



EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE

Home of Examinations and Assessment, Zone 6, Zwelitsha, 5600

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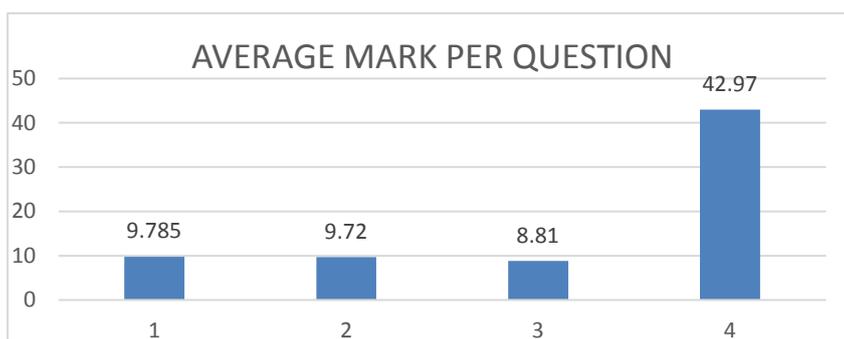
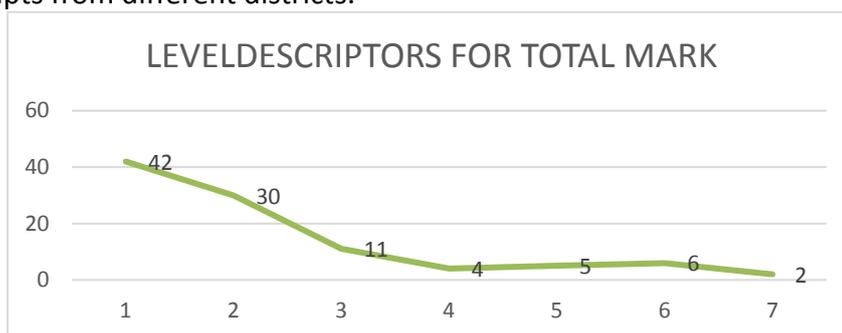
2018 NSC CHIEF MARKER'S REPORT

SUBJECT:		EGD (GRDS)
PAPER:		1
DURATION OF PAPER:		3
DATES OF MARKING:		30 Nov – 14 Dec 2018

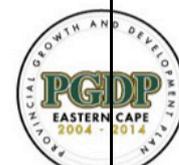
SECTION 1: (General overview of Learner Performance in the question paper as a whole)

The learner performance in the question paper varied from excellent to very poor. Learners who performed well in this paper had good time management skills, were well prepared for the paper and were able to interpret the examiners instructions correctly. Learners who did not perform well very often presented slovenly incomplete work and did not adhere to the instructions of the examiner. There were aspects in all four questions which the learners found challenging but also aspects which required very basic knowledge in order to obtain marks.

Given below is the performance of learners in all four questions taken from **100 randomly selected** scripts from different districts.



Learners do not read the instructions for each question.



When a question is developed the following levels of difficulty are incorporated:

30% lower order

40% middle order

30% higher order

The levels achieved above show that the learners sampled were in general not very well prepared.

SECTION 2: Comment on learners' performance in individual questions

(It is expected that a comment will be provided for each question).

QUESTION 1

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

(ANALYTICAL)

AVERAGE 33%

This question tested the learner's ability to read a site plan and title block and answer various questions pertaining to it. The question contained 21 questions of different degrees of difficulty.

This question was attempted by all learners.

The question was poorly answered

The lower order question viz. Q1 – Q12 was answered satisfactorily

The middle order question viz. Q13 – Q18 was answered poorly

The higher order questions viz. Q19 – 21 was answered poorly

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

Learners should always PRINT the answers neatly in capital letters to make them legible.

Question 1.1-1.6 required the learner to read information from the site plan and title block.

Any errors on these questions may be due to the fact that not enough exercises are done.

Question 1.7 (RE) knowledge of the meaning of abbreviations required RODDING EYE

Question 1.8 required the learner to convert the given dimension 2,2 m to mm i.e. 2200. The distance MUST NOT be measured and calculated. The drawing is not to scale. Conversion from m to mm requires the following calculation $2,2 \times 1000 = 2200$ mm.

Question 1.9 analysis of a symbol of a gate (passage between two buildings) the line indicates the gate and the arc shows the SWING of the gate.

Question 1.10 ELECTRICAL METER / WATT METER (P48 of SANS 10143)

Electricity meter (Watt- meter recording)	
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Question 1.14 compass directions and views need special attention the learner must keep in mind that the drawings are in first angle orthographic projection.

Question 1.15 HIDDEN LINES on a site plan show items to be removed. The RAMP is an existing structure that has to be removed for the new building to be erected.

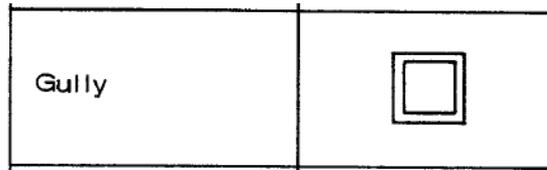
Question 1.16 the ARROW is on the MUNICIPAL SEWER LINE – refer to 2017 PAT – the arrow shows the direction of flow of the sewage.

Question 1.19 FACEBRICK (P44)

face brick



& GULLY (P47)



Question 1.20 is a simple addition calculation of data in the SURVEYORS REPORT, as well as taking into consideration and subtracting the two sliding gates that are NOT part of the fence.

BOUNDARY LENGTHS IN MILLIMETRES
AB = 22500
BC = 9850
CD = 26690
DE = 65050
EF = 49190
FA = 74900

$$\begin{aligned} \text{Perimeter} &= (22,5 + 9,85 + 26,69 + 65,05 + 49,19 + 74,9) - (12 + 10) \\ &= 248,18 \text{ m} - 22 \text{ m} \\ &= 226,18 \text{ m} \end{aligned}$$

Common mistake made was that the perimeter of the building and not the fence was calculated. Care must be taken with the adding of decimals and it is suggested to calculate to two decimals, unless stated otherwise.

Question 1.21 is a multiplication to calculate rectangles and triangles, and addition, it seems the learners have no experience in mathematical calculations. Candidates did not convert the dimension to metre before doing the calculation.

$$\begin{aligned} \text{Area} &= (7200 \times 24100) + (11100 \times 7200) + \frac{1}{2}(11100 \times 11100) \\ &= 173,52 + 79,92 + 61,605 \\ &= 315,045 \text{ m}^2 \end{aligned}$$

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

Use the approved textbooks for examples of analytical questions. The website **ecexams** has papers for 2008 to 2018 for June, September and November with memoranda, use these resources to teach your learners. Teachers must make use of the SABS and DBE approved textbooks to obtain the correct terminology and graphical symbols for the subject. The relevant SANS document and extracts from the Building Regulation can be obtained from the Subject Advisors.

The analytical question is an exercise in reading a drawing. Most of the answers are on the drawing. Teachers must make use of old examination papers to guide the learners in how to answer the analytical question. Exercises in the reading of drawings must be done to improve the learners' ability to find information and dimensions

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

The responses from learners indicate that many of them do not understand the terminology and language that is used in the paper.

The answers would reflect that they did not understand what was asked, e.g. names become dates, dimensions become line types, etc. This is possibly a result of the language barrier (learners are taught in their second language)

LEARNERS DO NOT READ THE INSTRUCTIONS ON THE COVER PAGE. And if they read them they do not do as the instructions require.

Cluster meetings for SBA meetings can also be used more productively for discussing the content of the exam paper and the report on the learners' responses. Weaker schools will benefit a great deal from this discussion. Many queries and challenges can be resolved by these informal discussions. The first cluster meeting of the year could be utilised as a memo discussion of this paper. This meeting must be held as early as possible in the first term to allow grade 12 teachers to go back and implement the suggestions made here.

QUESTION 2

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

Question 2 (Solid Geometry)

Average 24%

This question was very poorly answered by most learners.

The first problem is that learners do not plan the placement of the required views, causing them to run out of space. This question required the learners to project a sectional top view, sectional left view from the given views and a true shape, in FAOP. Many learners only copied the given views.

A lot of learners could not even reproduce the given hexagon. This is unacceptable for a grade 12 learner. Although the principle of marking with the mistake was applied, much of this would have been obviated if learners read the question and planned accordingly.

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

The reading/understanding skill of the learners was again a problem with this question. Learners do not read the question in full. Candidates do not know how to construct a hexagon, done in GR 10 term 1 under geometrical construction. The content is applicable through to GRADE 12 The given is not drawn correctly, the auxiliary view of the hexagon should be drawn first, the front

Geometrical construction	Grade 10	Geometrical (instrument) constructions, regular polygons and ellipses
	Grade 11	<i>The Grade 10 content remains applicable to all the relevant Grade 11 topics</i>
	Grade 12	<i>The Grade 10 content remains applicable to all the relevant Grade 12 topics</i>

view is projected from the auxiliary view. The left view should be projected and drawn to the right of the front view, this requires the learner to plan the layout of his page before starting the drawing.

The projection from the cutting plane is done with the aid of projection lines Learners must complete the projection lines to aid in the following of points, POINTS MUST BE LABELED to decide what point is visible and what point is invisible.

The instruction to draw invisible detail is ignored. The full invisible detail behind the cut surface must be shown.

The different views should be labelled although this is not a requirement of the question. There are penalties awarded for not following FAOP principles.

Constructions MUST NOT be erased.

Attention must be paid to the use of the correct line types. The marker must be able to follow the construction lines to check if points are projected correctly.

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

Learners must complete the projection lines to aid in the following of points, POINTS SHOULD BE LABELED to decide which points are visible and which points not visible.

The instruction to draw invisible detail is ignored.

The different views should be labelled although this is not a requirement of the question

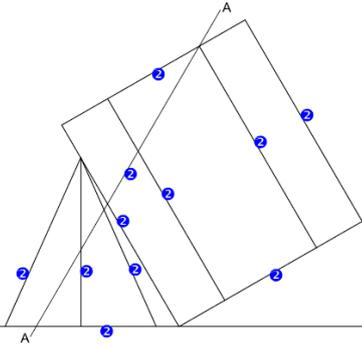
Constructions should not be erased

Attention must be paid to the use of the correct line types

It is evident from the learner responses and line quality of the drawings that a large amount of learners are not fully equipped with drawing instruments. The line quality is often slovenly presented and lines are drawn without T-squares and the necessary 45 and 60 degree set squares. As precision is a fundamental of this subject, a lot of marks are lost through this. A concerted effort has to be made to ensure that every learner has the necessary equipment for this subject.

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

The fact that so many learners did not even attempt this question makes one wonder if this part of the syllabus have been covered in gr 12.



The given views and the construction of the triangle and the hexagon as well as the placement of the top view would represent 10 marks for this drawing. The given is the lower level work in this question.

Teach the principal of cutting planes correctly. Include exercises cutting through the base of prisms and pyramids

As a guideline in planning a daily lesson. The time could be utilised as follows:

7 min for teaching the concept

36 min for drawing the exercise in class

Hand in work after the lesson - completed or not

QUESTION 3

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

Question 3 (perspective)

Average 24%

The learner's responses varied from excellent to very poor.

Learners who did poorly often only managed to determine the LVP and RVP for 6 marks.

Even here accuracy was lost due to a lack of proper equipment which left them with even less marks.

In this question, there were many more learners who under-performed rather than learners who excelled.

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

This question was poorly answered in most cases because of the following reasons.

The learners do not use correct approach to objects against the PP and object behind the PP

Some learners still do not know how to determine the RVP and LVP. This is not acceptable for a grade 12 learner as this principle is taught in grade 11.

Most of the learners still do not know how to obtain the height and position of elements behind the PP.

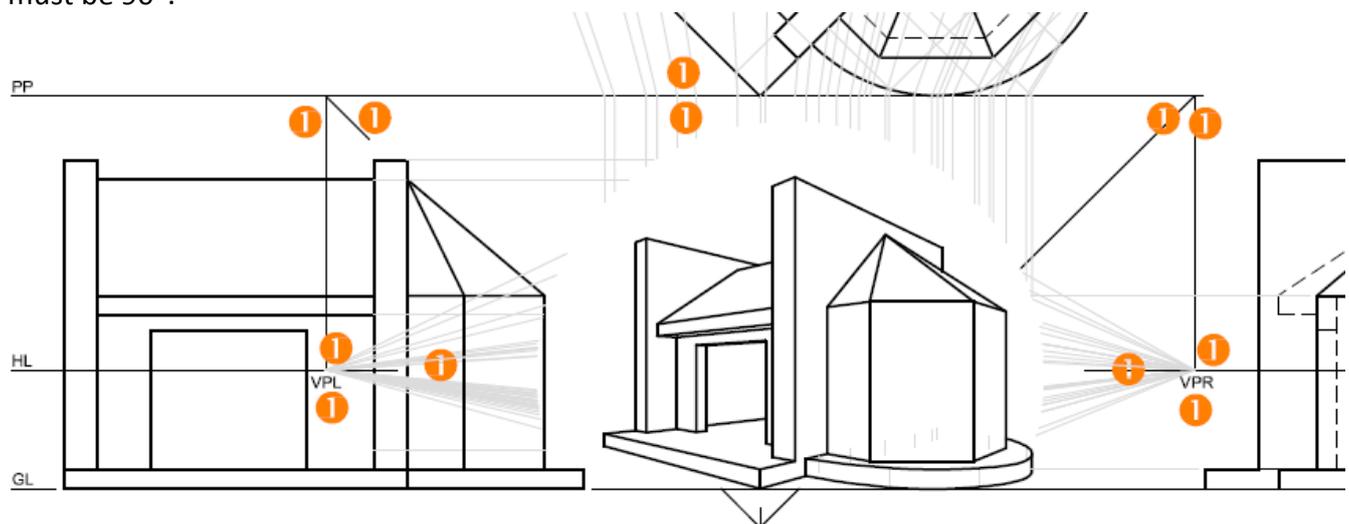
The 5 ½ marks for the construction of the arc on the right of the building was not attempted by most and it is clear that a lot of learners have no idea how this is done.

Perspective views is asked in every exam and learners should be well prepared for it.

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

Learners must align the drawing to the ground line i.e. the T-square must be on the ground line before the page is fixed to the drawing board.

Candidates must show the method for finding the LVP and the RVP. The vanishing points are determined by drawing lines parallel to the sides of the object from the SP to the PP. The included angle must be 90°.



From the intersect on the PP a line is drawn perpendicular to the HL, the intersect on the HL is the vanishing point, LABEL the vanishing point LVP and RVP.

Construction lines from top view to picture plane and from picture plane to drawing must be shown.

Although line quality is not penalized, care must be taken that the drawing is readable.

The method for determining the intersections on an arc or curve must be clear. Show division of the arc

in at least 1 or 2 views. When drawing circles, the construction should be used in the view that is placed on the GL as well as the top view. The intervals should be projected to the wall in the top view. In drawing perspective two methods can be used: the block method and the height line method. The block method can be used for the walls and windows. The building can be found with the block method.

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

This question contains a large number of construction lines that must not be erased as valuable marks can be lost. If the candidate determines the vanishing points incorrectly, he/she only loses the marks for the vanishing points. The rest of the question is marked according to his/her mistake. These construction lines assist the markers if the drawing is slightly inaccurate or even incorrect. Particular attention must be paid to accuracy and neatness. Learners must be taught a variety of possible starting points for these types of drawings. Arcs and circles on vertical and horizontal surfaces have to be practiced.

More than one point touching the ground line seemed to be challenging to the learners.

The only way to improve the marks in this question is by working consistently throughout the year.

There are many examples available from past exam papers that could be used to entrench the principles required to draw good accurate perspective drawings.

Teachers must make sure that learners know how to plot points that do not touch the picture plane.

Teachers must make use of previous exam papers to enlighten learners on how the question is asked and what is expected of them.

More exercises in perspective must be done during the year to help the learners to improve on their marks.

More revision is required on exercises with points not touching the picture plane. This requires the use of the height line method

QUESTION 4

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

Question 4 (CIVIL)

Average 43%

The entire question or part of the question was attempted by all candidates. The performance of the candidates varied from fair to very good. Unnecessary marks were forfeited simply because candidates do not read the question paper properly before attempting the question. Learners must be made aware that there are always notes to be read and schedules to check. If the candidate did not read the question properly, the incorrect scale was used for the sectional elevation in many cases. It can be clearly seen from these mistakes that attention was not given to the notes and schedules. This question consists of three sections. Completing the floor plan, drawing a west elevation and a sectional elevation through a cutting plane.

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

Learners lost many marks through not reading the question properly. In this question, you cannot assume what is required by the examiner - you have to read the question. By not doing so, candidates will lose many marks. The main reasons why learners performed badly in this question are:

FLOOR PLAN

(1) Labels

Inserting the room designation and floor finish was often neglected. In many cases, only the one component was given, either the room designation or the floor finish. Learners were also penalised for not printing neatly in CAPITAL LETTERS.

(2) Electrical

The graphical symbols must be used from the given legend and drawn to scale

- incorrect symbols were used at the designated points
- fluorescent lights were drawn without it's designated wattage as indicated on the legend the electrical wiring must not be drawn as a straight line but curved freehand. No arrows must be added.
- the switch socket outlets were often omitted.
- the symbol for the ceiling light was often incorrect.

(3) Windows & Doors

Marks were deducted for not being the correct length, window frame incorrectly positioned and not showing the window sill.

- In some cases the swing of the doors were not shown or done free hand.

these similar mistakes occurred last year.

- most learners only fill the space without calculating the actual width of the window.

(4) Hatching

Hatching was not always compliant with the SANS 10143 document.

Often done freehand and mechanical representation was used. Some of the walls were only partially hatched.

(5) Fixtures

The exact graphical symbols must be used as specified in the question paper and it must be drawn to the correct size

the symbols are marked either correct or wrong

Consult the SANS 10143 document for the correct graphical symbol.

No marks were awarded if the given graphical symbols given in the question paper was copied.

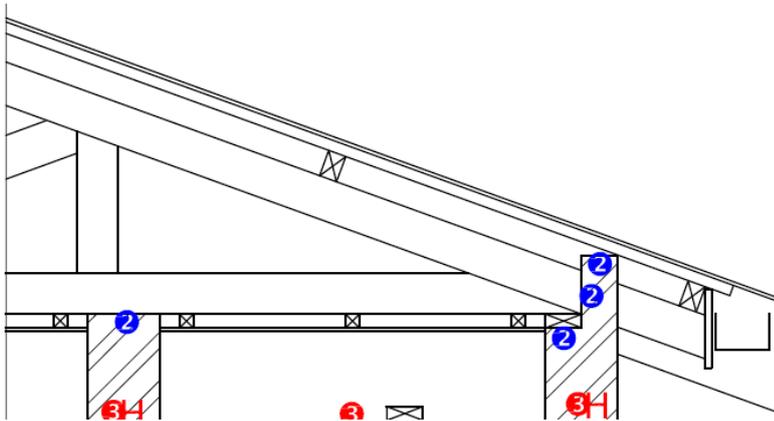
WEST ELEVATION

The instructions on the front cover clearly states that first angle principles must be used. However, candidates seem to ignore this instruction, with the result that they are penalized for incorrect alignment or rotation of views.

Common mistakes that were observed are:

- (1) The roof height in many cases was incorrect. In spite of the fact that the roof height from ground level is given.
- (2) The rain water down pipe was often not drawn.
- (4) The window was often incorrectly placed with no window sill and inaccurate.
- (5) The FFL line often omitted and incorrect line type is used.
- (6) the roof cap was left out most of the time
- (7) The required labels were very untidily placed anywhere near the view. Labels must be placed in the appropriate places. The correct abbreviation must be used and printed horizontally so that it is legible.
- (8) Lines for the walls for the veranda were not drawn.
- (9) BREAKLINES MUST NOT BE USED ON THE COMPLETED VIEW

SECTIONAL ELEVATION



This elevation had to be drawn to a scale of 1:20. Many learners lost marks for using an incorrect scale.) The following mistakes were commonly made.

- (a) the roof pitch is set at any angle but the given 20°
- (b) the purlins spacing and size was incorrect
- (c) the wall plates are not shown

- (d) the fascias and gutters and bargeboard were often omitted
- (e) Incorrect and incomplete roof truss
- (f) the roof sheeting thickness was drawn as a single line and not a double line.
- (g) Brandering and spacing incorrect
- (h) The placing and inserting of required labels was poorly, untidily done and in the wrong place.
- (i) The beam filling on the top of the outer walls were mostly omitted
- (j) The inner wall does not touch the tie beam
- (k) The lintel is a single lintel
- (l) hatching not done according to SANS 10143

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

FLOORPLAN

Hatching for brickwork must be done with instruments.

Symbols of fixtures must be drawn with instruments to the given dimensions and according to SANS 10143, The fixtures must be symbols (to scale) not copies of the fixtures given in the paper.

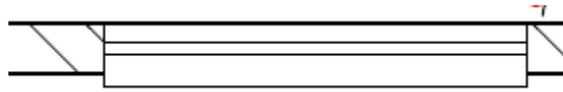
Any extra features on the symbols will be penalized

Care must be taken with the placement of the WC only the cistern against the wall the other sides about 200 mm from wall. Generally, a WC is not placed against an inside wall.

ELECTRICAL SYMBOLS	
n x 40 W	

Electrical symbols:

The symbols given in the paper must be used. The wiring connection from switch to fitting must be an arc and may be drawn freehand, without arrows



Windows:

The given dimensions in the schedule should be scaled and used for the windows. The opening left in the walls where the window is to be installed is larger and the marks are given for the sides of the windows. The frame must be centred in the wall and the sill must extend over the wall.

Doors: for doors, a single line is sufficient to indicate the door, the swing of the door must be drawn using a compass. The rebate of the frame indicates the direction for the door to open.



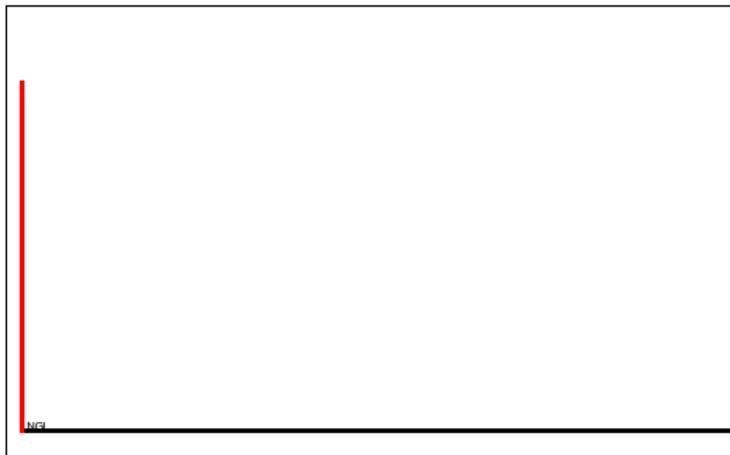
Sliding doors can be drawn as per example.

WESTVIEW

The WEST VIEW label is required

Roof:

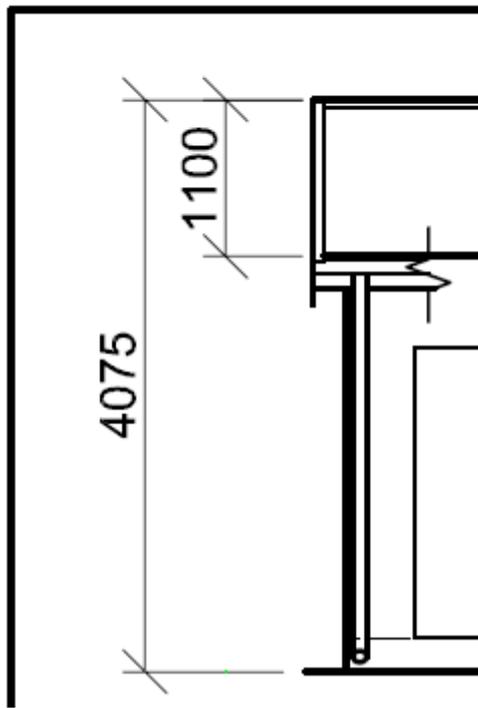
A practical method to find the heights



Draw the ground line. Draw a line perpendicular to the ground line close to the border.

Engineering Graphics

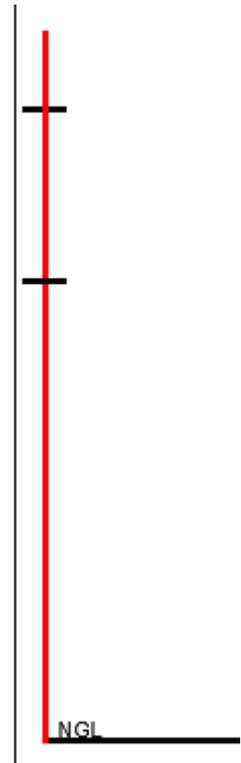
From the diagram take the given dimensions and scale:



$$4075 / 50 = 81,5$$

$$1100 / 50 = 22$$

Mark these dimensions of on the vertical line



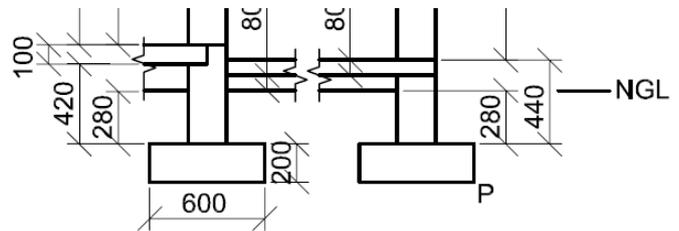
From the dimensions for the wall detail take dimensions and determine the scaled dimensions and mark of on the vertical line (you can write the dimensions to keep track)

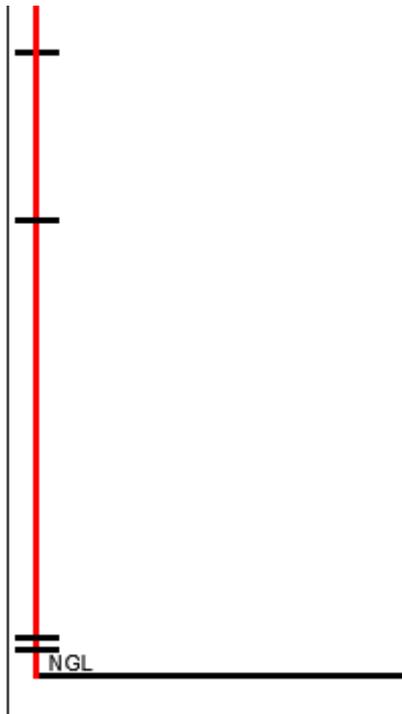
From GL to top of the veranda: $440 - 280 = 160$

$$160 / 50 = 3,2$$

From GL to indoor FFL: $420 + 100 - 280 = 240$

$$240 / 50 = 4,8$$



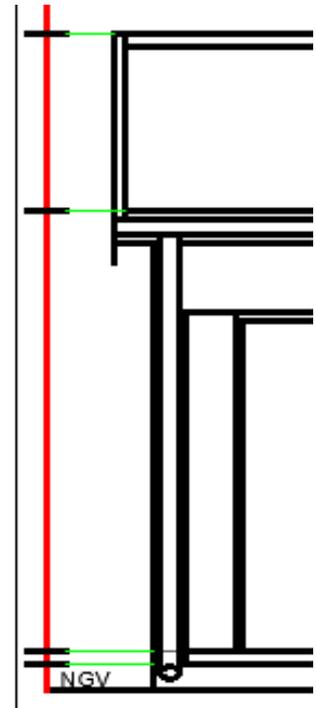


Use the height to transfer to the WEST VIEW

The important dimensions to determine the roof are given in the incomplete west view with information from the floorplan. The width of the fascia board and the detail of the gutter are given. Care must be taken when scaling dimensions, a 1mm error in dimensions is permitted.

The rain water down pipe is shown in the floorplan and is visible on the west view. The dimensions are provided in the

data sheet. Please show RWDP elements without break lines,



learners will know to complete the element e.g. RWDP or barge board.

Walls, Veranda, Ground line

The veranda walls that join the outside wall of the house must be projected from the floorplan. The steps on the veranda and under the visible door must be projected from the floorplan. The finished floor level is not drawn or the incorrect line type is used the line is a chain line similar to a centreline. The dimension for the height of the FFL is not scaled correctly. The Ground line (GL) and the Finished Floor Level (FFL) are not labelled

Doors and Windows

These two features must be projected from the floorplan, the window is drawn by the candidate and a concession for the incorrect size in the west view is granted but the window in the floorplan is penalized. The frame of the door and window can be single lines.

All drawing must be done with instruments, free hand may be used for substructure hatching as well as electrical symbols. Any other freehand work will NOT be assessed.

Teachers must make use of the SABS and DBE approved textbooks to obtain the correct rules of sectioning and hatching.

SANS 1-10143 and relevant sections of the NBR must be given to learners to study. Information can be requested from the subject advisor.

SANS symbols must be drawn to scale using the information in the question.

The SANS symbols must be absolutely correct for marks to be allocated. Pay specific attention to the position of the outlet. If there are extra lines on the symbol NO marks will be allocated.

Electrical symbols may be drawn in neat freehand. Do not draw the symbols to touch the walls.

Learners must practice using scale. Elevations will be the same scale as the floor plan, usually in examinations it is 1 : 50. Elevations must be aligned to the floor plan using projection lines for the position of the walls and the roof line. Use the heights given in the information sheet to the correct scale.

The section view will be done to a scale of 1 : 20. The detail at the lintel top need not be drawn, a straight line is sufficient.

The roof detail should be done as per the schematic. Pay attention to the position of the parts (queen post) of the roof.

The roof overhang is measured from the outside of the wall to the end of the rafter.

The branding distance is measured from the inside of the wall, 450 mm from the wall to the centre of

the brandering. The first brandering is 75 mm from the wall, the purpose of this brandering is to fix the CORNICE

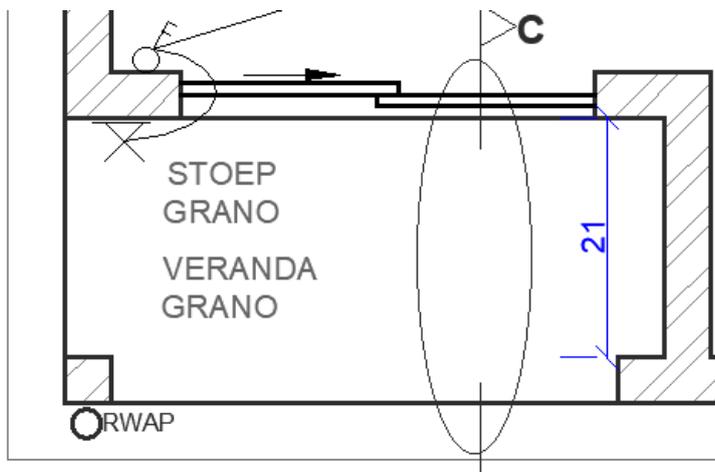
The west view should be drawn to the required scale (normally 1 : 50 or as indicated by the question). Pay close attention to the given dimensions in the data sheet. The information aids the learner in finding the finished floor level as well as the position of the roof, height of doors and windows and the fascia board.

The dimensions of the doors and windows are given, projection from the floorplan would give the learner the position of doors and windows in the west elevation.

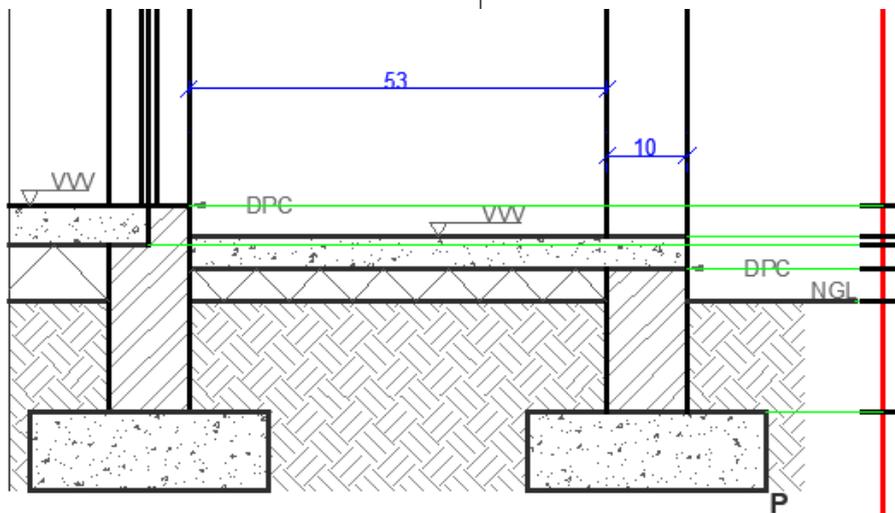
Although the line type for FFL is given in the incomplete west view, learners use a continuous line and not a chain line

The position of the west view label is neglected and done by learners as an afterthought, generally labels for views are inserted below the relevant view as per the schematics.

DETAILED SECTION



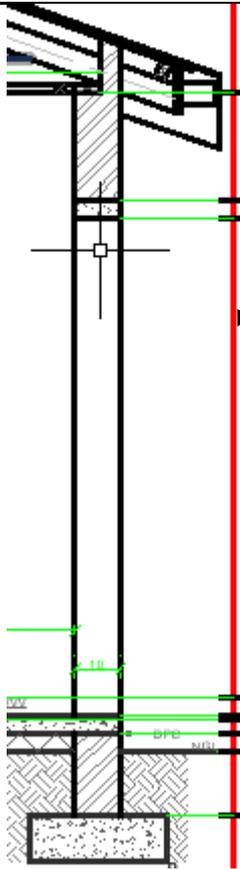
Problem - distance between the walls
 In the 1 : 50 top view measure the inside distance between the walls. Calculate $21 \times 50 / 20 = 53$



The 53 is used as indicated.

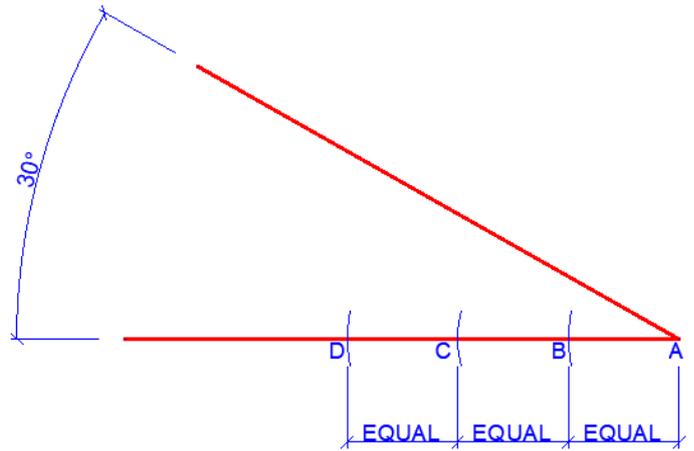
NOTE: the position of the labels

The height of the elements of the detailed section can be found in the same way as the heights of the WEST VIEW

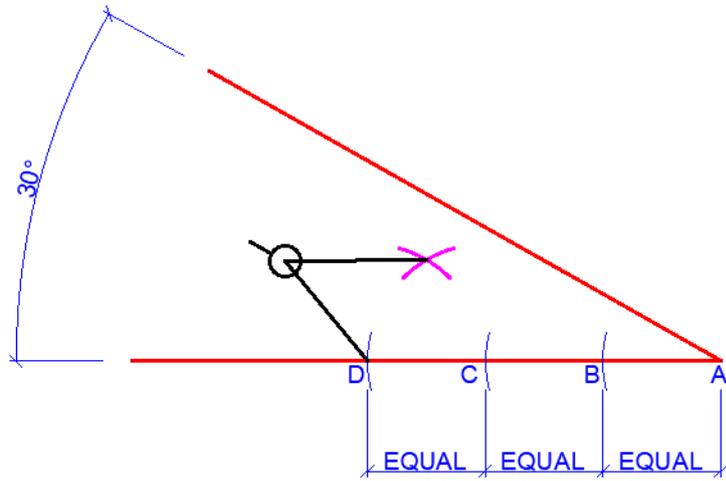


Height line to transfer measurements

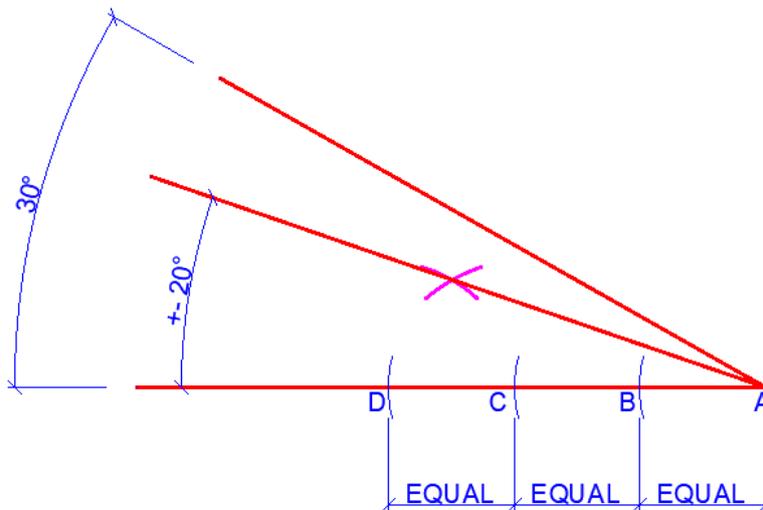
If the candidate does not have a protractor to draw the 20° roof angle the following construction can be used



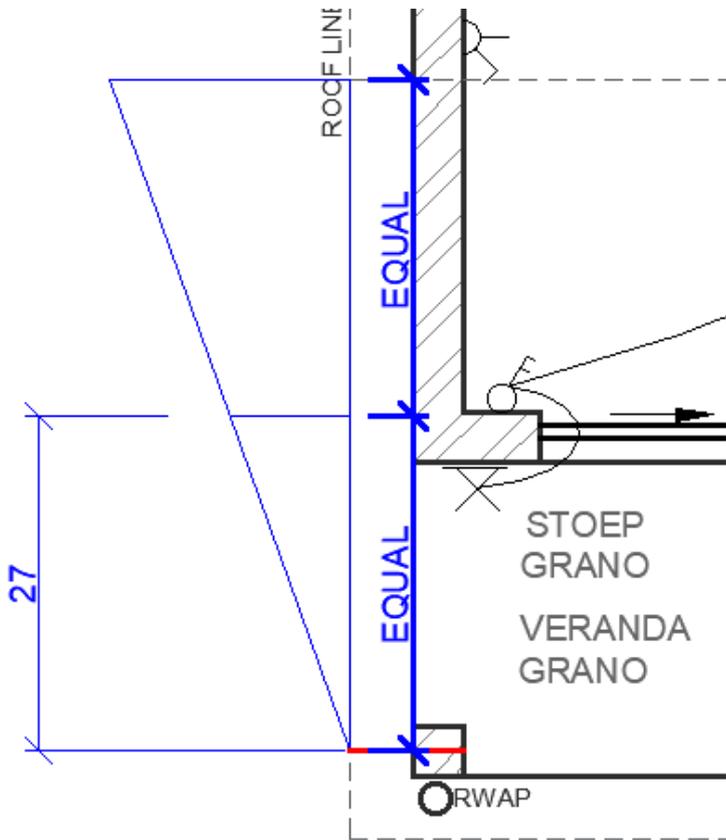
Set compass to DC and draw a vertical bisector



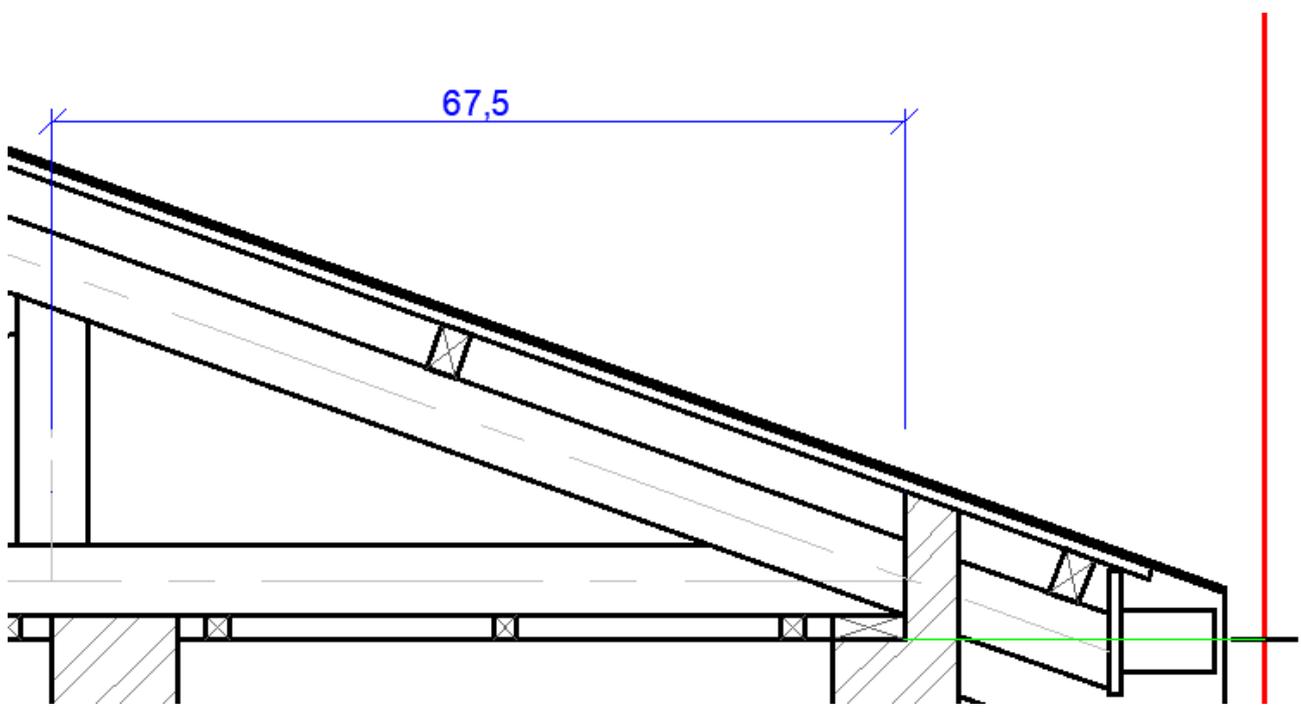
From A to the intersection of the two arcs draw the line that would be at an angle of approximately 20°



To find the position of the queen post in the roof truss the plan must be used to find the position.



$$(27 \times 50) / 20 = 67.5$$



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

First angle principles must be used when answering this question. The sectional view must be viewed in the direction of the cutting plane arrows and the correct scale must be used. Learners often don't know how to interpret a cutting plane. Attention must be given to correct sizes and placement of all components especially on a scale of 1:20. There are penalties for not adhering to this.

Electrical symbols may be drawn in neat freehand.

Substructure hatching may be done in neat freehand.

Labelling of rooms and finishes is not done neatly, text must be either horizontal or vertical in capital letters only. Labelling of views must be neat.

Pay attention to the neat connection of electrical symbols to wiring

Teachers must emphasize that the various parts i.e. fixtures and all roof detail must be according to the scale given.

Many of the components were out of proportion.

Teachers must make use of old examination papers to guide the learners in how to answer the civil question.

Teachers must make sure that the learners understand the rules of sectioning and do relevant exercises to improve their understanding.

PLEASE NOTE

Most of the mistakes made by the candidates mentioned above were also made in previous years. It appears as if the suggestions made in this report is not implemented by the EGD teachers or conveyed to the learners. Teachers and subject advisers must please scrutinize this report thoroughly and make sure that it is implemented.

As a guideline in planning a daily lesson. The time could be utilised as follows:

7 min for teaching the concept

36 min for drawing the exercise in class = ALLOTTED TIME FOR A 40 MARK QUESTION

Hand in work after the lesson - completed or not