

200 Marks - 180 minutes - First Angle Orthographic Projection

Question 1 - Civil Analytical - Site Plan: ± 30 Marks ± 27 Minutes

- Know the abbreviations used on a Site Plan and other Civil Drawings: MH, BL, IE, RE, IC, ST, VP, G, IC, RWDP, BIC, etc.
- Determining distances on a Site Plan in Metre or in Millimetres.
- Know the different colours used on Site Plans, Elevation and Drainage Plans that represent types of work (material) to be conducted, or the identification of building materials used.
- Remember that corner heights are given in Metres. Ensure that you understand what Contour Lines are and how to determine different heights on a given Site Plan.
- Read the questions thoroughly. If the question states that the answer must be in Metre, give the answer in Metre. The same applies for questions asked in Millimetre.
- Remember that Graphical Symbols (B, WC, SH, WB, S, WT, U, etc) must be represented without any deviation from the SANS codes.
- If you are asked to draw a Graphical Symbol, remember to draw the views in First Angle Orthographic projection.
- Do not leave any questions blank. The answers can be found or determined by referring to the given Title Panel or the Site Plan.
- You will be required to calculate Area and Perimeter. Always indicate the calculations and formula used. Remember that the Area of a Triangle = $\frac{1}{2} b \times H$ (Always add the unit i.e. m² for Area and m for Perimeter).
- Convert the given dimensions to metres before doing the calculations.
- Remember that the Stand number is allocated on the Stand.
- Identification of Water meter, Electrical meter, Water storage tanks, Work to be demolished, Ramps, Steps, etc. on a Site Plan.
- Ensure that you can identify and draw the North Point and determine orientation towards N, E, S, W.
- Know all the labels of building features/materials used to represent the Foundation to the Roof Cap on a Civil Section!

Question 2 - Solid Geometry and/or Interpenetration & Development: ± 40 Marks ± 36 Minutes

Solid Geometry:

- Conduct layout planning first for the views to be drawn in First Angle Orthographic Projection.
 - Ensure that you can distinguish between a Prism, Pyramid, Cone and a Cylinder.
 - Ensure that you know what is referred to by 'Right Regular' Prisms and Pyramids.
 - Always redraw the given views to scale to obtain the minimum marks for the question.
 - Remember that hidden detail can be indicated behind hatched surfaces in Solid Geometry.
 - Hatching should be at 45°, evenly spaced, similar to hatching of mechanical parts.
 - Remember to indicate Centre Lines where required.
 - Allocate numbers and/or letters to label different points of a figure on different views.
 - You will not be penalised for using and leaving numbers or letters on your drawing.
 - Ensure that you can correctly rotate and project a given figure in First Angle Orth. projection.
 - Focus on Pyramids and Prisms of Triangles, Squares, Rectangles, Pentagons, Hexagons, Octagons including Cones and Cylinders.
 - Make sure you can identify and draw Auxiliary Views from the given Primary Views.
 - Ensure that you can draw and determine the True Shape of a cut surface.
 - Always indicate construction lines used.
 - Only the curves of irregular arcs may be drawn in neat freehand, eg. The base of an inclined Cone or cylinder.
 - Inaccurate and/or untidy curves will be penalised.
 - All hidden detail must be shown on all views unless stated otherwise.
- <AND/OR>

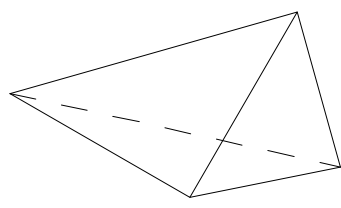
Interpenetration and Development:

- Conduct layout planning first for the views to be drawn in First Angle Orthographic Projection.
- Determine which primary views and auxiliary views must be drawn first, don't just start to draw.
- Redraw the given views to scale to obtain the minimum marks for the question.
- Check if there is a seam present and start your development from the seam.
- Ensure that you can identify and determine True Lengths on the different views.
- Hidden detail must be shown unless stated otherwise.
- Remember that calculating the circumference of a circle (cylinder) is $\pi \times \text{Diameter}$.
- Make sure you can correctly apply the construction method for line divisioning.
- The curve of interpenetration can be symmetrical or non-symmetrical, know the difference.

Question 3 - Two-Point Perspective: ± 40 Punte ± 36 Minutes

- Read the question before you start to draw.
- Check if internal features, door and window depth, should be presented or not
- The top view of the Perspective drawing is at 45° or 30°/60° or 60°/30°.
- Always label the vanishing points immediately after determining them (LVP, RVP).
- Circles and/or arches are always present, indicate circle/arc constructions used.
- You must practice Perspective drawings in order to improve your drawing speed for the Perspective question. The latter applies to all EGD drawings!
- The vanishing points are always present on the Horizon Line (HL).

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Question 4 - Civil Drawing: ± 95 Marks ± 80 minutes

Floor Plan: ± 30 Marks ± 27 minutes

- Read Question 4 thoroughly and plan your drawing layout before you start to draw, take enough time to study p. 5.
- Determine which elevation must be drawn and identify the Civil Section and the direction thereof.
- Remember that electrical symbols and Graphical Symbols must be drawn without any deviation from the SANS 10143.
- You will be required to draw conventions of Graphical Symbols i.e. Wash-up Basins, Urinal, Water Closet, Bath, Wash Tub, Shower, BIC, etc. on the given Floor Plan.
- You will not be asked to redraw the entire Floor Plan!
- Electrical symbols and wiring may be drawn in neat freehand. Wiring must touch the electrical symbols.
- Remember to always indicate the room designations and the Final Floor Layer (Floor Finish) used.
- Room designations and floor finishes must be indicated in CAPITAL PRINTED lettering, vertically or horizontally only!
- Leave hatching of the Floor Plan (45°) for last, it is time-consuming work for a few marks.
- Draw the windows correctly on the Floor Plan. The gap given for the windows on the Floor Plan is larger than the actual size of the windows when drawn to scale.
- The double line which represents the frame of the window must always be drawn in the middle of the wall.
- Use abbreviations to label Graphical Symbols, check the question to see if it is required.
- Ensure that you can correctly interpret the direction of the Civil Section.
- You do not have to memorise the sizes of Civil features, windows and doors, etc. There will be different tables on p.5 specifying the sizes. Use an arrow to indicate the opening direction of sliding doors.

Incomplete Elevation: ± 25 Marks ± 22 minutes

- The Elevation must be redrawn to the same scale of the Floor Plan, usually scale 1:50.
- You must project the necessary lengths/features from the Floor Plan to the Elevation.
- Use the given information on p. 5 to complete the Elevation. Remember arrows for sliding windows and doors.
- Window frames and doors may be presented as a single line on the Elevation. FFL must be indicated as a CL.
- Remember to indicate window sills if present as well as the hinged side and opening side of the windows.
- Always label the GL, FFL, and Title of the Elevation eg. WEST ELEVATION.
- Remember to indicate the double lines for the roof cap and barge-boards on the roof.

Detailed Civil Section: ± 35 Marks ± 32 minutes

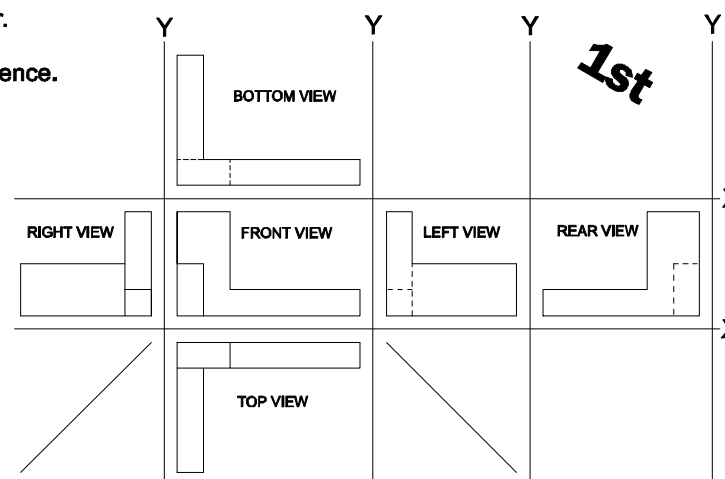
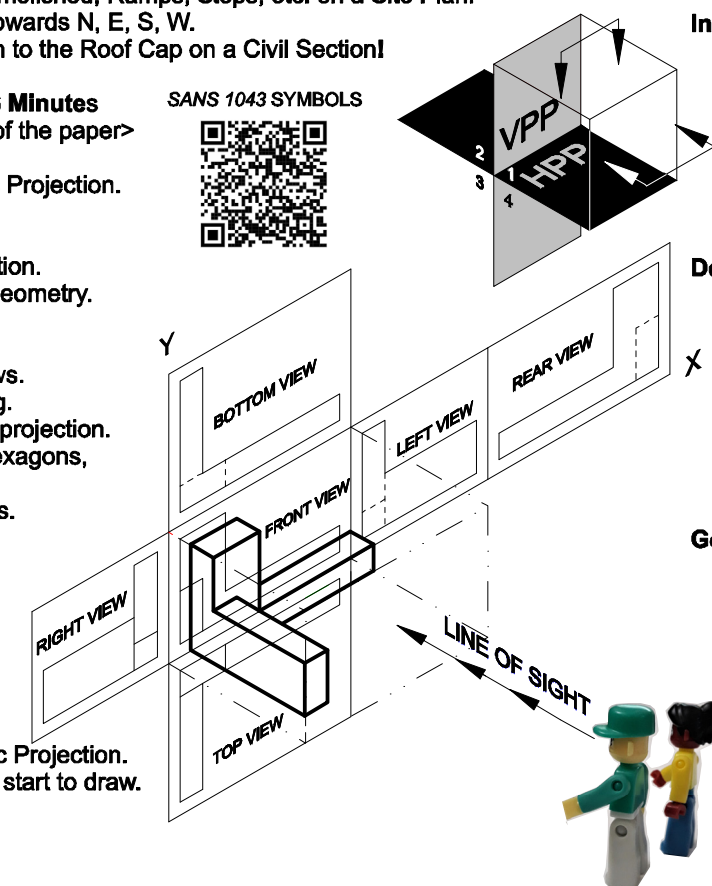
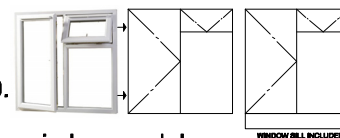
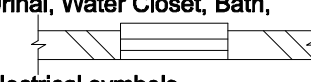
- The Civil Section will be drawn to a bigger scale to indicate more detail, usually scale 1:20.
- Substructure hatching must be completed in neat freehand. This will help to save time!
- Remember to draw the gutter, fascia board, rain-water downpipe if observed from the section.
- Always label the DPC (at window and floor), GL, and Final Floor Layer (FFL) in PRINTED lettering.
- You do not have to draw electrical symbols or sewage on the Civil Section in EGD.
- The civil cutting plane will usually be through a door or sliding door and/or a window. Ensure you can correctly present the different features including all Graphical Symbols observed on a sectional elevation.
- Practice conversion of civil dimensions mentally, this will help save time, eg. 1200/20 = 60; 1850/50 = 37.

General Notes for the Question Papers:

- Read every question thoroughly before you start drawing. Follow the given instructions to complete each question.
- Ensure that you can rotate/project the view of a given figure correctly in First Angle Orthographic projection
- Know the layout for all six views in First Angle Orthographic projection.
- Never draw in pen!
- Labels and abbreviations on a drawing must always be presented in CAPITAL PRINTED lettering.
- Focus on Civil Analytical questions, Two-Point Perspective, and Civil Drawings, as these topics will be in the Civil Question Paper (P1).
- If the question states that the drawing must be in freehand, the drawing must be in freehand.
- Dimensions of EGD drawings, Civil and Mechanical, will always be in Millimetres (mm) - System International (SI) unit.
- The only exception to the use of the SI-unit is on certain dimensions of a site plan.
- All dimensions on drawings will always reflect the 'true' dimension or size regardless of the scale used.
- Scale 1:7 is seven times smaller. Scale 7:1 is seven times bigger.
- You must practice the drawings and not merely look at questions and answers.
- Never erase any construction lines used.
- Draw for the complete duration of the examination session!
- Ensure that your drawing instruments are clean before the examination session starts.
- Use the indicated assessment criteria of each question as a checklist for completion of the drawing.
- Ensure that you have two tables at your disposal during the examination session:
 - One for your A3 drawing board and one for your drawing instruments and examination paper.
- Refer to your EGD textbook to gain in-depth knowledge of the different EGD topics.
- Use previous EGD National Senior Certificate examination papers as exercises. Time yourself!
- Hidden detail must only be shown if instructed to indicate it.
- As accuracy is a fundamental and essential component of EGD drawings, a deviation of only 1mm or 1° is permissible on the accuracy of all aspects of all drawings.
- Ensure that you can construct Polygons using different construction methods.
- Neat Work = Neat Marks!

Ensure that you have the minimum required drawing instruments for the examination session:

- Protractor, Eraser, 300mm Ruler, Compass, Divider, Circular stencil.
- Large 30°/60° drawing set square.
- Large 45° drawing set square.
- A3 drawing board with a T-square.
- Masking tape / Insulation tape / Clips, if needed.
- Clutch pencil & leads 0,3; 0.5 and/or drawing pencil: 2H, 3H or 4H.
- Calculator, Dust cloth.



References



Gr. 12 EGD NOTES 2026 Paper 2 (Mechanical Paper) Tuesday, 27 October 2026 @ 14:00 (13:00)

200 Marks - 180 Minutes - Third Angle Orthographic Projection

Question 1 - Mechanical Analytical: ± 30 Marks ± 27 Minutes

- Label and identification of views presented in Third Angle Orthographic projection. Determining of dimensions on Mechanical parts.
- Ensure that you are able to correctly insert and represent the Mechanical Cutting Plane on the given views.
- Know the elements of Welding Symbols, Machining and surface texture symbols including the different aspects represented on each symbol.
- Know all the different types of Sections for Mechanical parts:
Full section, Half section, Partial section, Revolved section, Removed section, Successive section, Multi-plane section, Aligned section.
- Remember that the Third Angle Orthographic projection symbol appears on Page 5 of your Mechanical question paper.
- Do not leave any questions blank. All the answers can be found on the given drawing or in the title panel.
- Ensure that you understand what tolerance refers to and how to calculate the minimum and maximum tolerance. Know abbreviations of SPH, C/B, CSK, PCD, TOL, NTS, AF, MCD, etc.
- Know conventional representations of Gears, Shafts, S-brake, Square on a shaft, Screw thread, Stud bolt, Bolt and Nuts, Bearings, Coil springs, etc.
- You may also be asked to measure an angle with your protractor.
- Distinguish between a Fillet and a Rounding on a Mechanical part.

Question 2 - Loci: Cams and/or Mechanisms: ± 40 Marks ± 36 Minutes

<If you struggle with the content of question 2, first complete questions 1,3 and 4 of the question paper>

- Read the question thoroughly. Planning is essential for all EGD drawings.
- Always redraw the given views to obtain the minimum marks for the question, remember centre lines.
- Always divide a circle into segments by using your 30°/60° set square.
- Ensure that you can divide a straight line into any number of equal parts without using a calculator.

Loci of a Cam:

- Displacement Graph: Understand and apply construction methods for Uniform Motion, Uniform Acceleration, Uniform Retardation, Harmonic motion, Uniform Acceleration and Retardation.
- Ensure you know what Dwell, Horizontal, Vertical, Diagonal, Clockwise and Counter-Clockwise refers to.
- Always indicate the direction of rotation with an arrow.
- Label the DISPLACEMENT GRAPH and include the horizontal scale used for the profile of the cam.
- Familiarise yourself with common types of followers used, i.e. Wedge-ended and Roller-ended followers. Remember that measurements can be given in the question and in the schematic figure.
- Remember to hatch the camshaft.

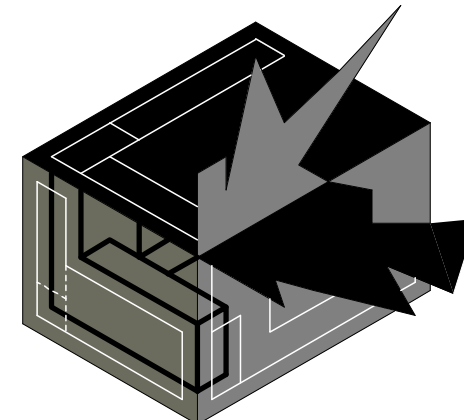
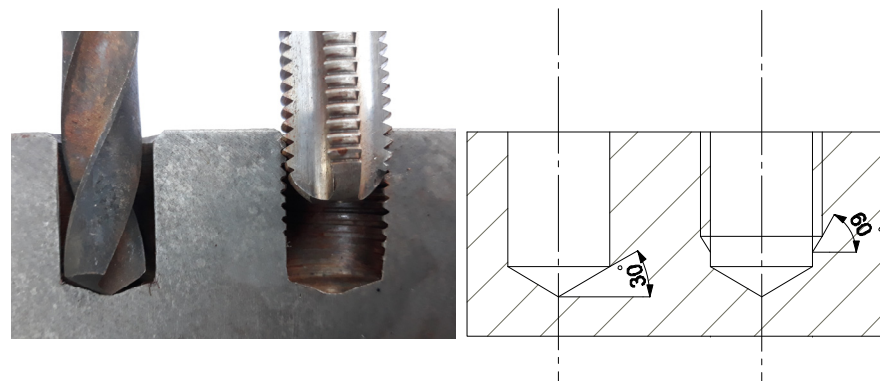
<AND/OR>

Loci of a Mechanisms:

- Understand the following terms: Strut, Rotation, Crank, Loci, Rod, Pivot, Linear and Link.
- Redraw the circles using the correct line types, as given!
- Allocate numbers and/or letters to label different points of the Loci on different sections to assist with completion of the drawing. Remember centre lines.

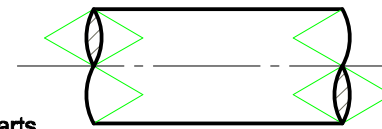
Question 3 - Isometric Drawings: ± 40 Marks ± 36 Minutes

- Plan where you will draw your auxiliary views (clearly indicate aux. views).
- Plan your drawing by using the given reference point.
- Study and rotate the given orthographic views before you start to draw.
- Determine if there is a section present on the drawing, remember that hatching for Isometric drawings should be at 60°, equally spaced.
- You will be required to construct auxiliary views of regular Polygons i.e. Triangles, Squares, Pentagons, Hexagons, Octagons and Angles.
- This question will contain Isometric Circles, always indicate the construction method used, do not erase any construction lines. Remember centre lines!



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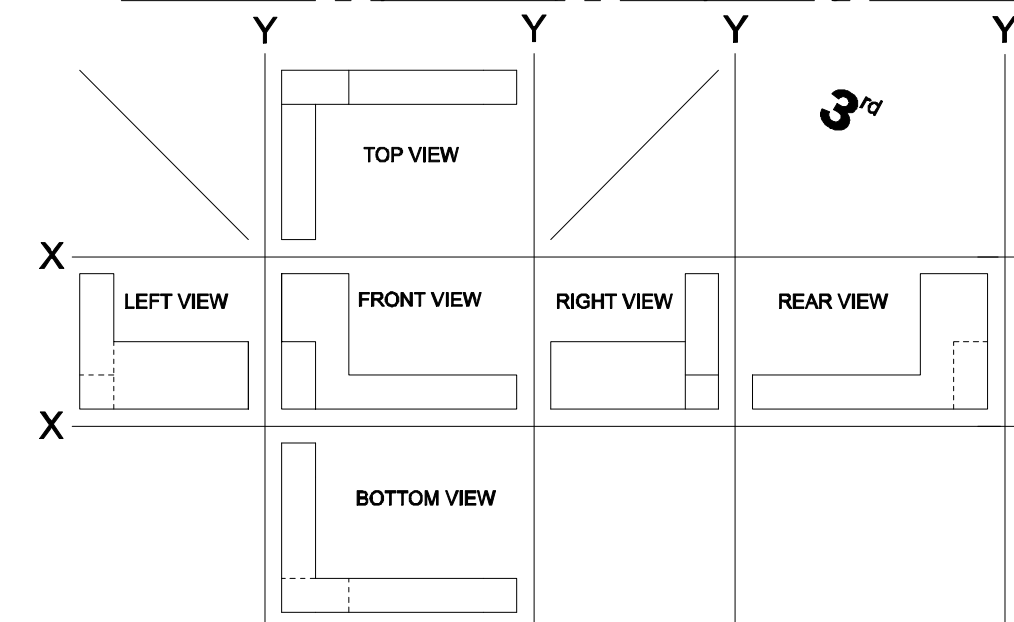
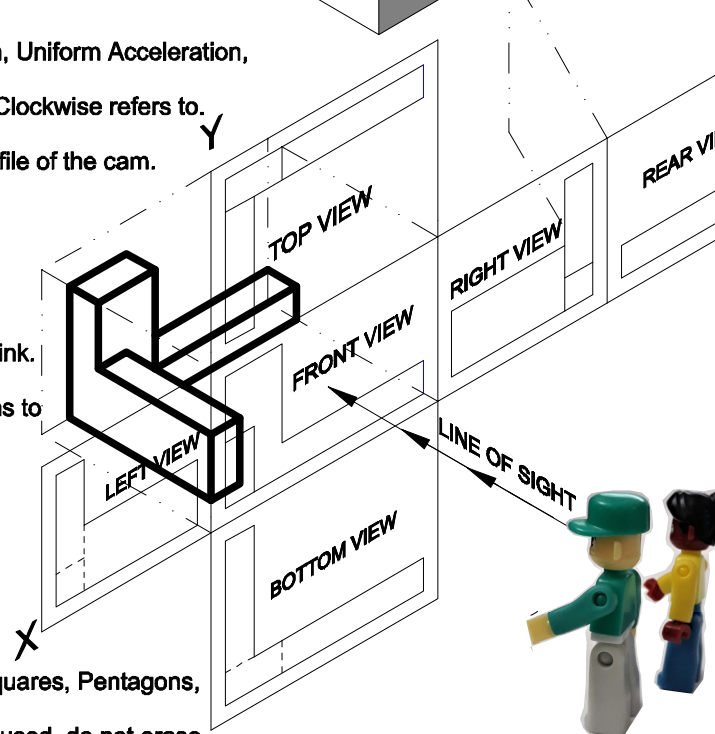
Question 4 - Mechanical Assembly: ± 95 Marks ± 85 Minutes

SANS 10111
Conventions
& Symbols

- Read the question thoroughly before you start to draw. Take enough time to plan your drawing on Page 6 and review page 5 of the Mechanical Assembly.
- Determine which views must be drawn and sectioned.
- Use the exploded Isometric view on page 5 to identify a 'main' part and draw the centre lines (horizontal and/or vertical) as a starting point.
- The 'main' part is usually a shaft where other parts fit around the shaft.
- Try to draw the view with the most circles first for projection purposes.
- Remember that the letter 'M' in M16 refers to the nominal diameter of the thread used for a part containing screw thread. M stand for Metric.
- Know basic formulas for Bolt and Nut construction i.e. Across Flats = $M \times 1,5$. Bolt head height = $M \times 0,7$. Nut head height = $M \times 0,8$, etc.
- Always add all relevant centre lines to the drawing. Correctly indicate the Mechanical Cutting Plane on the required view. The arrows used must touch the Cutting Plan and the direction must be correct.
- Add Welding symbols and Machining symbols if instructed to do so.
- Check to see if the rule of symmetry may be applied to a view.
- If projection methods are not correctly applied, you will not finish with the drawing paper.
- Label views and title and check what other information is required to be represented on the drawing.
- Understand the function of Keys, Fillets, Roundings, Springs, Bushes, Countersink, Rib, Web, Blind hole, etc.
- Ensure that you are capable of constructing an Ellipse.
- Check the instructions if you are required to add dimensions.

General Notes for the Question Paper:

- Read every question thoroughly before you start drawing.
- Practice and apply the following constructions: Bisecting lines and angles, Perpendicular lines, Line division, Circle divisions, Fillets, Roundings, Parallel lines for hatching, etc.
- Ensure that you can rotate the views of a given figure correctly in Third Angle Orthographic projection.
- Know the layout for each view in Third Angle Orthographic projection.
- Never draw in pen.
- Labels and abbreviationss on a drawing must always be presented in CAPITAL PRINTED lettering.
- Focus on Mechanical Analytical, Isometric Drawings, and Mechanical Assemblies, as these topics will be in the Mechanical Question Paper.
- If the question states that the drawing/feature must be presented in freehand, the drawing must be in freehand.
- All EGD drawings, Civil and Mechanical, will always be in Millimetres (mm) - System International (SI) unit.
- All dimensions on drawings will always reflect the 'true' dimension regardless of the scale used.
- Scale 1:7 is seven times smaller. Scale 7:1 is seven times bigger.
- You must practice the drawings and not merely look at questions and answers.
- Never erase any construction lines used.
- Stencils may be used, a circular stencil is crucial for Paper 2.
- Draw for the complete duration of the examination session.
- Ensure that your drawing instruments are clean before the examination session starts.
- Leave hatching of the sectioned parts for last as it is time-consuming work for the minimum amount of marks.
- Ensure that you have two tables at your disposal during the examination session:
One for your A3 drawing board and one for your drawing instruments and examination paper.
- Refer to your EGD textbook to gain in-depth knowledge on the different EGD topics.
- Use previous EGD National Senior Certificate examination papers as exercises, time yourself per question.
- Hidden detail must only be indicated if instructed to do so.
- As accuracy is a fundamental and essential component of EGD drawings, a deviation of only 1 mm or 1° is permissible on the accuracy of all aspects of all drawings.
- Ensure that you can construct Polygons using different construction methods.
- Make a circle or a C on your hand/set squares before your drawing session starts, remember Centre Lines!

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References

