EXAM GUIDELINES FOR ENGINEERING GRAPHICS AND DESIGN

Please note that these are merely guidelines for preparing for the examinations, they do not in any way suggest that you concentrate on any particular aspect of the curriculum.

PAPER ONE:

The focus in paper one is on the Civil aspect of the curriculum.

QUESTION ONE: CIVIL ANALYTICAL

This question focuses, amongst other things, on your ability to read and interpret Civil Drawings. Therefore it is important for you to go through all aspects of the Civil content including Grade 10 and 11 work as well.

- All aspects of SITE PLANS
- Roofs and related aspects
- Walls
- Foundations
- Sewer and Storm water Drainage
- All conventions related to Civil drawings an specified in *SANS 0143*
- Calculations such as area and perimeter.

This is a question where you can score good marks and you should not spend too much of time doing this question.

QUESTION TWO: INTERPENETRATION, DEVELOPMENT AND TRANSITIONS

INTERPENETRATION AND DEVELOPMENT

In this question it is very difficult to say which aspects are going to be in the examinations, so it is important that you into the examination room thoroughly prepared.

Remember that the branch pipe may be at an angle of 90° to the main pipe or it could be inclined.

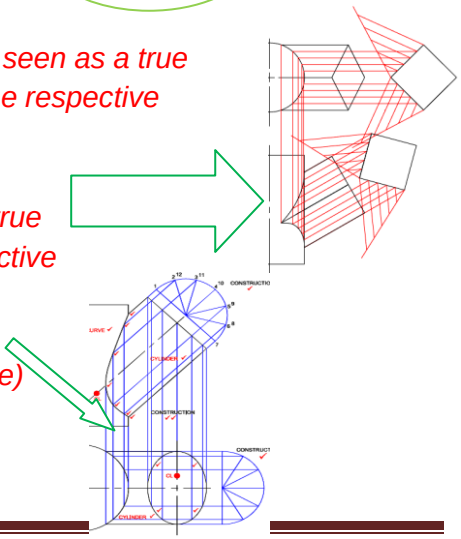
Try to cover exercises from the following combinations.

- Cylinder to Cylinder
- Prism to Cylinder
- Prism to Prism
- Cylinder to Prism

CHECK THE ASSESSMENT CRITERIA ON THE ANSWER SHEET AND MAKE SURE ALL THE REQUIRED ASPECTS ARE COVERED IN YOUR ANSWER

Hint

- *Draw the given views – marks are generally allocated for this.*
- *Always try to draw a view / auxiliary where the branch pipe is seen as a true shape against the main pipe. This helps to locate points on the respective surfaces avoiding confusion and saving time.*
- *Label all points of penetration and surfaces.*
- *When a prism penetrates a cylinder – divide the sides of the true shape (auxiliary view) of the polygon and project to the respective views to obtain the points of penetration.*
- *When a cylinder penetrates another cylinder – divide the true shape (auxiliary view) of the branch pipe (which will be a circle) into 12 equal parts and project to the respective views.*

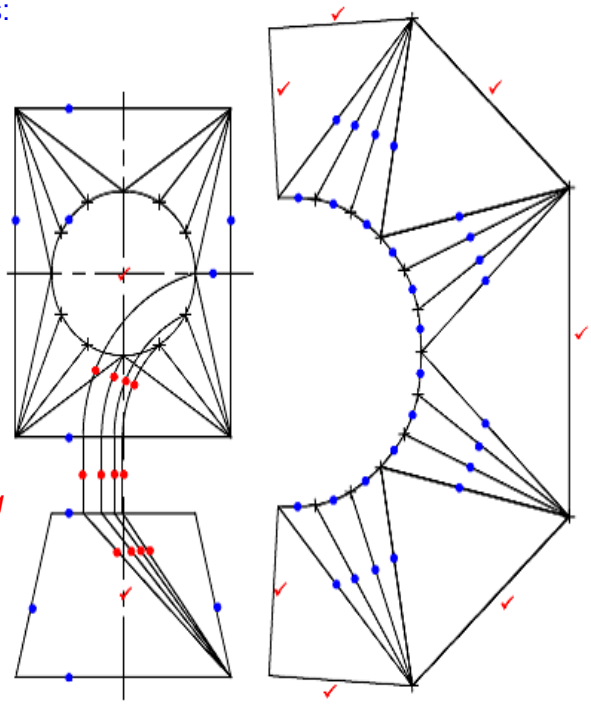


TRANSITIONS AND DEVELOPMENT

The key to answering this question is the ability to find the true length of all the fold lines in the transition and being able to label them appropriately.

Try to cover sufficient examples from the following combinations:

- Square to Square
- Square to Round
- Rectangle to Round
- Cones (truncated)
- Other geometrical shapes
- Include examples where the upper polygon is off-set.



Hint

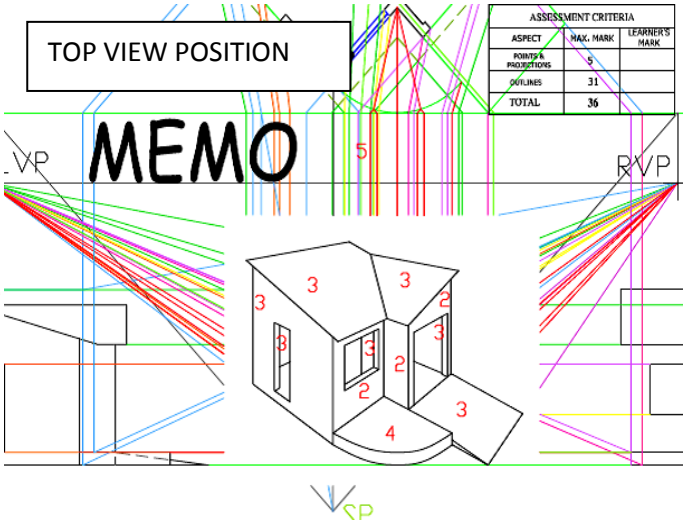
- *Draw the given views and show the fold lines – marks are generally allocated for this.*
- *Show centre line or lines of symmetry.*
- *Label all points in the front view and top view (depending on which views are given and required) – including the fold lines.*
- *Find the true lengths and label them appropriately – this helps when drawing the development as it saves time and avoids unnecessary confusion.*
- *Start the development with the side opposite to the seam.*

QUESTION THREE: PERSPECTIVE DRAWING

Most perspective drawings are Civil related. As there is no telling whether it will be Single Point or Double Point Perspective drawing it is advisable that you also revise through Grade 10 work on Single point Perspective Drawing - covering circles and arcs and parts of the object that are situated behind the Picture Plane.

Areas of Concern - Two Point Perspective Drawing

- Drawing of circles and arcs in perspective – work through examples that have the circle or arc in the front, left and top view positions.
- Determining VPR and VPL – show constructions and label the VP's appropriately .
- Points that are situated behind the Picture plane often do not reflect the correct – try using height lines for this.



QUESTION FOUR: CIVIL DRAWING

This question covers almost all of the Civil aspects of the curriculum.

Work through examples covering the following aspects:

- Floor Plans – conventions for walls, sanitary fitments, doors, windows, electrical
- Elevations - windows, doors, roof, rainwater goods, roof covering
- Sectional Elevation – roof trusses, roof coverings, sub-structure, windows, doors, ceiling

This question involves drawing the floor plan and elevation/sectional elevation from the foundation through to the roof.

Virtually all aspects of Civil will be tested in this question. This is a main question in the paper as it carries the bulk of the marks.

A thorough understanding of construction theory and the associated conventions will assist you in this question.

Work through examples covering the following aspects:

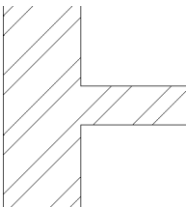
- Floor Plans – conventions for walls, sanitary fitments, doors, windows, electrical
- Elevations - windows, doors, roof, rainwater goods, roof covering
- Sectional Elevation – roof trusses, roof coverings, sub-structure, windows, doors, ceiling

Common errors by learners in the examinations:

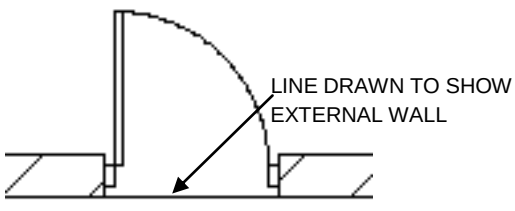
FLOOR PLANS:

1. Conventions for walls are incorrectly done. This is not mechanical drawing where hatching is shown as single lines at 45°.
   When common bricks are used double lines are drawn at 45° and when face bricks are used then between two sets of double lines a single line is drawn.

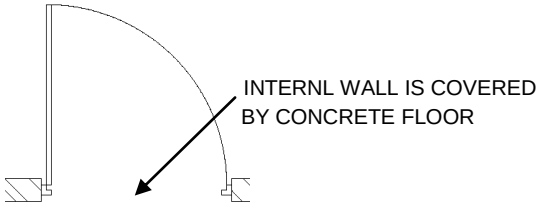
   There has to be a clear distinction between the thickness of the internal non-load bearing walls and the external load bearing walls.



2. Conventions:
   Doors – the profile and thickness of the door including the door swing must be shown.

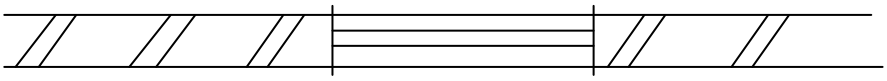


EXTERIOR DOOR



INTERIOR DOOR

Windows – double lines for the windows centrally positioned on the thickness of the wall.



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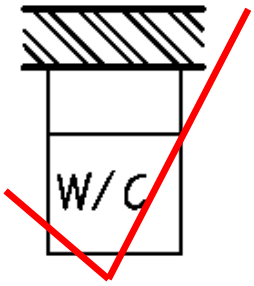
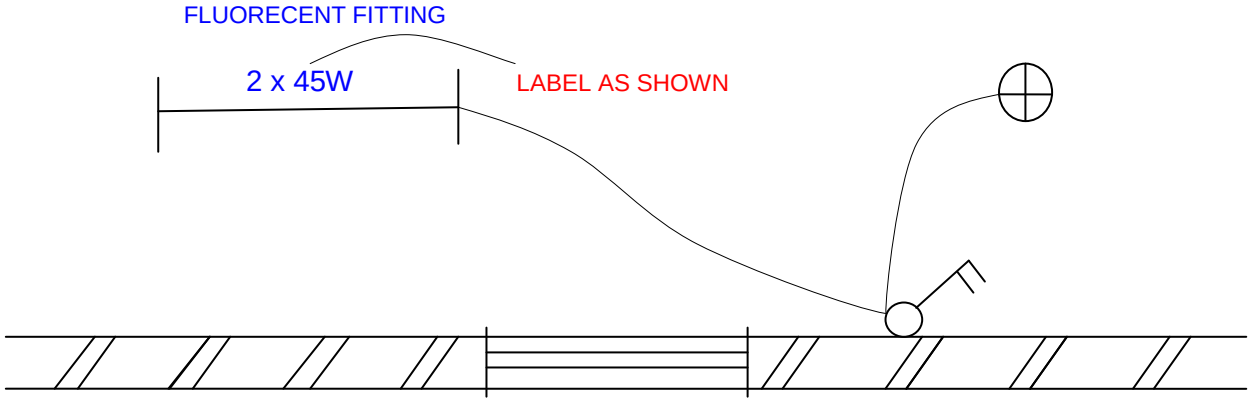
3. Conventions for fitments:
   All drawings in the exams are drawn using instruments – for instrument drawings there are conventions that must be used to show sanitary fitments as per SANS 0143. Drawing computer generated takes up a lot of valuable time and is an incorrect practice. Eg.



Remember to label each of the sanitary fitments with the correct abbreviation.

4. Conventions for Electrical Fittings
   Do not only show the switch and light bulb - show the electrical wire/cable joining the switch and the switch and light bulb.



5. Show the roof line and the position of the rain water downpipe (rwp).

6. Finally label each room with the appropriate floor finish.

   Label the elevation and indicate the scale.

   Show the north symbol.

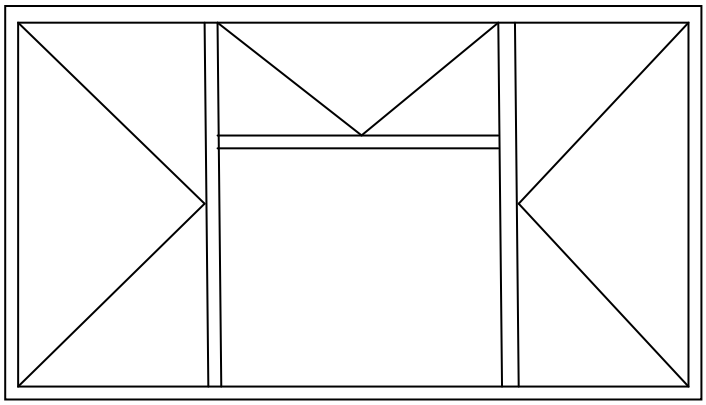
   Check by ticking off against the assessment criteria that all aspects that are required are done in your answer.

ELEVATION AND /OR SECTIONAL ELEVATION

Common errors when an outside elevation is required.

1. Failure to show the finished floor level (FFL) and the natural ground level (NGL).

2. The thickness of the window and door frames are neglected – show the opening fanlight of windows ie. Whether they are left side hung /right side hung/ top hung.



3. Roof Structure
   Barge boards and facia boards ore often omitted.
   Show the downpipe and the gutters. Label the downpipe as (∅ 100 rwp)
   Show the roof covering and the ridge cover.

Common errors when a sectional elevation is required

1. Show the DPC – this is positioned between the external wall and the floor slab.
2. Hatch the foundation wall.
3. Facia board and gutter must be shown.
4. Slab level is generally 150 mm from the NGL.
5. At window – show the lintel over the window and door.
   Show the reveal on either side of window frame.
   Show the window sill and the mortar filling below the window frame.
   Show the DPC below the window.
6. Show wall plate on the inside of the external wall.
7. Show trusses and the connector plates.
8. Show the roof covering and the battens or purlins.
9. Complete the beam filling.
10. Complete the ceiling showing the branderings in position.
11. Provide labels and a caption for the elevation.