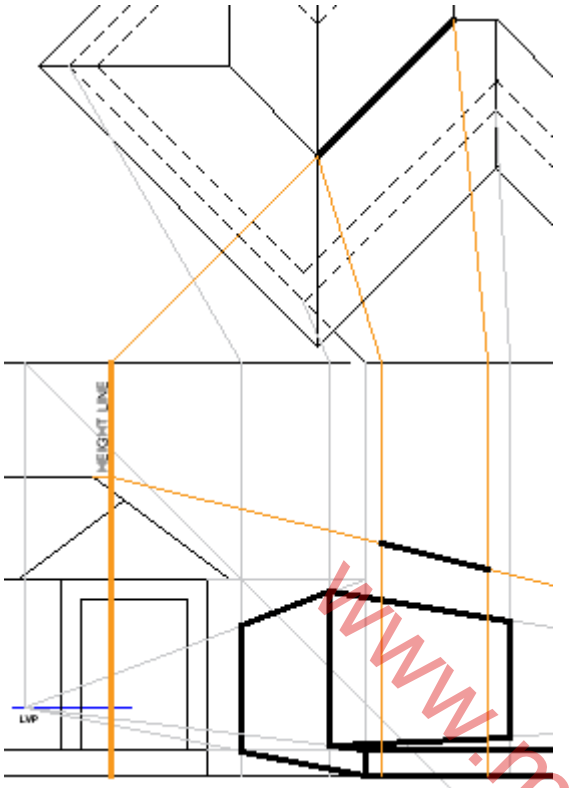
The first objects to draw are those on the PP, the heights are then from the views and from the TV. These lines create the height lines for both the block method and the height line method.

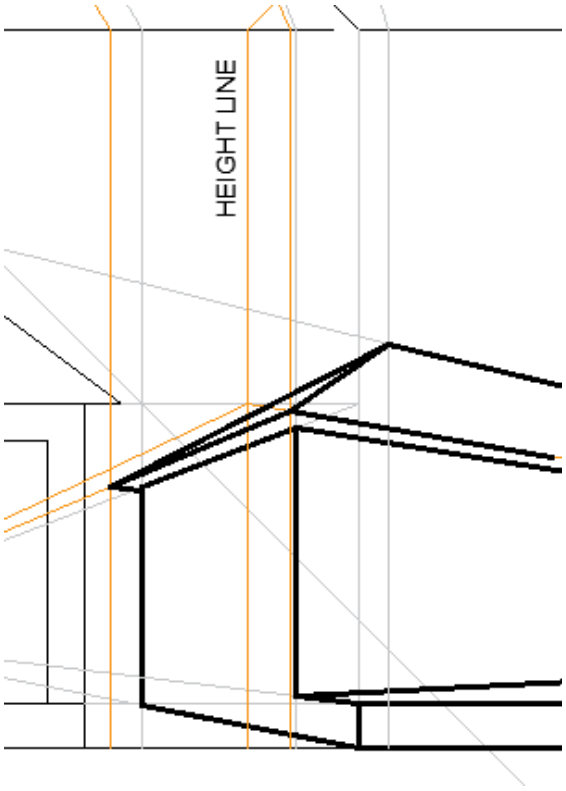






The height line method to determine the roof is shown below.



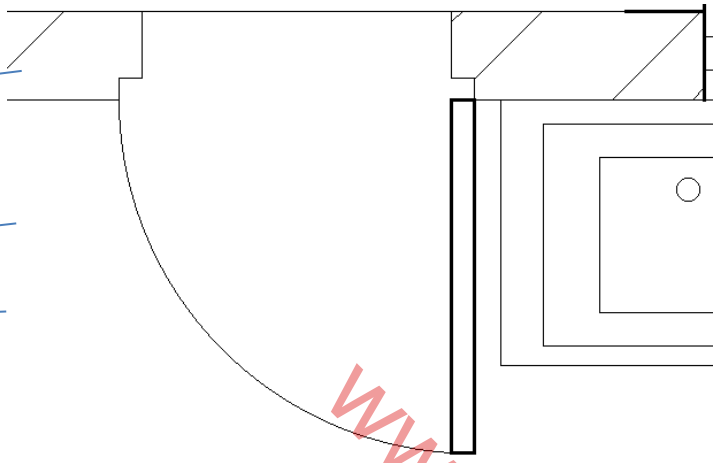


QUESTION 4: CIVIL

Candidate must read the question. While they read they must work through the datasheet. When answering the question they should use the assessment criteria as a guideline.

Floorplan:

Start by drawing the doors, use the information in the data sheet and the given floorplan. The doors must fit to the opening. Take note of where the hinge of the door is in the diagram.

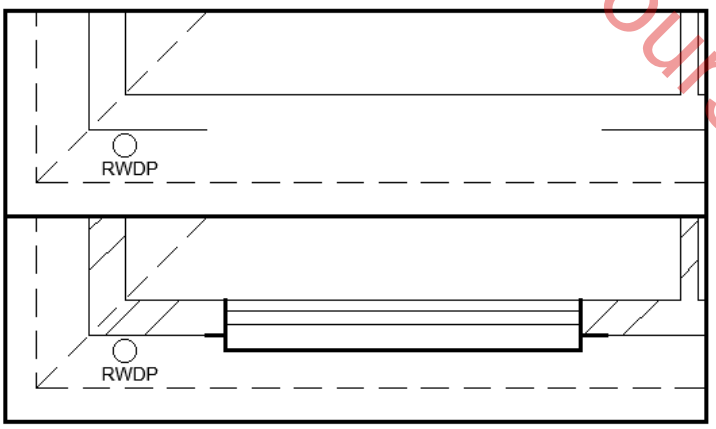


DOOR HINGE POINT (place compass here to draw the swing a mark the length of the door)

DOOR (single line is acceptable for scale 1 : 50)

DOOR SWING (draw with a compass)

Next the windows should be drawn, the information is in the door and window schedule. And the reference is in the data sheet. Take the dimensions and use the scale to find the size of the window to draw. (divide by 50) THE GIVEN GAP IS LARGER THAN WHAT MUST BE DRAWN. Do not merely fill the opening with the window. The frame of the window is in the middle of the wall, the sill must extend 50 mm (1 mm) outside the wall.



GIVEN DETAIL

REVEAL (LENGTH OF WINDOW)

WINDOW FRAME (FROM SCHEDULE)

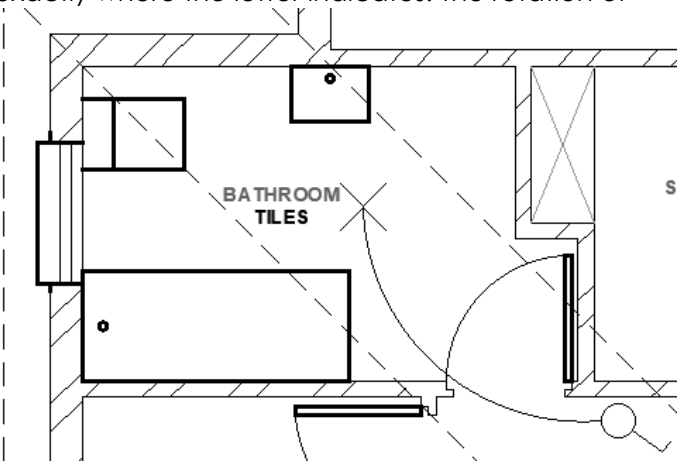
WINDOW SILL (FROM SCHEDULE)

Once the doors and windows are completed the hatching is filled in, ensure that all the walls are hatched, beware not to hatch features such as steps. The rooflines are completed by drawing hidden detail lines at an angle of 45º from the corners. Refer to the given incomplete floorplan to see how the rooflines should drawn.

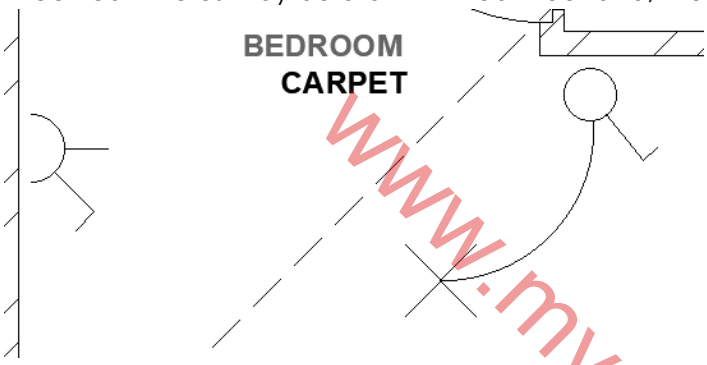
Fixtures given in the drawing must not be copied, use the dimensions and draw to scale the symbols. The SANS 10143 symbols must be used. Place the symbol exactly where the letter indicates. The rotation of letters indicate the direction of placement.

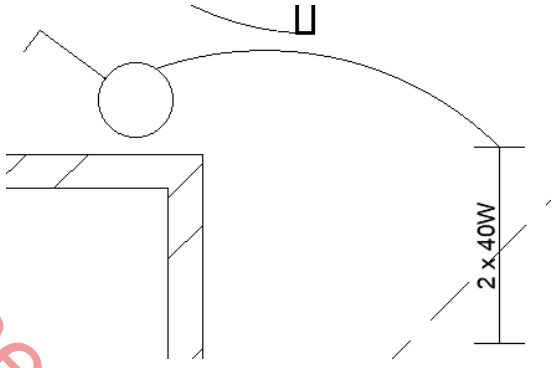
Place the back of the fixtures against the wall.

Special note: The sides of the WC and hand wash basins do not work well when placed against the walls.



Electrical fixtures may be drawn in neat freehand, the connecting wires must join the switches on the circles and be joined the fixture, wires are drawn as an arc. Draw the fixtures slightly away from the wall that the circles can be seen in full. A 2 mm stencil can be used to draw the circles.



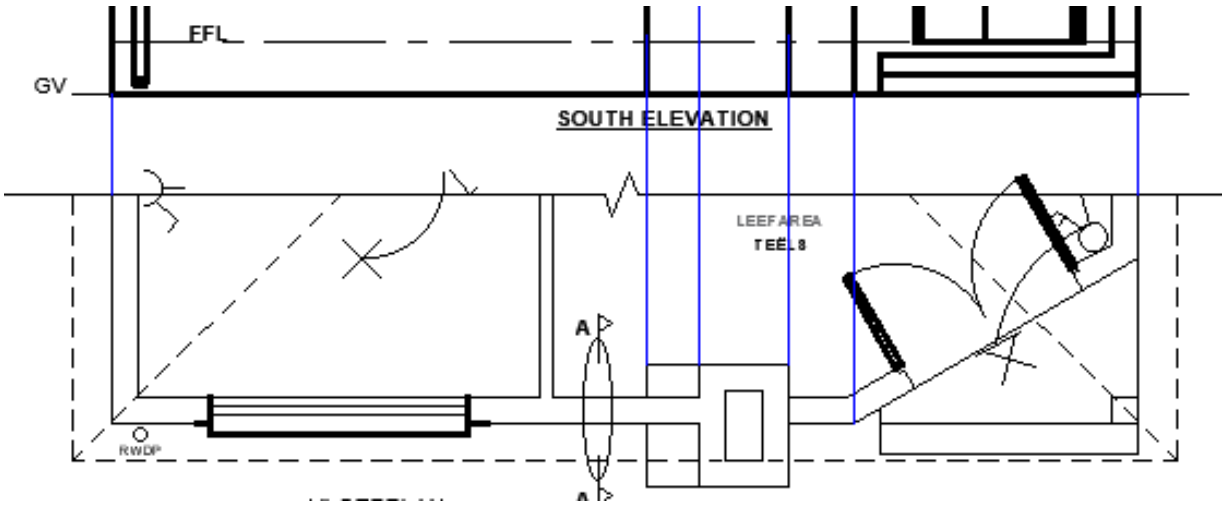


The fluorescent light has a label that must be indicated with the given number of tubes.

LABELS must be written in capital letters to the same size as the room designation, the text below the room designation.

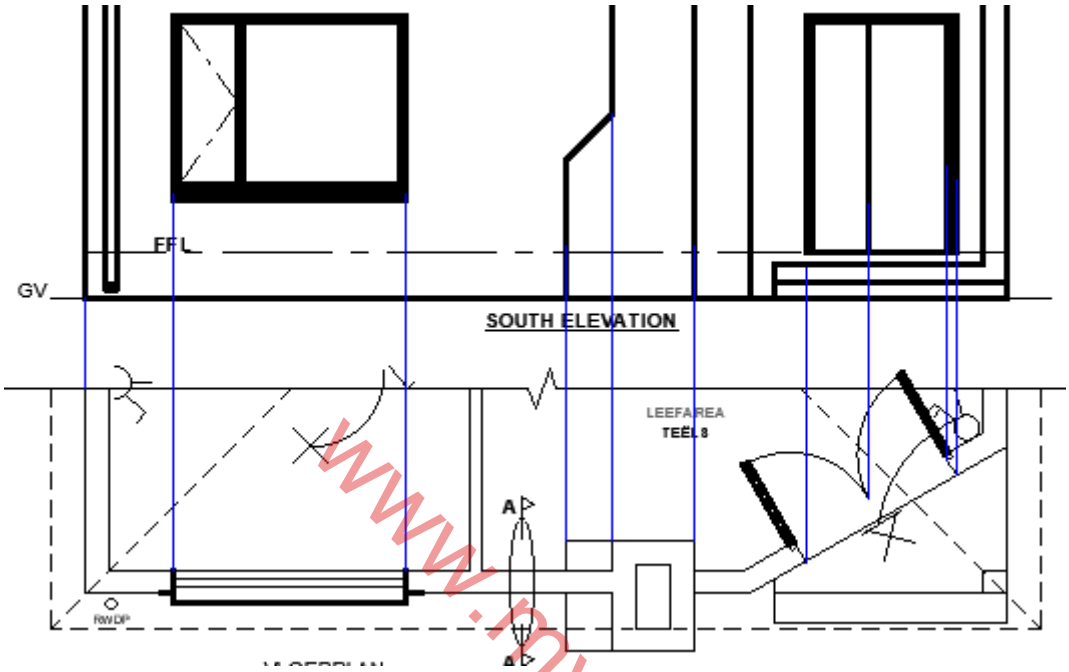
SOUTH ELEVATION

Project the elevation walls from the floorplan. The ground line must be drawn longer than the walls. Read the height of the finished floor level from the ground line and calculate the scaled dimension. The finished floor level is drawn as a centreline.

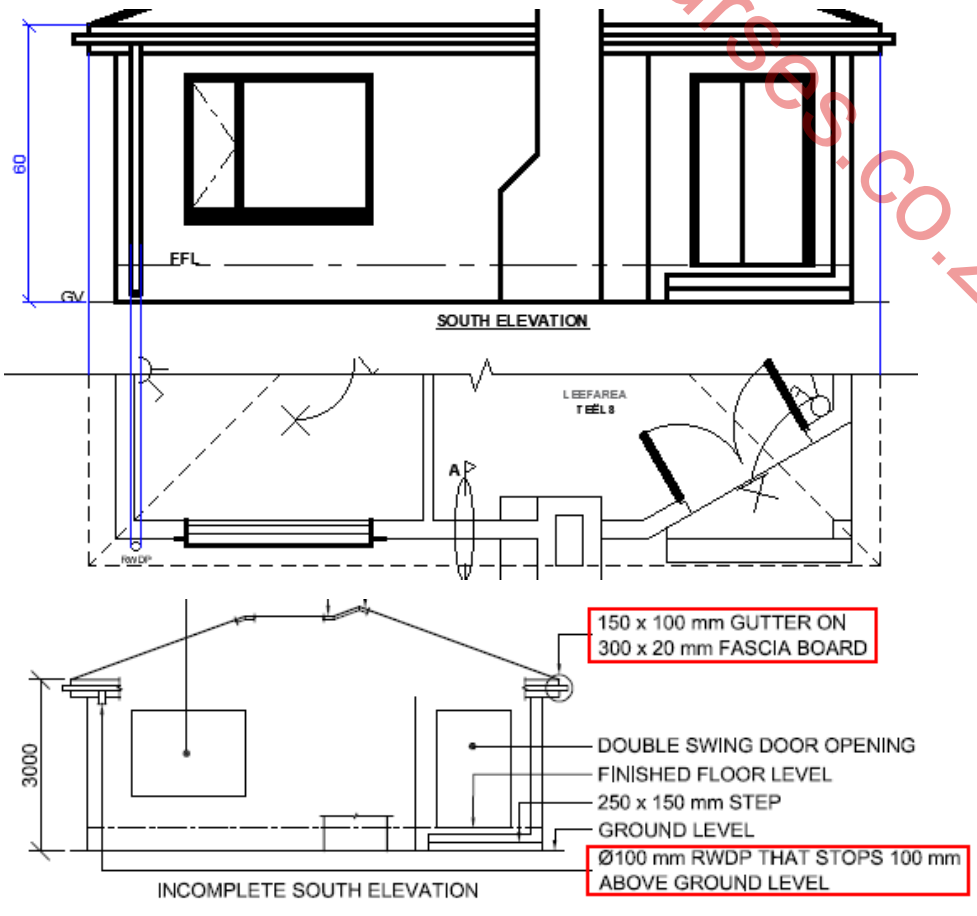


Project features such as doors, windows and chimney from the floorplan. The height of the top of the

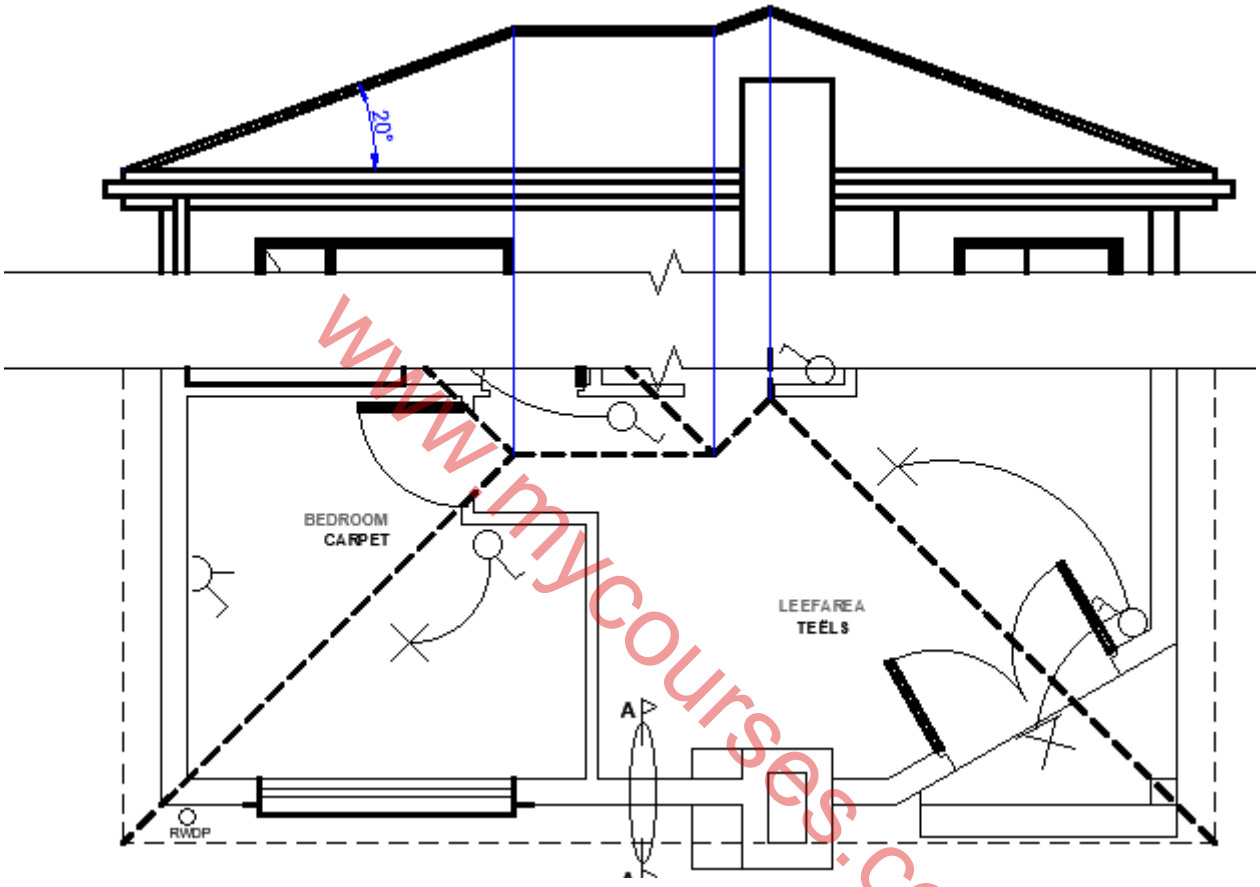
door is taken from the schedule. In the South elevation that is drawn to scale 1 : 50 the door and window frames can be drawn as single lines. Doors and windows are drawn as though they are closed in the elevations. The opening window is indicated with hidden or centre lines to indicate that you can see through the window (clear glass). Below the window remember to add the window sill, the gap of 2-3 mm is sufficient.



The top of the facia board is given in the incomplete view (calculate the scaled dimension) the facia is drawn below and the gutter is drawn on the facia. Form the floorplan project the roofline, add the facia thickness (20 mm < 1 mm) and the width of the gutter (150 mm – 3 mm).



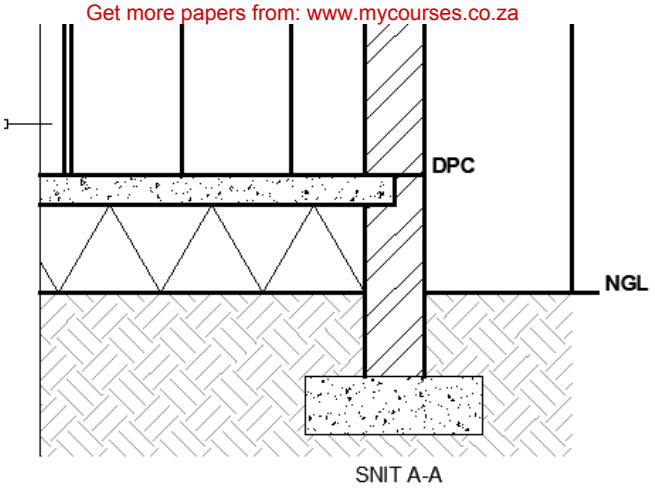
The corner that is found between the horizontal and vertical lines of the facia is the stating point for the roof. Draw on either sides lines to 20º and project from the floorplan to find the intersecting points. Once the roof is dawn add the roof cap line below the lines a gap of 1 – 2 mm is sufficient.



The final step is to add the labels FFl for the finished floor level and the title of the elevation i.e. SOUTH ELEVATION.

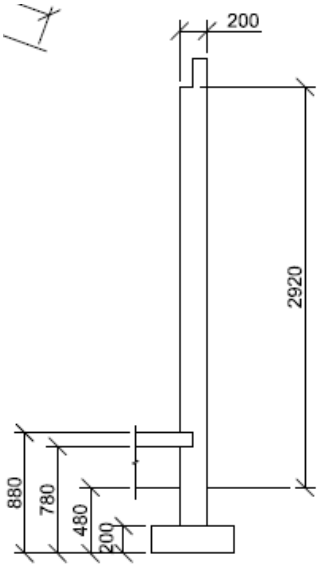
DETAILED SECTION

Start drawing from the given foundation. The detail in the 1 : 50 floorplan must used by multiplying the dimension from the drawing x 50 then dividing to scaled dimensions. The 200 mm walls will be 10 mm on the drawing.



SNIT A-A

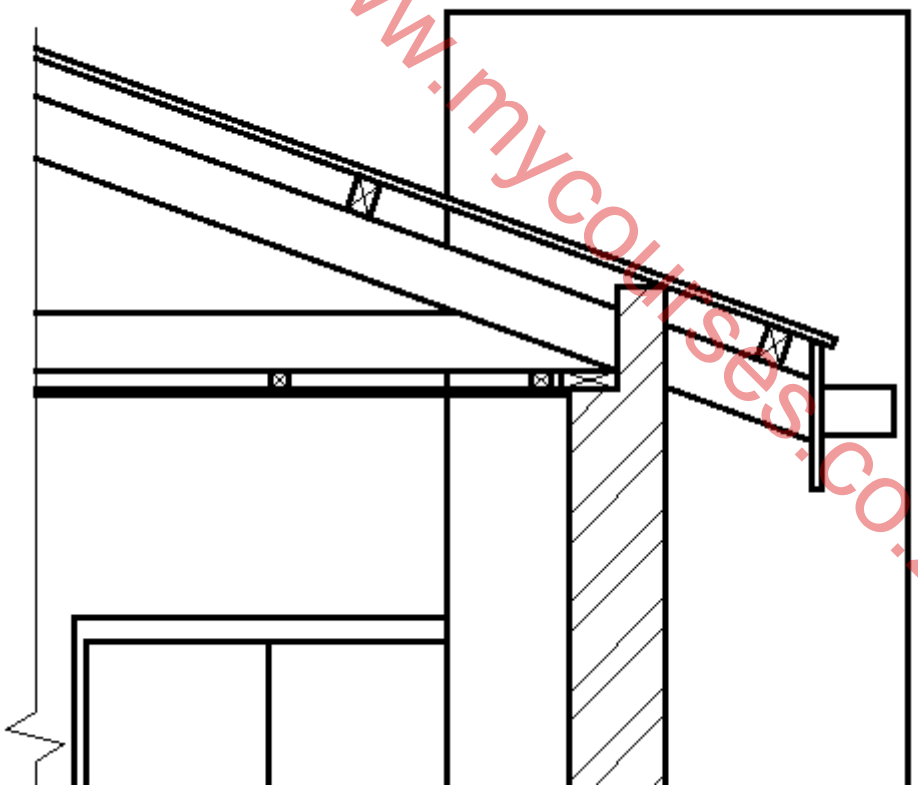
Follow the dimensions on the incomplete foundation and external wall detail diagram. The floor slab must close the entire width from the wall to the break line.



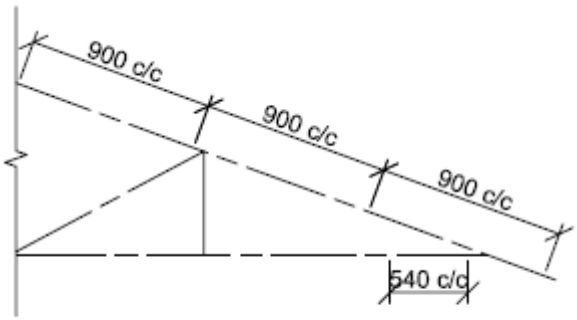
INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL

The diagram shows the height where the ceiling board will be drawn.

The roof details must close the entire width from the wall to the break line.



To draw the features the dimensions given in the roof notes and diagram must be followed



INCOMPLETE SCHEMATIC DIAGRAM OF A ROOF TRUSS

ROOF NOTES:
20° ROOF PITCH

114 x 40 mm ROOF TRUSSES ON
114 x 40 mm WALL PLATES

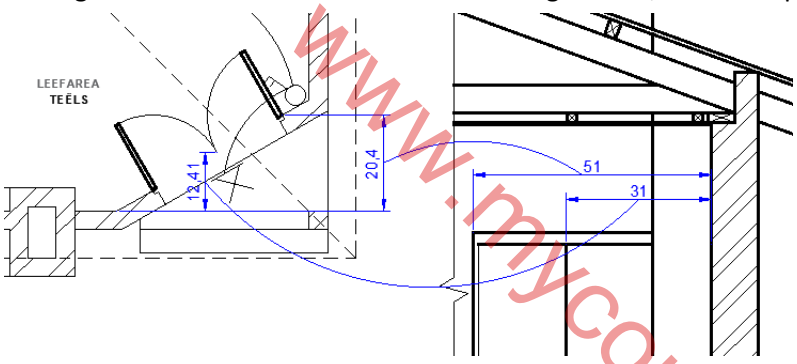
300 mm ROOF OVERHANG TO END OF ROOF TRUSS

20 mm CORRUGATED ROOF SHEETING ON
75 x 50 mm PURLINS @ 900 mm c/c

300 x 20 mm FASCIA BOARDS WITH
150 x 100 mm GUTTERS ON ALL SIDES

10 mm CEILING BOARD ON 40 x 40 mm
BRANDERING STRIPS @ 540 mm c/c

The diagram below shows the 1 : 50 scale changed to 1 ; 20 to complete the detailed section



(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

GENERAL:

THERE SEEMS THAT THERE ARE NO KNOWLEDGABLE SUBJECT ADVISORS FOR EGD. THERE IS VERY LITTLE SUPPORT FOR THE SUBJECT THAT IS STEADILY GROWING IN NUMBERS. THIS SEVERLY IMPACTS ON THE RESULTS FOR THE SUBJECT IN THE PROVINCE.

In the classroom the learners must draw exercises against time in one period the learner must finish for example a solid geometry drawing, of gr 12 standard. A civil drawing examination should take 3 to 4 periods in total.

QUESTION 1: ANALYTICAL

Teachers must teach the content, regular class tests must be used to ensure that learners know the content. Use old exam papers as source for the questions. Work through the paper that the learners know how to approach the question.

During the reading time the learners must work through the question and find the answers. This save time when answering the questions.

QUESTION 2: SOLIDS

Practice often single solids in different positions, Use old exam papers as questions.

QUESTION 3 : PERSPECTIVE

Old exam papers are an excellent source for exercises. The learners must do many exercises to be skilled in perspective drawings

QUESTION 4: CIVIL

Use the features in the classroom to explain the concepts, e.g. The structure around a door and where the hinge point is. The structure around windows. These are all real life examples of their drawings.

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2022

MARKS: 100

TIME: 3 hours

GRDSE1

This question paper consists of 6 pages.

Barcode label

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-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 examination number 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	MARKS OBTAINED			½	SIGN	MODERATED			½	SIGN	RE-MARKING			½	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

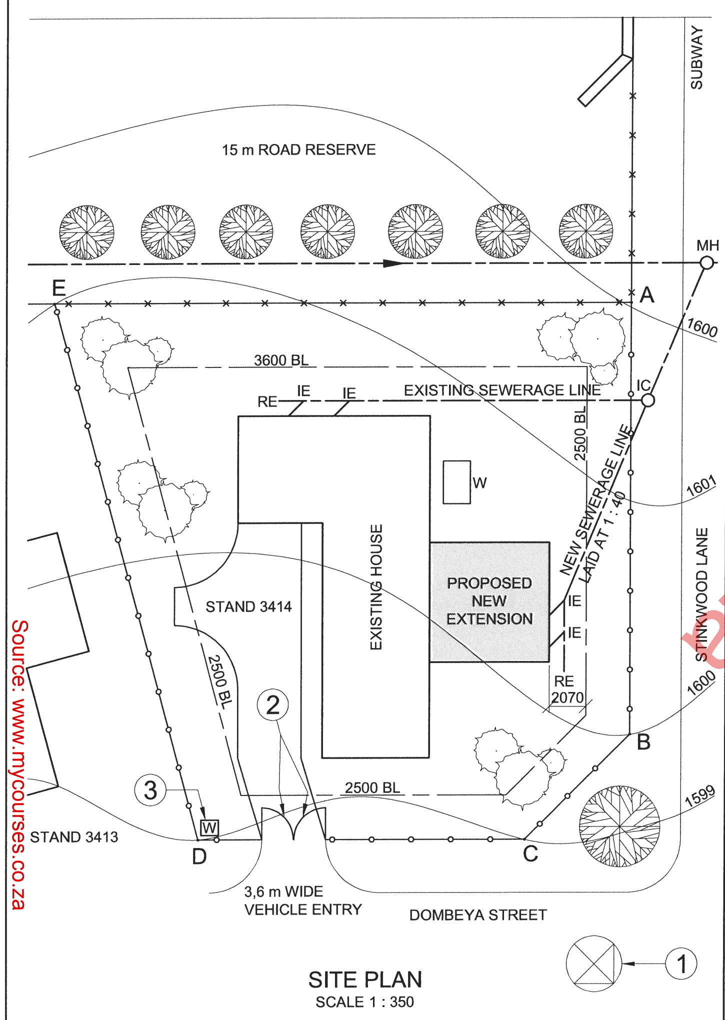
FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER

DO NOT FOLD THIS QUESTION PAPER IN HALF.

LAND SURVEYOR'S CERTIFICATE OF THE CORNER HEIGHTS AND BOUNDARY LENGTHS OF STAND 3414			
CORNER HEIGHTS IN METRES		BOUNDARY LENGTHS IN MILLIMETRES	
A	1600	AB	24230
B	1600	BC	8370
C	1599	CD	18380
D	1599	DE	31200
E	1601	EA	32400

SYMBOL LEGEND	
(symbol)	EVERGREEN TREES
(symbol)	BUSHES
(symbol)	2000 HIGH SECURITY FENCE
(symbol)	1800 HIGH PALLISADE FENCE



SITE PLAN
SCALE 1 : 350

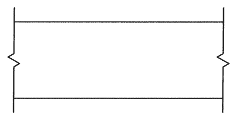
NOTE:
Contractors must verify all dimensions and levels on site before commencing work. Architects to be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE ....

CLIENT'S SIGNATURE ....

ANSWER 18
In the space below, draw, in neat freehand, the *SANS 10143* hatching (symbol) for a (18.1) FACE BRICK WALL, and graphical symbol for a (18.2) STAIRCASE.

18.1



18.2

REVISION	DATE	DESCRIPTION	DRAWN
2	07/01/22	ADD WATER METER	LISA B
1	06/01/22	COLOUR NEW ADDITION RED	LISA B

KOMBELLA, JOUBERT & MINNAAR
ARCHITECTURAL DESIGN
365 BORCHARDS AVENUE
ERASMIA
0183
012 685 1857 www.kjmdesign.co.za

PRINTED BY: STEVENS PRINTERS	DATE OF PRINT: 08/01/2022

DRAWING TITLE: SITE PLAN

PROJECT:
PROPOSED NEW ADDITION FOR
MR N KEENAN
ON STAND 3414,
21 DOMBEYA STREET, HARRISMITH

PROJECT NUMBER: FTW2022-59		DRAWING NUMBER: 1 OF 5	
DATE: 05/01/2022	DRAWN: CASPER	CHECKED: ANNIE Q	SCALE: 1 : 350
REFERENCE CODE: K1N-2022			

QUESTION 1: ANALYTICAL (CIVIL)

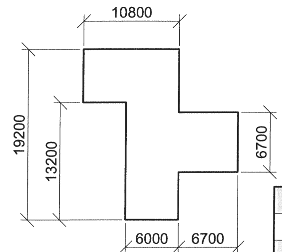
Given:
The site plan of an existing house with a proposed new extension, a title panel and a table of questions. The drawing has not been presented to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which refer to the accompanying drawing, title panel and civil content. **[30]**

	QUESTIONS	ANSWERS			
1	What does the number FTW2022-59 refer to?		1		
2	Who is the client?		1		
3	What is the title of the drawing?		1		
4	What action was taken on 08/01/2022?		1		
5	Who was responsible for preparing the revisions to the drawing?		1		
6	How wide is the road reserve in millimetres?		1		
7	Whose signatures are required on the site plan?		2		
8	How many new inspection eyes are shown on the site plan?		1		
9	What does the abbreviation *RWDP* stand for?		1		
10	Which corner of STAND 3414 is the highest?		1		
11	Determine the shortest distance from the proposed new extension to boundary line AB in metres.		1		
12	What is indicated in BLUE on floor plans and/or sections?		2		
13	Name the feature at 1.		1		
14	What is indicated by the arcs at 2?		1		
15	Name the feature at 3.		1		
16	What does the ratio 1 : 40 on the new sewerage line indicate?		1		
17	Which elevation of the existing house faces the N3 national road?		2		
18	In the space in the title panel (ANSWER 18), draw, in neat freehand, the *SANS 10143* hatching (symbol) for a (18.1) FACE BRICK WALL, and graphical symbol for a (18.2) STAIRCASE.		4		
19	In the space below (ANSWER 19), determine the total length of the 1800 high pallisade fence required for STAND 3414, in metres.		3		
20	In the space below (ANSWER 20), determine the total area of the house, including the new extension, in square metres. Show the answer to TWO decimal places.		3		
		TOTAL	**30**		

ANSWER 19
Show ALL calculations.

ANSWER 20
Show ALL calculations.



EXAMINATION NUMBER

EXAMINATION NUMBER

2

STAPLE

QUESTION 2: SOLID GEOMETRY

Given:

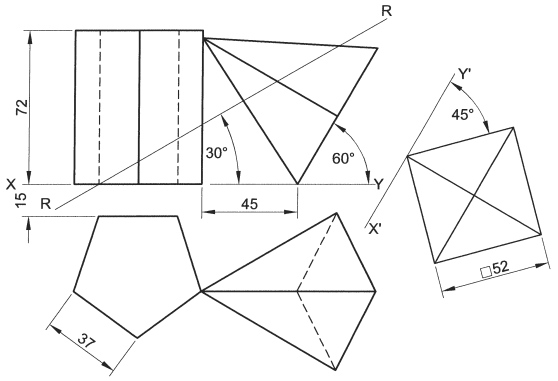
- The front view and top view of a right square pyramid that rests against a right regular pentagonal prism
- An auxiliary view of the right square pyramid
- Cutting plane R-R

Instructions:

Draw, to scale 1 : 1, the following views of both solids:

2.1 The given front view
2.2 A sectional top view with the parts above cutting plane R-R removed
2.3 A sectional right view with the parts below cutting plane R-R removed
2.4 The true shape of the cut surfaces of BOTH solids

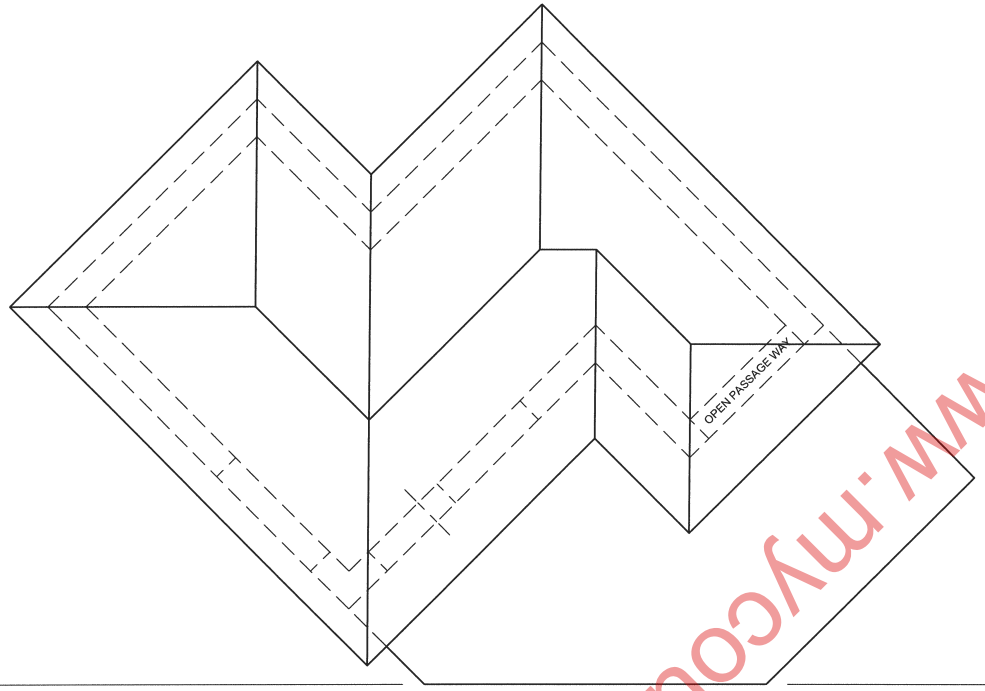
- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction. **[37]**



ASSESSMENT CRITERIA						
1	FRONT VIEW	7				
2	SECTIONAL TOP VIEW	12 ½				
3	SECTIONAL RIGHT VIEW	10				
4	TRUE SHAPE	6 ½				
5	CORRECT HATCHING	1				
PENALTIES (-)						
	TOTAL	**37**				

EXAMINATION NUMBER	
EXAMINATION NUMBER	3

STAPLE



PP

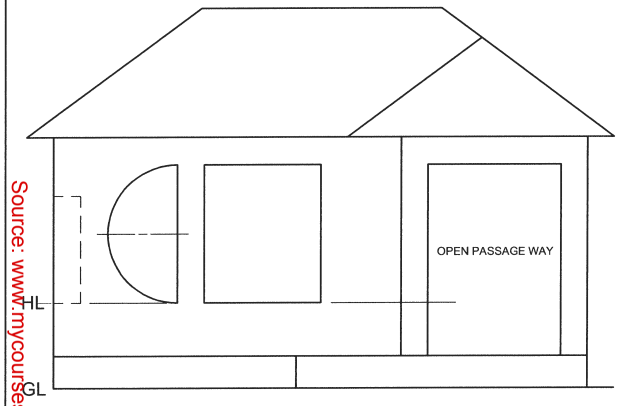
QUESTION 3: PERSPECTIVE

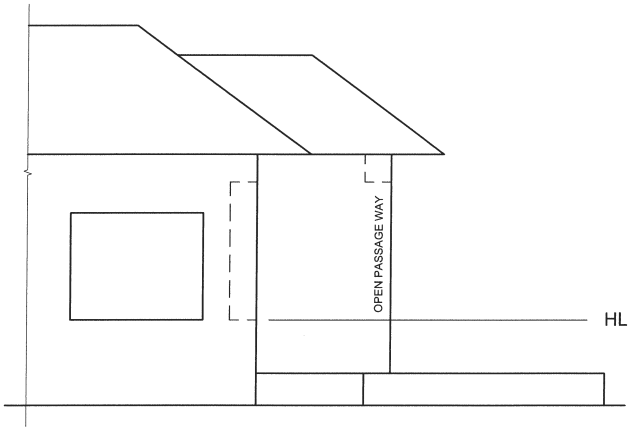
Given:
Three views of a club house and the information needed to draw a two-point perspective drawing
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

Instructions:
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the windows.
- NO hidden detail is required. **[41]**

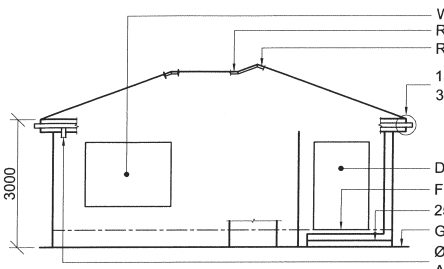
ASSESSMENT CRITERIA					
1	CONSTRUCTION	6			
2	WALL + BASE	11			
3	WINDOWS + OPENING	10			
4	ROOF	7 ½			
5	ARC	6 ½			
PENALTIES (-)					
	TOTAL	41			



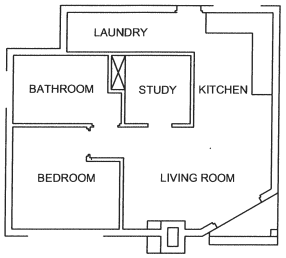


SP

EXAMINATION NUMBER	
EXAMINATION NUMBER	4



INCOMPLETE SOUTH ELEVATION

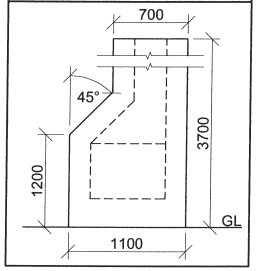


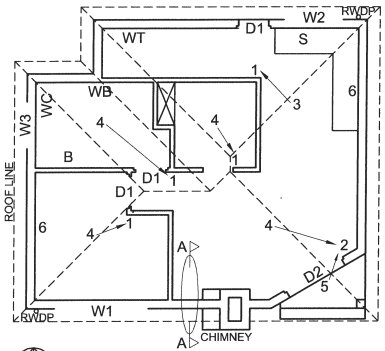
ROOM DESIGNATIONS

FLOOR FINISHES

LAUNDRY:	TILES
BATHROOM:	TILES
STUDY:	CARPET
KITCHEN:	TILES
BEDROOM:	CARPET
LIVING ROOM:	WOOD

CHIMNEY DETAIL





INCOMPLETE FLOOR PLAN

FEATURES

D1	DOOR
D2	DOUBLE SWING DOOR
W1	WINDOW
W2	WINDOW
W3	WINDOW

FIXTURES

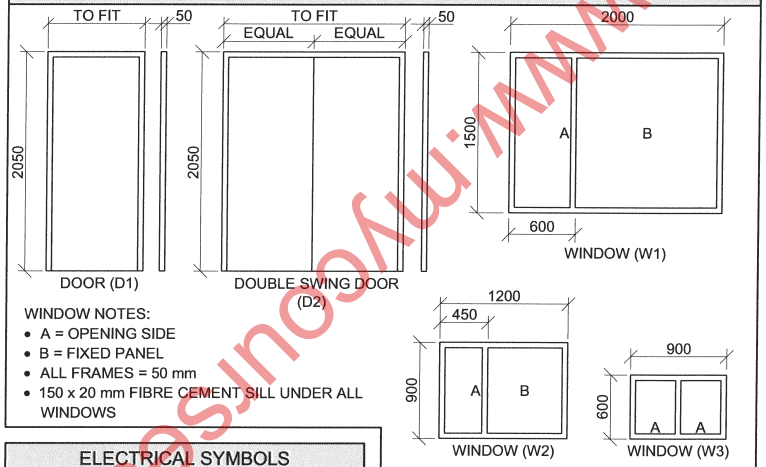
WC	TOILET
WB	WASH BASIN
WT	WASH TUB
S	SINK
B	BATH

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. SWITCHED SOCKET OUTLET

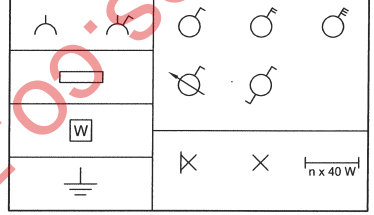
NOTE:
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

DOOR AND WINDOW SCHEDULE



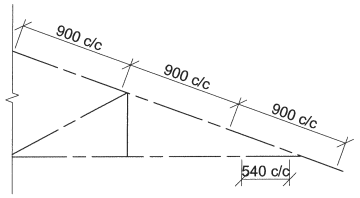
WINDOW NOTES:
- A = OPENING SIDE
- B = FIXED PANEL
- ALL FRAMES = 50 mm
- 150 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS

ELECTRICAL SYMBOLS



ROOF COMPONENTS

	300 x 20 mm FASCIA BOARD
	150 x 100 mm GUTTER
300	ROOF CAP AND RIDGE COVER



INCOMPLETE SCHEMATIC DIAGRAM OF A ROOF TRUSS

ROOF NOTES:
20° ROOF PITCH

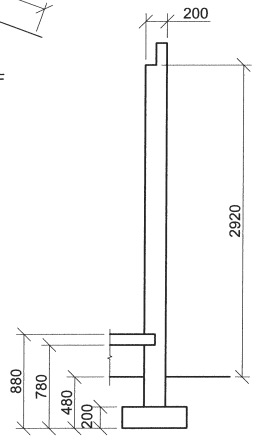
114 x 40 mm ROOF TRUSSES ON 114 x 40 mm WALL PLATES

300 mm ROOF OVERHANG TO END OF ROOF TRUSS

20 mm CORRUGATED ROOF SHEETING ON 75 x 50 mm PURLINS @ 900 mm c/c

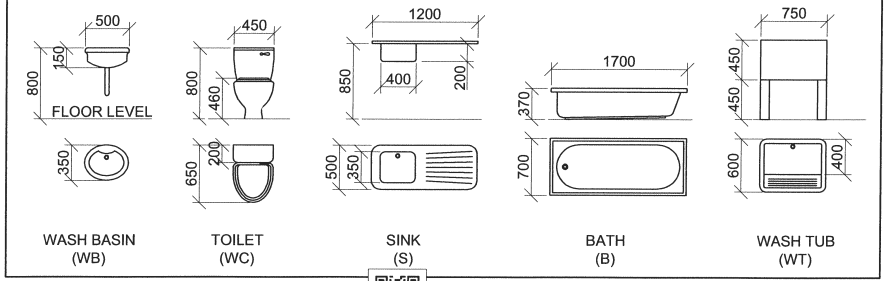
300 x 20 mm FASCIA BOARDS WITH 150 x 100 mm GUTTERS ON ALL SIDES

10 mm CEILING BOARD ON 40 x 40 mm BRANDERING STRIPS @ 540 mm c/c



INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL

FIXTURES



QUESTION 4: CIVIL DRAWING

Given:
- The incomplete south elevation of a **new house**, showing the walls, window and double swing door openings, step, position of the chimney, roof and labels
- The incomplete floor plan showing the walls, step, positions of the doors, windows, chimney and fixtures, as well as electrical layout
- An incomplete schematic diagram of a roof truss and roof notes
- The incomplete foundation and external wall detail
- Room designations and floor finishes
- A table with chimney detail
- A door and window schedule
- A table of electrical symbols
- A table of roof components
- A table of fixtures
- The incomplete floor plan and position of the ground level of the **new house**, drawn to scale 1 : 50, and the incomplete foundation and a break line for the detailed section, drawn to scale 1 : 20, on page 6.

Instructions: Answer this question on page 6.

4.1 Using the given incomplete floor plan and ground level, draw, to scale 1 : 50, the following views of the **new house**:

4.1.1 **THE COMPLETE FLOOR PLAN**
Add the following features to the drawing:
- ALL doors and windows
- ALL fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL the roof lines
- ALL hatching detail

4.1.2 **THE COMPLETE SOUTH ELEVATION**
Show the following features on the drawing:
- The outside walls, step, chimney, window and double swing door detail
- The roof detail, including the fascia boards, gutters and rainwater down-pipe
- The finished floor level

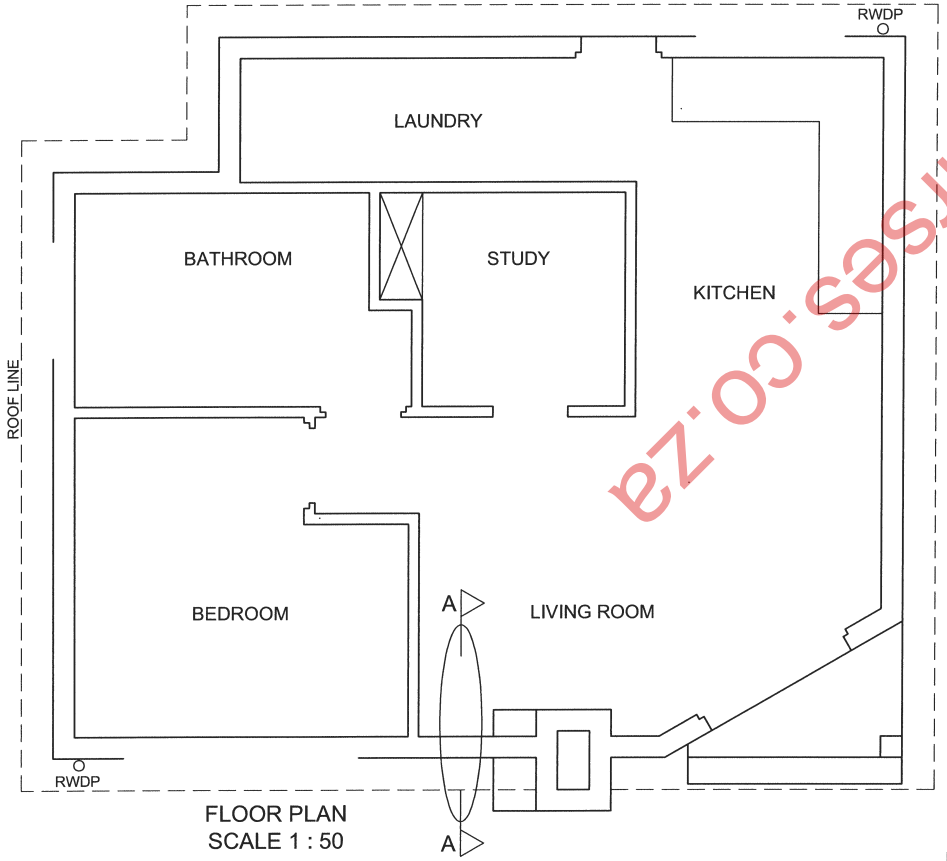
4.2 Using the given incomplete foundation and break line on page 6, draw, to scale 1 : 20, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan.
Show the following features on the drawing:
- The complete foundation and external wall detail
- The roof detail, including the fascia board and gutter
- The chimney and the double swing door and frame to the right (east) of cutting plane A-A
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:
- The south elevation
- The floor finishes
- Ground level, finished floor level and damp-proof course (use the correct abbreviation and show it on ALL relevant views).

NOTE:
All drawings must comply with the **guidelines** and **graphical symbols** as contained in the *SANS 10143*. **[92]**

STAPLE

GL



FLOOR PLAN
SCALE 1 : 50

SECTION A-A
SCALE 1 : 20

MARK ALLOCATION FOR SECTION OF ROOF	
A	
B	
C	
D	
E	
F	
G	
H	
TOTAL	

FOR OFFICIAL USE ONLY	
INCORRECT SCALE(S) USED	
NON-ALIGNMENT OF VIEWS	
VIEW(S) ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
TOTAL	

ASSESSMENT CRITERIA

FLOOR PLAN

		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	11			
2	FIXTURES + ROOF LINES	15			
3	ELECTRICAL	10			
4	HATCHING	3			
5	LABELS	3			
SUBTOTAL		**42**			

SOUTH ELEVATION

1	ROOF + RWDP	$8\frac{1}{2}$			
2	WALLS + STEP + CHIMNEY + FFL	7			
3	DOOR + WINDOW	7			
4	LABELS	1			
SUBTOTAL		**$23\frac{1}{2}$**			

DETAILED SECTION

1	ROOF DETAIL	$11\frac{1}{2}$			
2	SLAB + WALL + CHIMNEY	8			
3	HATCHING	$3\frac{1}{2}$			
4	DOOR	$2\frac{1}{2}$			
5	LABELS	1			
SUBTOTAL		**$26\frac{1}{2}$**			
TOTAL		**92**			
PENALTIES (-)					
GRAND TOTAL					

EXAMINATION NUMBER

EXAMINATION NUMBER 6

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2022

MARKING GUIDELINES

MARKS: 100

These marking guidelines consist of 8 pages.

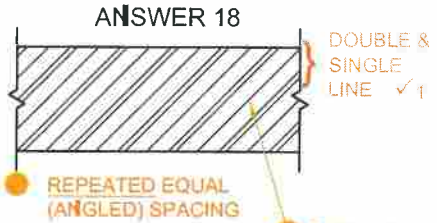
10 Nov 2022

ANSWERS

1	PROJECT NUMBER	1
2	MR N KEENAN	1
3	SITE PLAN	1
4	PRINTING	1
5	LISA B	1
6	15000	1
7	ARCHITECT and CLIENT / MR N KEENAN	2
8	2	1
9	RAINWATER DOWN-PIPE	1
10	E	1
11	4,57	1
12	NEW ✓ IRON / STEEL ✓	2
13	NORTH POINT	1
14	SWING / OPENING OF THE GATES	1
15	WATT METER / ELECTRICAL METER	1
16	FALL / GRADIENT / SLOPE / DROP	1
17	SOUTH WEST / SW	2
18	*See below*	4
19		3
20		3
	TOTAL	**30**

ANSWER 18

18.1



18.2

RECTANGLE / SQUARE

STAIRS (STEPS) ARROW ENTIRE LENGTH

ANSWER 19

Show ALL calculations.

APPLYING CORRECT FORMULA ✓

P = AB + BC + CD + DE

= AB + BC + CD + DE (- GATE)
= (24,23 + 8,37 + 18,38 + 31,2) - 3,6
= 78,58 ✓

ANSWER IN METRES ✓

ANSWER 20

Show ALL calculations.

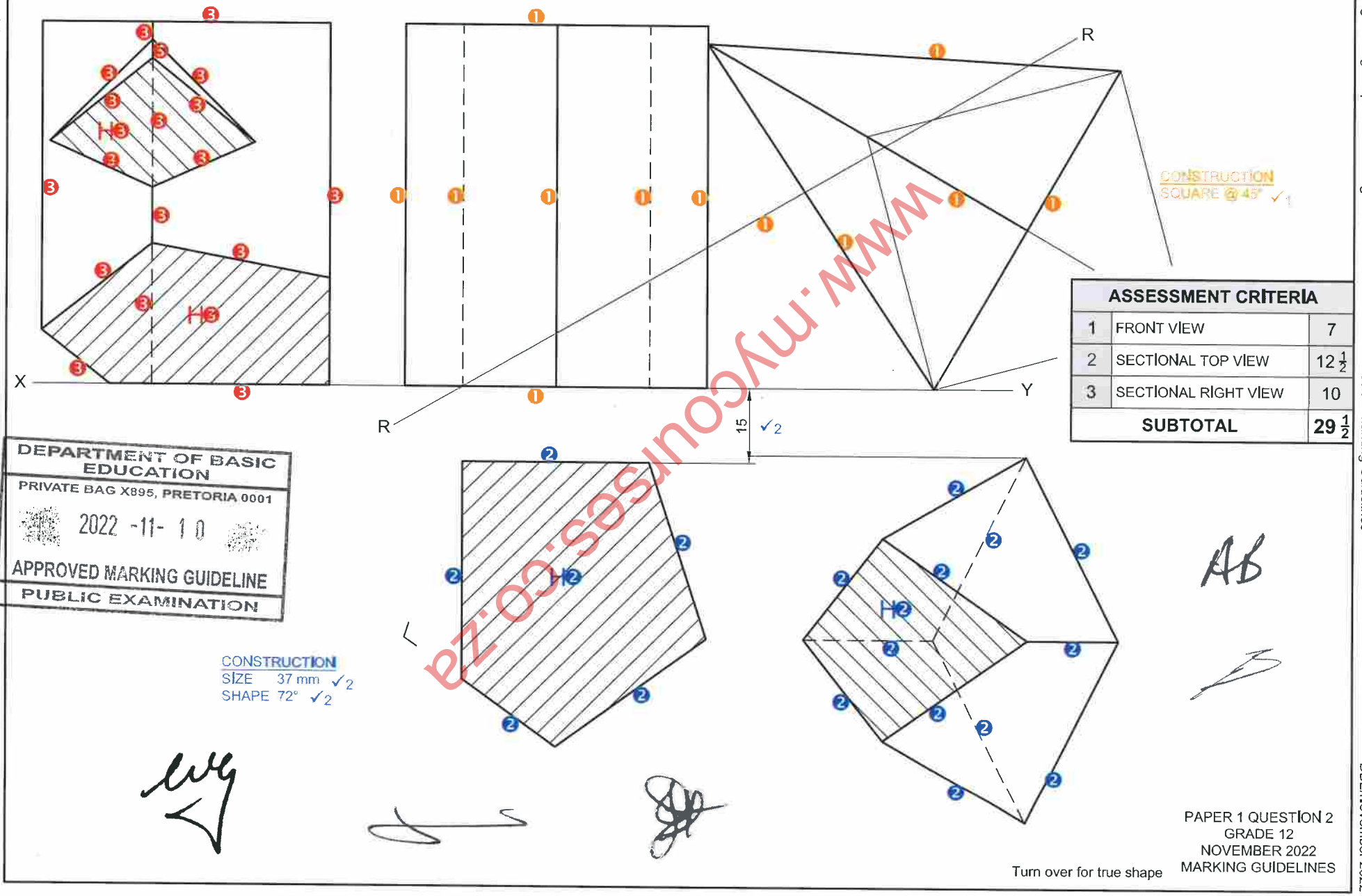
APPLYING CORRECT FORMULA ✓

A = L x B

= (10,8 x 6) + (13,2 x 6) + (6,7 x 6,7)
= 64,8 + 79,2 + 44,89
= 188,89 ✓ m^2

ANSWER IN SQUARE METRES AND m^2 SHOWN ✓

PAPER 1 QUESTION 1
GRADE 12
NOVEMBER 2022
MARKING GUIDELINES

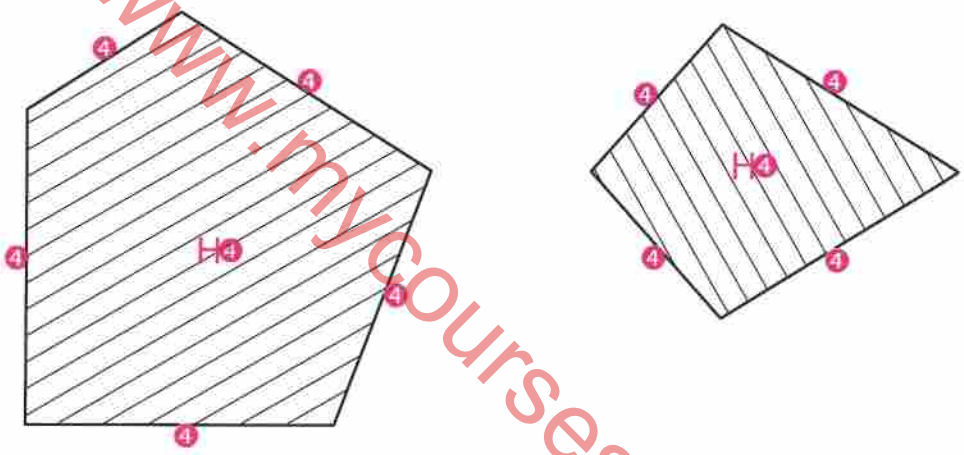


ASSESSMENT CRITERIA		
1	FRONT VIEW	7
2	SECTIONAL TOP VIEW	12 ½
3	SECTIONAL RIGHT VIEW	10
SUBTOTAL		29 ½

DEPARTMENT OF BASIC EDUCATION
PRIVATE BAG X895, PRETORIA 0001
2022 -11- 10
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

PAPER 1 QUESTION 2
GRADE 12
NOVEMBER 2022
MARKING GUIDELINES

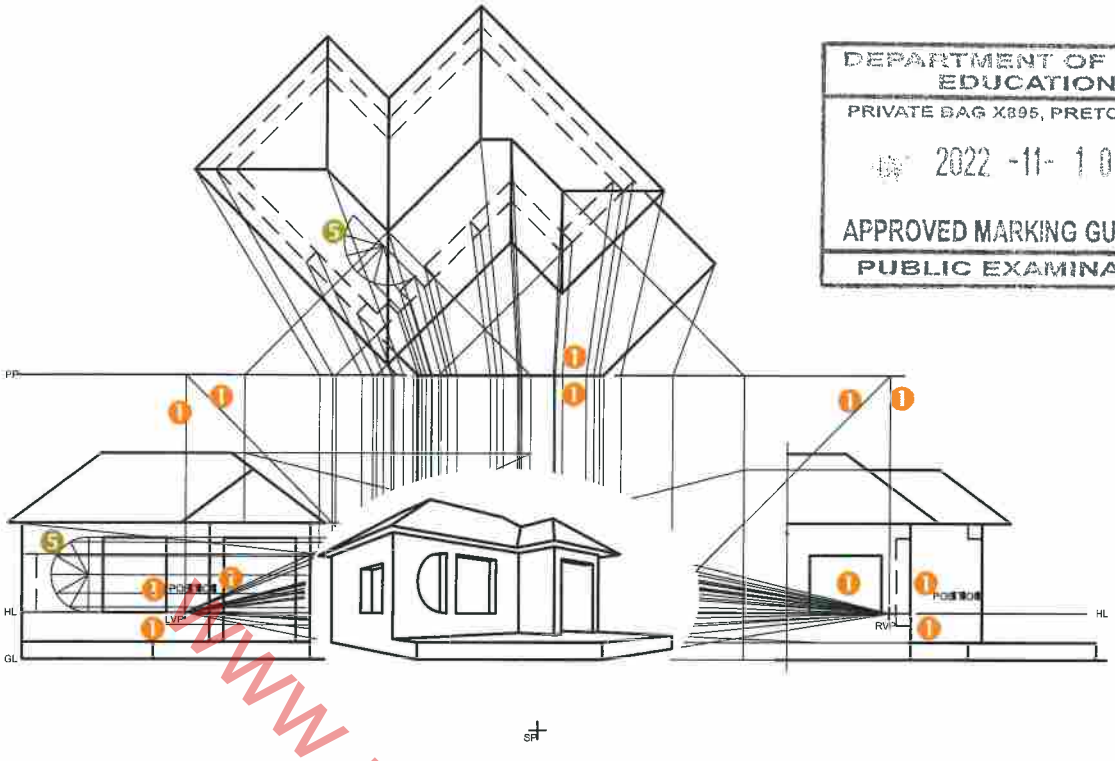
TRUE SHAPE
ANY RECOGNISED METHOD ✓4

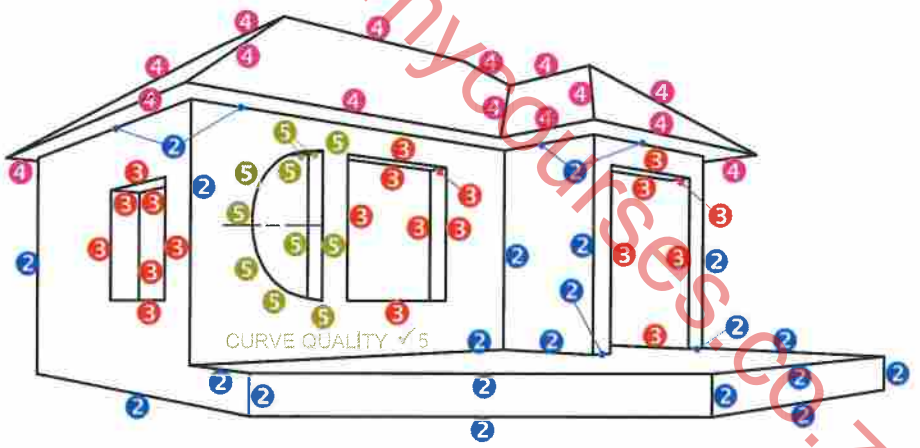


5. NOTE ON CORRECT HATCHING
DIFFERENT DIRECTIONS ✓5

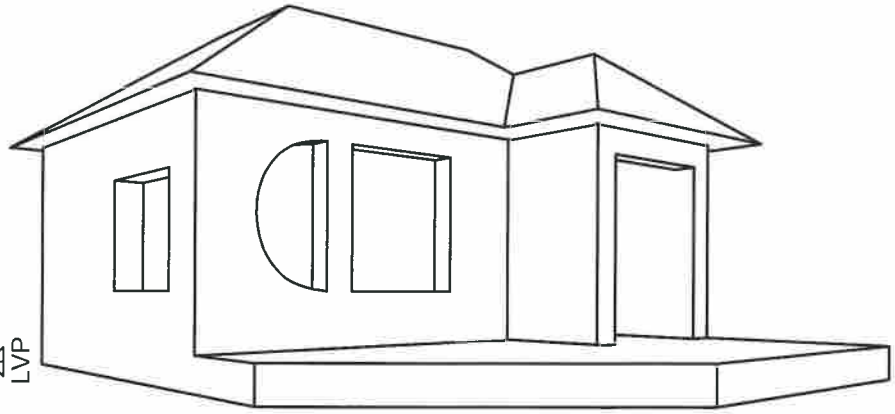
ASSESSMENT CRITERIA		
4	TRUE SHAPE	6 ½
5	CORRECT HATCHING	1
SUBTOTAL		7 ½

PAPER 1 QUESTION 2
GRADE 12
NOVEMBER 2022
MARKING GUIDELINES





SPI

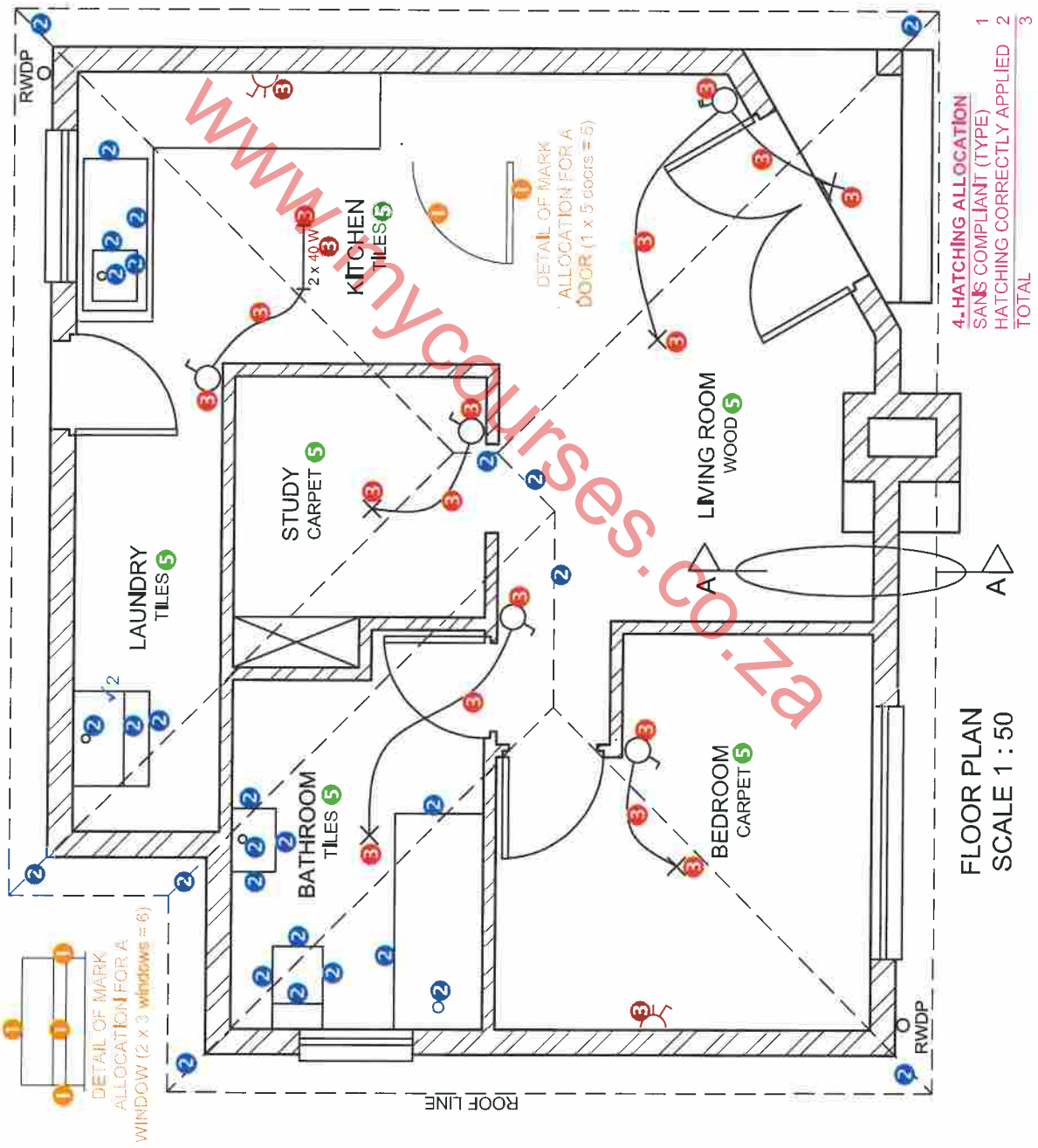


ASSESSMENT CRITERIA		
1	CONSTRUCTION	6
2	WALL + BASE	10 ½
3	WINDOWS + OPENING	10
4	ROOF	7 ½
5	ARC	7
	TOTAL	41

PAPER 1 QUESTION 3
GRADE 12
NOVEMBER 2022
MARKING GUIDELINES

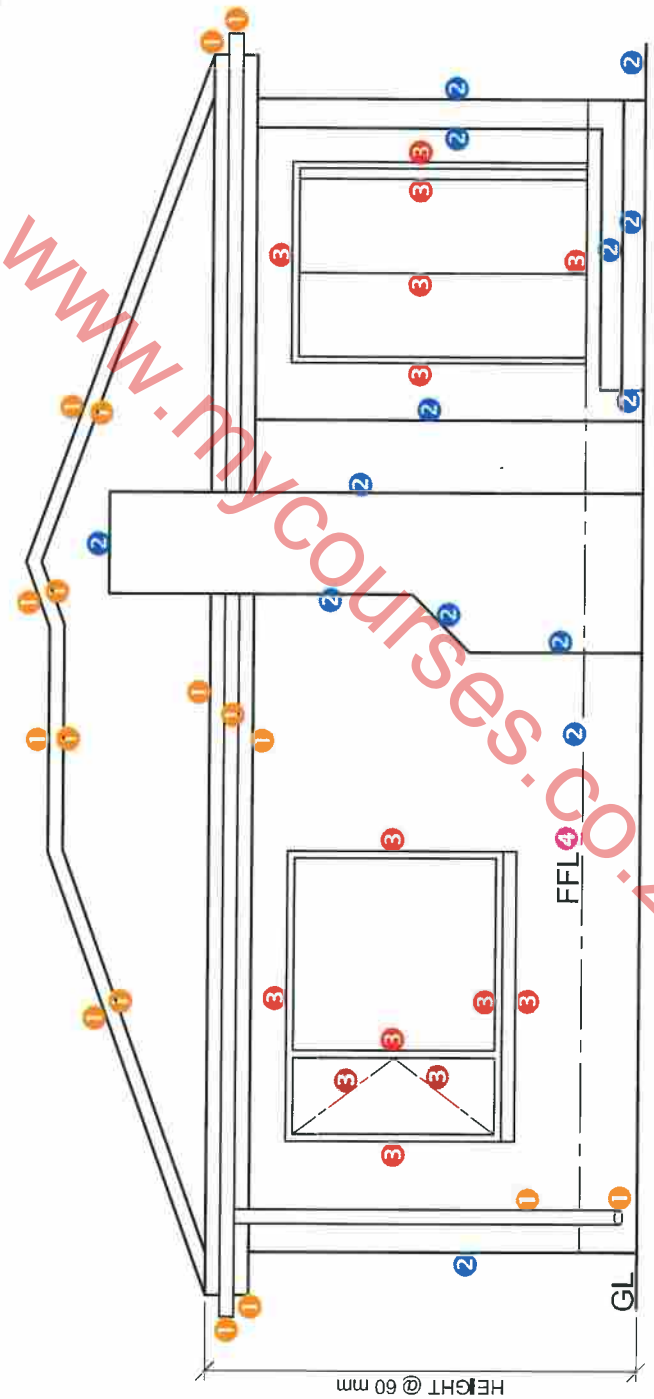
244,67

ASSESSMENT CRITERIA		POSSIBLE
FLOOR PLAN		
1	DOORS + WINDOWS	11
2	FIXTURES + ROOF LINES	15
3	ELECTRICAL	10
4	HATCHING	3
5	LABELS	3
	SUBTOTAL	42



PAPER 1 QUESTION 4
GRADE 12
NOVEMBER 2022
MARKING GUIDELINE

ASSESSMENT CRITERIA	SOUTH ELEVATION	
1	ROOF + RWDP	8 1/2
2	WALLS + STEP + CHIMNEY + FFL	7
3	DOOR + WINDOW	7
4	LABELS	1
	SUBTOTAL	23 1/2



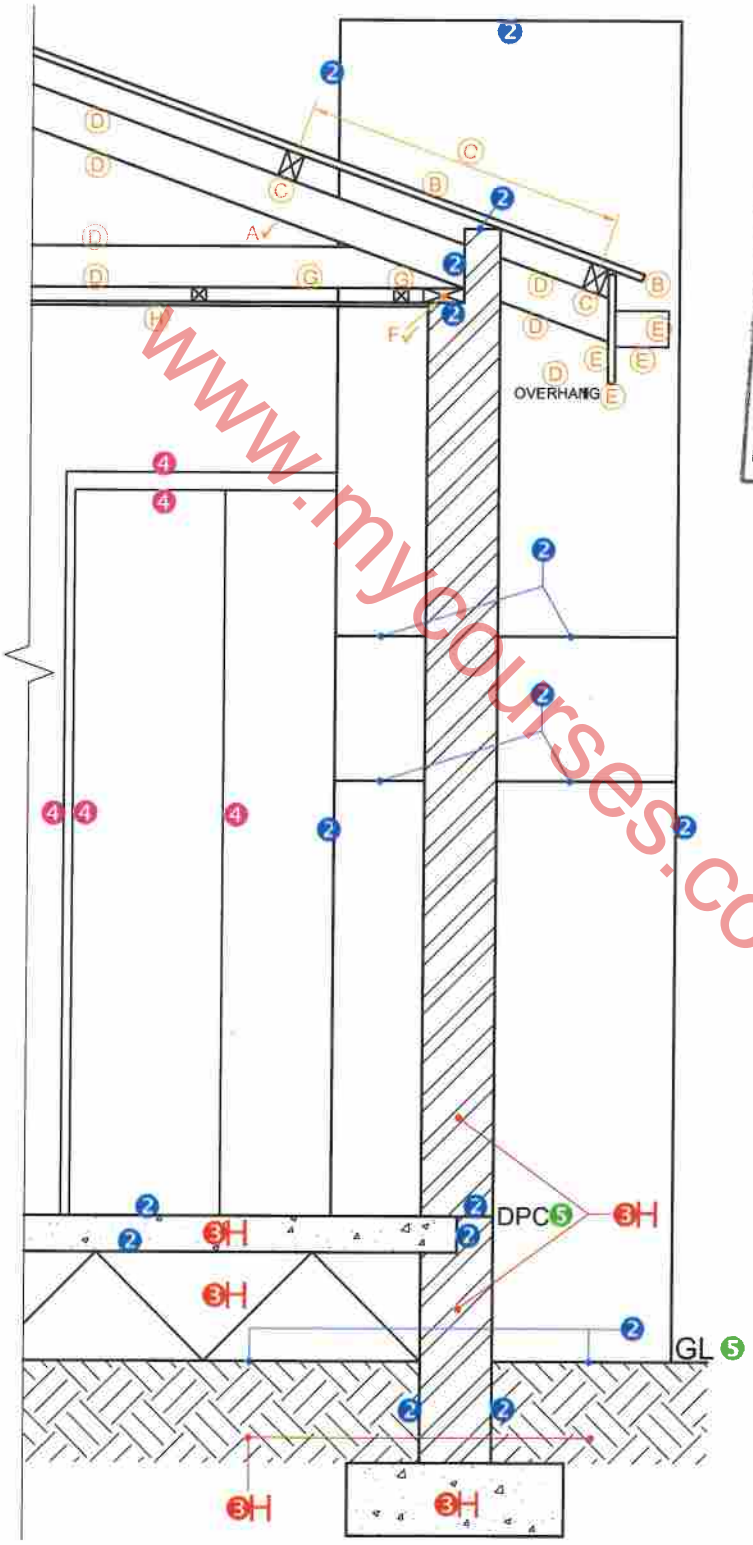
PAPER 1 QUESTION 4
GRADE 12
NOVEMBER 2022
MARKING GUIDELINE

1. MARK ALLOCATION FOR ROOF

A: ROOF ANGLE	1
B: ROOF SHEET	1
C: PURLIN + SPACING	1,5
D: TRUSS + OVERHANG	3,5
E: FASCIA BOARD + GUTTER	2
F: WALL PLATE	1
G: BRANDERING + SPACING	1
H: CEILING BOARD	0,5
TOTAL	11,5

3. HATCHING FOR ROUGH TIMBER

SANS COMPLIANT (TYPE)	0,5
HATCHING CORRECTLY APPLIED	0,5
TOTAL	1

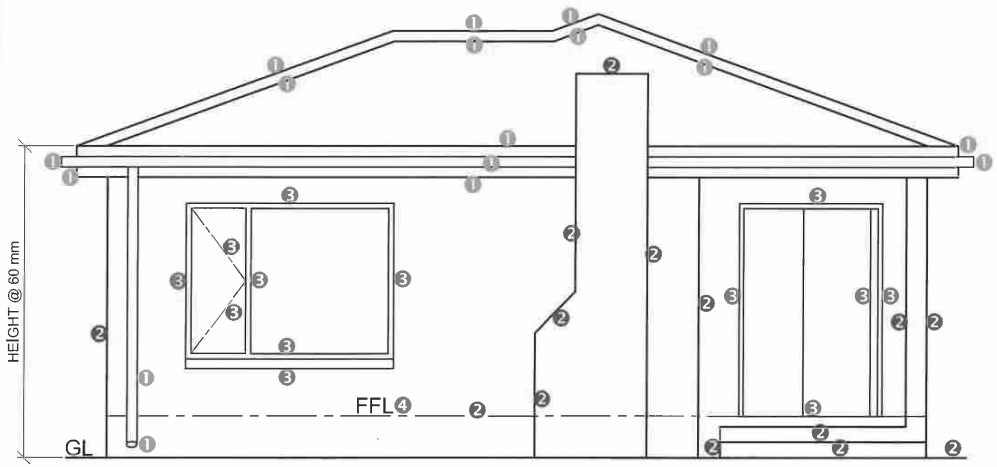


SECTION A-A
SCALE 1 : 20

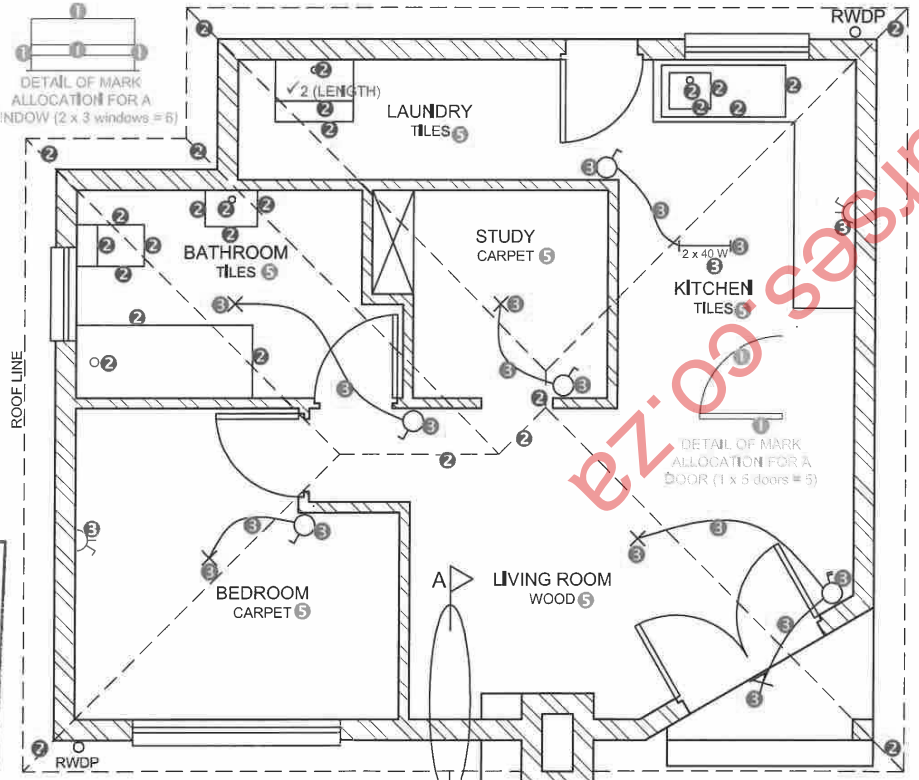
DEPARTMENT OF BASIC EDUCATION
PRIVATE BAG X895, PRETORIA 0001
2022 -11- 17
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

ASSESSMENT CRITERIA		
DETAILED SECTION		
1	ROOF DETAIL	11 ½
2	SLAB + WALL + CHIMNEY	8
3	HATCHING	3 ½
4	DOOR	2 ½
5	LABELS	1
SUBTOTAL		26 ½

PAPER 1 QUESTION 4
GRADE 12
NOVEMBER 2022
MARKING GUIDELINE



SOUTH ELEVATION 4



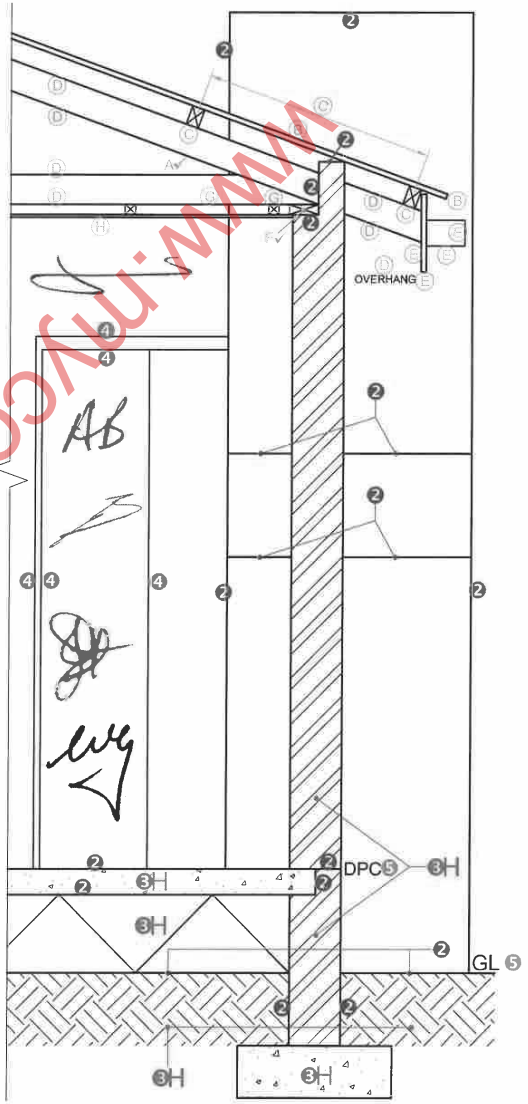
FLOOR PLAN
SCALE 1 : 50

1. MARK ALLOCATION FOR ROOF

A: ROOF ANGLE	1
B: ROOF SHEET	1
C: PURLIN + SPACING	1,5
D: TRUSS + OVERHANG	3,5
E: FASCIA BOARD + GUTTER	2
F: WALL PLATE	1
G: BRANDERING + SPACING	1
H: CEILING BOARD	0,5
TOTAL	11,5

3. HATCHING FOR ROUGH TIMBER

SANS COMPLIANT (TYPE)	0,5
HATCHING CORRECTLY APPLIED	0,5
TOTAL	1



SECTION A-A
SCALE 1 : 20

4. HATCHING ALLOCATION

SANS COMPLIANT (TYPE)	1
HATCHING CORRECTLY APPLIED	2
TOTAL	3

MARK ALLOCATION FOR SECTION OF ROOF	
A	
B	
C	
D	
E	
F	
G	
H	
TOTAL	

FOR OFFICIAL USE ONLY	
INCORRECT SCALE(S) USED	
NON-ALIGNMENT OF VIEWS	
VIEW(S) ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
TOTAL	

ASSESSMENT CRITERIA

FLOOR PLAN

		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	11			
2	FIXTURES + ROOF LINES	15			
3	ELECTRICAL	10			
4	HATCHING	3			
5	LABELS	3			
SUBTOTAL		42			

SOUTH ELEVATION

1	ROOF + RWDP	8 1/2			
2	WALLS + STEP + CHIMNEY + FFL	7			
3	DOOR + WINDOW	7			
4	LABELS	1			
SUBTOTAL		23 1/2			

DETAILED SECTION

1	ROOF DETAIL	11 1/2			
2	SLAB + WALL + CHIMNEY	8			
3	HATCHING	3 1/2			
4	DOOR	2 1/2			
5	LABELS	1			
SUBTOTAL		26 1/2			
TOTAL		92			
PENALTIES (-)					
GRAND TOTAL					