

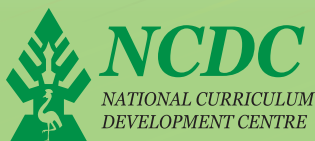


THE REPUBLIC OF UGANDA
Ministry of Education and Sports

ADVANCED SECONDARY CURRICULUM



TECHNICAL DRAWING ASSESSMENT GUIDELINES



2026

ADVANCED SECONDARY CURRICULUM

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2026



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A product of the National Curriculum Development Centre for the Ministry of Education and Sports with support from the Government of Uganda

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Kampala- Uganda
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ISBN: 978-9913-06-114-8

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Acknowledgements

The National Curriculum Development Centre (NCDC) is indebted to the Government of Uganda for financing the development of these Assessment Guidelines to support the implementation of the Advanced Secondary Curriculum.

Our gratitude goes to the Ministry of Education and Sports for overseeing the development process, the Curriculum Task Force of the Ministry of Education and Sports for the guidance and timely decisions whenever necessary, and members of the public who made helpful contributions towards shaping these Guidelines.

NCDC is also grateful to UNEB, Members of Parliament, schools, universities, and other tertiary institutions, the writing panels, critical reviewers, and professional bodies for their contribution towards the design and development of these Assessment Guidelines. To all those who worked behind the scenes to finalise the production of these Guidelines, your efforts are invaluable.

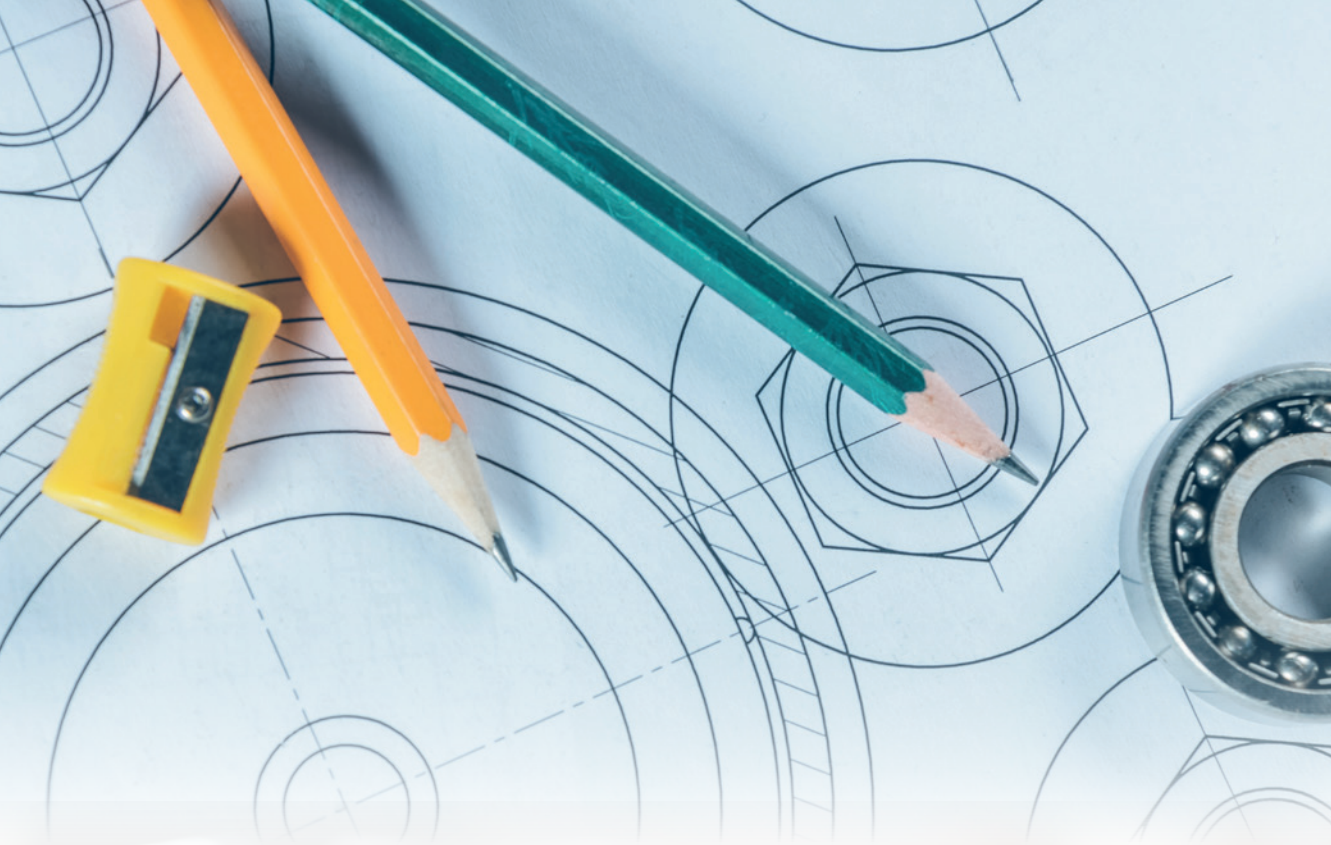
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Director

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1. Introduction

This assessment guidelines document is developed as a companion to the Assessment Framework for Advanced Secondary Curriculum and should be read and applied in conjunction with it. The Framework provides the overarching principles, standards, and requirements for assessment across all subjects, while this guideline contextualises those provisions to the specific subject demands and practices.

End-of-Cycle Assessment of Technical Drawing will be administered by the Uganda National Examinations Board (UNEb). The assessment will be guided by four assessment objectives drawn from the four assessment constructs. The assessment items will be set at the level of the construct. This will allow learners to integrate knowledge, skills and values drawn from topics within a construct in order to address a societal challenge or problem.

A continuous assessment in Technical Drawing will be conducted through a project work that will contribute to the learner's final grade at the end of the cycle.

1.1 Assessment Objectives

The learner will be assessed in Technical Drawing in order to check his/her ability to:

A01: Create drawings by applying projection techniques and geometrical constructions to communicate practical engineering solutions addressing community needs.

A02: Determine the behavior of structures under applied loads to inform the design of appropriate structural members in beams and frameworks.

A03: Create engineering drawings of mechanical components and systems that comply with industry standards

A04: Integrate architectural and building construction principles to design and construct essential components of bungalow buildings (single floor, not more than six rooms) in alignment with client's needs and community priorities.

1.2 Linkage Between Assessment Objectives, Constructs and Syllabus

Table 1:

Table showing the relationship between assessment objectives, constructs and the topics in the syllabus

Assessment Objective	Construct	Construct Description	Topics in the Syllabus
AO1	Application of Geometric and Spatial Skills	Applying geometric and spatial visualization skills to analyse, interpret, represent engineering components in 2D and 3D and develop patterns and intersections relevant to manufacturing.	1) Projections of Solids 2) Surface Development 3) Intersection of Solids
AO2	Force Analysis	Applying principles of statics to identify, represent and resolve forces acting on structural elements using graphical and analytical methods to determine equilibrium, reactions and internal forces for accurate interpretation of structural behavior.	4) Vector Geometry

A03	Mechanical Drafting and Assembly	Assembling mechanical components within a system, illustrating internal features and functional relationships to guide machinists, welders and fabricators in producing parts according to design specifications and assist in fault identification and maintenance decision-making	1) Machine Drawing 5) Power Transmission Systems
A04	Architectural and Building Construction Practices	Applying architectural and structural design knowledge and practical construction skills to develop, interpret, and implement building plans for bungalow-type houses, ensuring safety and compliance with design and client requirements.	2) Foundations and Floors 3) Wall Designing 4) Roofs 5) Building Drawing

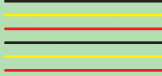
2. Table of Constructs

The table below presents the constructs for Technical Drawing. It outlines the competencies/learning outcomes that constitute each construct, the expected learner abilities, and the aspects the assessor should examine in the learner's work as evidence of achievement of the intended learning outcomes (indicators of mastery)

Construct	Learning outcome The learner should be able to:	Abilities The learner is able to:	Indicators of the abilities The learner:	Level of Complexity
1) Application of Geometric and Spatial Skills: Applying geometric and spatial visualization skills to analyze, interpret, represent engineering components in 2D and 3D, develop patterns and intersections relevant to manufacturing.	1a) create isometric drawings of solids commonly found in the local environment to improve their understanding and communication of engineering designs	a) mentally rotate a 3D object and accurately describe its appearance from a new, viewpoint. b) sketch the cross-section of a 3D object when sliced by a plane at a given angle.	i) Draws components within the community in proportional free-hand isometric sketches. ii) produces Accurate Isometric and orthographic drawings.	High

	1b) produce orthographic projections of solid objects within the environment to develop the ability to interpret 3D objects into 2D 1c) make models of solid objects using isometric and orthographic drawings for a deeper understanding of 3D aspect.	c) interpret incomplete 2D views (e.g., top and side) and mentally construct the missing view or the 3D object itself. d) select, prepare and process materials for assembling and constructing of components according to design specifications e) create a physical scale model (e.g., using cardboard, 3D printing, or	iii) produces technical drawings with annotations, labels and dimensions. iv) develops assembly of local community items with materials appropriately selected for making functional models of objects. v) makes functional models to specified scales.	
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		foam) that accurately reflects the proportions and geometry of the design.	i) produces drawings of components showing traces, true lengths, true inclinations of the edges to the horizontal plane and vertical plane. ii) identifies the specific line(s) whose true length and angles of inclination need to be determined.	
			f) produce true lengths and shapes of surfaces for pattern development. g) visualize the unfolding (development) of a 3D solid into a 2D net and vice-versa. h) explore and construct patterns for transition pieces and multi-panel solid objects used in engineering fabrication.	
	4a) Produce true lengths and shapes of surfaces for making patterns. 4b) Create patterns of transition pieces and multi-panel solid objects for making of engineering products.			



	7a) Plot points of intersection for intersecting objects to establish interaction between surfaces	a) apply geometric principles to plot intersection points that define how surfaces in design and construction interact to ensure seamless assembly in manufactured products.	i) identifies intersecting surfaces of components in technical drawings. ii) accurately plots points of intersection using appropriate geometric methods (e.g., projection, auxiliary views). iii) demonstrates understanding of surface meeting points in both 2D and 3D views. iv) applies principles of geometry (e.g., angles, curves, tangents) to ensure precision in plotted intersections.	
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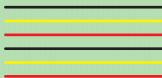
2) Force analysis: Applying principles of statics to identify, represent, and resolve forces acting on structural elements using	6a) Analyse and resolve forces within structural systems to ensure stability and safety in engineering and construction projects.	c) apply principles of statics to resolve forces that can maintain the structural stability and safety of engineering and construction projects.	v) ensures continuity and alignment of intersecting components for seamless assembly. vi) uses Diagrams or models to determine and explain surface interactions between intersecting objects.	High
			i) identifies Force types acting on structural elements and classifies them as tension, compression, shear and or torsion.	

graphical and analytical methods to determine equilibrium, reactions and internal forces for accurate interpretation of structural behavior.		ii) draws Free-body diagrams representing forces and moments acting on structures. iii) applies equilibrium conditions ($\Sigma F = 0$ and $\Sigma M = 0$) to solve for unknown forces in statically determinate structures. iv) graphically determines reactions at supports and internal forces in beams and frameworks. v) interprets the relationship between applied forces and resulting structural behaviour (drew shear and bending moment diagrams).	
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3) Mechanical Drafting and Assembly: Assembling mechanical components within a system, illustrating internal features	1d) Design and draw various mechanical fasteners within their environment to understand the importance of strong and effective connections in mechanical systems.	d) analyse structural systems to identify the types and effects of forces acting on them.	i) uses diagrams/graphics (e.g., force diagrams, free-body diagrams) to represent force distribution within a structural system. ii) determines equilibrant and resultant forces for coplanar force systems	High
3) Mechanical Drafting and Assembly: Assembling mechanical components within a system, illustrating internal features	1d) Design and draw various mechanical fasteners within their environment to understand the importance of strong and effective connections in mechanical systems.	a) analyse load conditions of mechanical systems and material properties to select appropriate mechanical fasteners.	i) identifies fasteners for specific mechanical systems applications. ii) draws sketches of mechanical fasteners maintaining correct shape and proportions.	High

and functional relationships to guide machinists, welders and fabricators in producing parts according to design specifications and assist in fault identification and maintenance decision-making		b) interpret and illustrate mechanical fasteners by accurately depicting their shapes, proportions and methods of assembly within mechanical systems	iii) applies conventions and standards (labels, annotations and dimensions) to drawn mechanical fasteners iv) illustrates the position and orientation of fasteners within an assembly or system v) represents methods of fastening (e.g., threaded, pinned, riveted) using correct drawing conventions.	
	2a) Use different dimensioning styles according to British Standards 308-part 2 for defining the geometry of features	a) create detailed specifications to guide machinists, fabricators, and engineers.	i) uses appropriate dimensioning styles for different views or components. ii) applies dimensions to curved, angled, or detailed surfaces accurately.	

	2b) Indicate and interpret the tolerance dimensions according to ISO 45001 recommendations for refining allowable variations		iii) makes drawings that conform to international engineering drawing standards. iv) uses tolerance table IS45001 limits and fits. v) shows allowable variations on designs/drawings. vi) produces orthographic drawings including sectional views to scale.	
	2c) Construct orthographic views of machine parts of mechanical systems to communicate complex engineering designs	a) create orthographic drawings that depict the assembly of machine parts, using sectional	i) draws proportional free-hand isometric sketches. ii) uses appropriate orthographic views (front, top, side) to represent overall geometry of the assembly.	



		views to reveal internal features and communicate functional relationships within mechanical systems.	iii) uses sectional views to expose hidden or internal features of components. iv) aligns and positions individual parts to reflect the relationship assembled drawings. v) clearly labels component parts, fasteners and features using standard annotations. vi) applies dimensioning and tolerances where necessary for fit and function.
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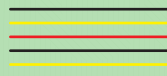
	3a) Describe mechanical structures and operations of power transmission elements, gaining essential knowledge of how different parts of machines work together to transmit power.	a) identify parts, functions of power transmission elements and their operation. b) interpret drawings of power transmission systems components.	i) labels and describes parts of power transmission system elements. ii) sketches Power transmission elements and explains their operations.	
	3b) Draw elements of power transmission systems to gain clear visual understanding of how different components work together to transmit power.	visually represent and analyse power transmission components to understand their roles and interactions in transferring motion and force.	iii) represents key mechanical transmission components on drawings. iv) draws mechanical components in orthographic or isometric projection showing their physical relationships.	

			v) uses standard drawing symbols and conventions for mechanical motion elements. vi) applies basic sectioning or exploded views to show internal features or assembly when relevant.	
4) Architectural and Building Construction practices: Applying architectural and structural design knowledge and practical construction skills to develop, interpret, and implement building	2a) Design foundations and floors for bungalow buildings in the community to ensure stable and safe structures	a) apply structural design principles to draw safe and stable foundations for bungalow-type buildings. b) select a foundation type appropriate for soil conditions.	i) draws and presents written information on structural requirements of foundations (e.g., strip, pad, raft foundations) responding to bungalow-houses. ii) presents drawings and write ups on foundation types	High

plans for bungalow-type houses, ensuring safety and compliance with design and client requirements.			based on soil conditions, load requirements and environmental factors. iii) produces foundation drawings with accurate dimensions, labels and material specifications. iv) produces drawings showing annotations explaining the purpose and function of different foundation components. v) presents written information justifying the design choices of	
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			foundations and floors based on the intended structural stability and local context (e.g., soil type, weather).	
			i) presents written work on site clearance and or observed cleared the construction site of vegetation, debris, and obstructions. ii) presents written work on foundation layout and or observed measured and marked out the foundation layout done based on the building plan.	
			a) demonstrate site preparation techniques for constructing stable and level foundations for bungalow buildings.	
			3a) Practice construction of foundations and floors for bungalow buildings within their community, ensuring stability and safety of structures.	

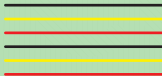
			iii) Presents the recorded observations of the soil conditions and demonstrates the procedures for site leveling, including the tools used for leveling the soil. iv) Presents written information on foundation trenches or reports on observed foundation trenches that have been dug to the specified dimensions and depth. v) wears appropriate protective gear during site work.	
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		b) interpret and implement floor plans accurately during construction activities.	i) positions construction elements on-site according to floor plan. ii) uses appropriate tools (e.g., tape measures, levels, plumb bobs) for layout.	
		c) select and use appropriate tools, materials and equipment for foundation and floor construction.	i) presents written information on the tools and materials suitable for different foundation and floor types. ii) presents a checklist of tools and material use and or a write up on the use of tools and materials in construction activities.	

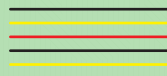
iii) generates observation check list for safe handling, storage and maintenance of tools and equipment.	i) uses appropriate concrete mix ratios based on construction requirements and presents written justification. ii) applies correct concrete pouring techniques and removal of air pockets when filling foundation or floor forms.
d) mix, pour and cure concrete correctly to form durable and safe foundations and floors.	

iv) presents scaled floor plans with accurate dimensions and labels reviewed and accepted by the client presented Bottom of Form. v) uses architectural symbols and conventions correctly in drawings.			
i) labeled positions of relevant parts of the plan such as wall and wall openings matching with their symbols (doors/windows) and structural features.	c) interpret building plans to determine brick wall specifications and layout.	5b) Construct brick walls for bungalow houses in the community to connect classroom learning with real world application	



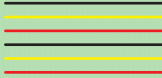
	ii) presents written extract of material specifications such as, wall size, thickness, length type of bricks and mortar ratio details. iii) marks out wall positions on the ground based on the plan. iv) sets out and aligns wall corners and junctions according to the drawings. v) Uses the drawing scale to calculate actual dimensions for site preparation.	
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		d) select appropriate materials and tools for constructing brick walls.	i) presents a list of Brick types and forms suitable for specific wall construction. ii) selects tools (trowel, level, line, hammer, etc.) appropriate for bricklaying tasks. iii) matches materials (cement, sand, water, bricks e.t.c...) with construction specifications and site conditions. iv) explains the purpose and function of selected tools and materials in wall construction.	
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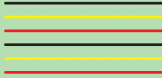
			v) demonstrates understanding of material quality (e.g., tested brick strength or inspected sand grain size). vi) prepares materials and tools for use following safety and operational guidelines.
	e) prepare the site and foundation before brick wall construction	i) clears and levels the construction site using appropriate tools. ii) marks foundation layout according to construction plans. iii) selects and uses suitable materials for the foundation bed (e.g., hardcore, sand, or gravel).	

		f) mix mortar to the correct ratio for bonding bricks securely.	i) identifies and selects appropriate materials (cement, sand, water e.t.c...) for mortar mixing. ii) measures and mixes materials in correct ratios (e.g., 1:4 cement to sand) as per project specifications. iii) uses appropriate tools and equipment (e.g., mixing board, hoe, bucket, or mechanical mixer). iv) makes consistent mortar texture—smooth, workable, and free from lumps.
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		v) tests mortar adhesion before application to verify bonding quality. vi) maintains cleanliness, safety and avoided wastage during the mixing process.	
	g) lay bricks in accurate alignment and level using appropriate techniques (e.g., stretcher bond, English bond).	i) selects and prepares bricks and mortar according to the type of bond to be used. ii) positions bricks accurately using string lines and spirit levels to maintain straight courses and vertical alignment.	

iii) applies uniform mortar beds and joints to ensure strong bonding and consistent spacing. iv) maintains correct bond pattern (e.g., stretcher bond, English bond) throughout the wall. v) uses a trowel and jointer effectively to shape and smooth mortar joints. vi) demonstrates knowledge of bonding rules to interlock bricks for structural strength.							
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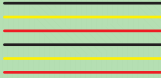


		h) use measuring tools (plumb line, spirit level, tape measure e.t.c...) to ensure wall accuracy and structural integrity.	i) selects appropriate measuring tools for the specific task (e.g., spirit level for horizontality, plumb line for verticality). ii) measures wall dimensions accurately using a tape measure to confirm alignment with building plans. iii) uses a spirit level consistently to maintain horizontal levels across brick courses. iv) applies a plumb line correctly to check and adjust vertical alignment of the wall.	
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		v) marks reference points and lines to guide bricklaying and maintain uniform height and alignment.	
	i) follow safety procedures during construction tasks.	i) wears appropriate personal protective equipment (PPE) such as gloves, helmet, safety boots, and goggles. ii) uses tools and equipment correctly and safely according to instructions or training. iii) maintains clean and organized workspaces to reduce risk of accidents or injuries.	

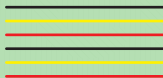
	8a) Create gabled and hipped roofs for bungalow houses that fulfil the client's preferences and requirements.	a) interpret client needs to inform roof type selection and design.	i) collects and documented client preferences regarding aesthetics, function and budget. ii) matches client needs with appropriate roof types (e.g., gabled, hipped, flat). iii) produces sketches or design proposals that reflect the client's vision.	
		b) differentiate between gabled and hipped roof structures based on function and aesthetics.	i) identifies and lists key features of gabled and hipped roofs (e.g., slopes, ridges, overhangs)	

ii) describes the functional advantages of each roof type (e.g., drainage, wind resistance). iii) uses diagrams or sketches to illustrate and contrast roof forms. iv) justifies selection of a roof type based on environmental, structural, or aesthetic factors.	i) draws roof designs with respective roof types compatible with the bungalow layout.
c) design appropriate roof plans that match the bungalow layout and client specifications.	



ii) Presents proper pitch, slope and drainage features in roof design. iii) applies architectural symbols and conventions accurately in roof plan drawings. iv) provides labels explaining key features of the roof plan.	
	i) lists roofing materials types appropriate for gabled and hipped roofs (e.g., timber, metal sheets, tiles).
	d) select suitable materials and components (e.g., trusses, rafters, roofing sheets) for constructing gabled and hipped roofs.

	ii) explains the function of each component (trusses, rafters, purlins, battens e.t.c...) in roof construction. iii) justifies selection of materials based on client needs and building context. iv) applies safety and building codes in choosing materials for roofing.	i) measures and marks timber components (e.g., rafters, ridge boards, wall plates) accurately for roof assembly.
	e) construct roof frameworks with accuracy, ensuring correct pitch, alignment and stability.	

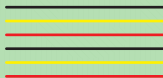


			ii) cuts and joins roof members using correct tools and techniques to achieve structural integrity. iii) maintains correct roof pitch in accordance with design specifications and building standards. iv) aligns rafters and trusses consistently across the framework to ensure uniformity. v) explains the purpose of each structural element in supporting the roof and resisting loads.
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	8b) Make prototypes of gabled and hipped roofs for bungalow buildings in the community to simulate real life construction.	a) Interpret roof design drawings to guide the construction of accurate prototypes. b) select and use appropriate materials for model-making that reflect real roofing components.	i) labels key features (e.g., pitch, ridge, eaves) from roof design drawings. ii) translates 2D roof plans into 3D representations for prototype construction. i) lists model-making materials (e.g., cardboard, foam board, wood) that simulate actual roofing components ii) justifies and uses materials that represent specific roofing components like trusses, rafters and roofing sheets.	
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		c) create roof prototypes with correct pitch and angles.	i) calculates roof pitch and angles accurately using geometric principles. ii) applies correct measurements and scale when cutting prototype components to reflect desired slopes. iii) constructs gabled and hipped roof prototypes with visibly accurate pitch and angle relationships.	
	9a) prepare working drawings and Models for the construction of buildings in the community.	a) develop accurate working drawings that include plans, elevations and sections for community buildings.	i) produces floor plans with correct dimensions, room labels, and wall layouts.	

		ii) draws building elevations showing height, window and door placements and external finishes. iii) draws sectional views that clearly illustrate internal structures and vertical relationships. iv) Uses Architectural symbols and conventions in all drawings.
	b) create scaled models that visually and structurally represent proposed building designs.	i) interprets 2D architectural drawings accurately into 3D to guide the modeling process.



			ii) measures and cuts appropriate model-making materials (e.g., cardboard, foam board, balsa wood) suitable for a model structure according to design specifications. iii) assembles model elements (e.g., walls, roofs, floors) accurately and in correct sequence.	
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3. Structure of the Assessment Papers

There will be two examination papers for each option of Technical Drawing at Advanced Secondary Curriculum.

Paper One - Geometrical drawing

This paper will be picked from two constructs of “Application of Geometric and Spatial Skills” and “Force analysis” will have 2 compulsory items. The proposed duration of the paper will be 3 hours. The learner will respond to the compulsory items that require them to read and create technical drawings, resolve forces and produce surface patterns

Paper Two

The items for this paper will be selected from Assessment Objective AO3, addressing Construct 3 Mechanical Drafting and Assembly. The paper will contain two compulsory assessment items: one designed to assess theoretical concepts and the other to evaluate drawing skills. In this paper, the theory component will take 40/80, while the drawing component will also contribute 40 / 80. The remaining score of 20 of the final grades will be obtained through continuous assessment.

Paper Three

The items for this paper will be drawn from Assessment Objective AO4, which addresses Construct 4: Architectural and Building Construction Practices. The paper will contain two compulsory assessment items: one designed to assess theoretical concepts and the other to evaluate drawing skills. In this paper, the theory component will take 40/80, while the drawing component will also contribute 40 / 80. The remaining score of 20 of the final grades will be obtained through continuous assessment.

The continuous assessment score for this paper shall be obtained from a project whose theme shall be determined by UNEB and assessed both on the physical product and a portfolio. The project shall be done within one year starting with term 2 of S.5 to term 2 S.6. The assessment date shall be determined by UNEB.

Technical Drawing**Paper I**

November 2025

Time: 3 hours**UGANDA ADVANCED CERTIFICATE OF EDUCATION****TECHNICAL DRAWING****Paper I (Geometrical Drawing)****Time:** 3 hours**Instructions to candidates:**

- 1) This question paper consists of **Two** scenario items.
- 2) Answer **both** items; each on separate page of the A2 drawing paper provided.

Item One

A security company is planning to construct Uniport structures using sheet metal. Each structure features a roof composed of four panels, which are connected to a wall that transits to a circular base, as illustrated in **Figure 1**. The fabricator contracted to produce a sample unit, echoed the need for working drawings to assist him determine the precise size of the materials for fabricating the uniport.

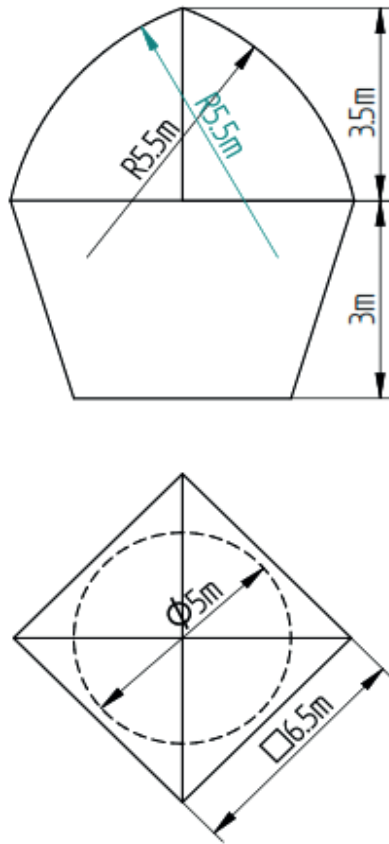


Fig.1

Task:

Produce the drawings needed by the fabricator.

Item Two

In a timber framing workshop, a team of carpenters disagreed over the importance of struts in a roof truss design. One of the carpenters argued that some of the members were redundant and could be omitted to save time and materials. The foreman graphically demonstrated (using Figure 2) that while the struts carried no load under ideal vertical weight, they are a necessary. To assess the truss's safety under real working conditions, he simulated and applied concentrated loads at key joints: 80 kg at the ridge, 50 kg at the midpoint of each sloping member and a 60 kg placed at a distance $\frac{1}{3}$ of the span on the horizontal beam spanning the structure.

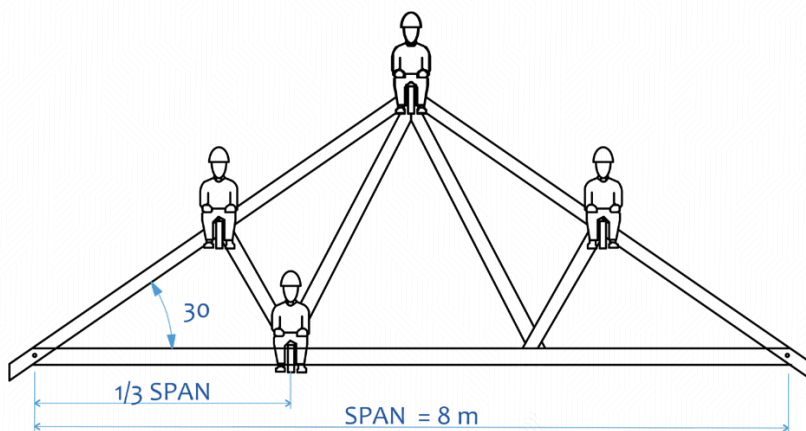


Fig.2

Task.

Provide a graphical presentation to justify the foreman's argument.

Technical Drawing

Paper II

November 2025

Time: 3 hours

UGANDA ADVANCED CERTIFICATE OF EDUCATION TECHNICAL DRAWING

Paper II

Option 1 (Mechanical Construction)

Time: 3 hours

Instructions to candidates:

- 1) This question paper consists of two scenario items (the theory item and the drawing item)
 - 2) Answer all the tasks.
 - 3) Answer item 1 in the answer booklet and item 2 in the drawing paper A2.
-
- 1) Kiweewa is a technician at a mechanical workshop specializing in agricultural equipment. In one of the components used for lifting food items, he identified a fault in a manually operated lifting mechanism that connects two steel rods using a knuckle joint. During his inspection, Kiweewa noticed abnormal looseness at the joint. He thought that this is what had compromised the alignment and stability of the entire lifting system. But a closer examination revealed that the primary support element housing the knuckle joint components (illustrated in Figure 1) was worn out, allowing unwanted movement.

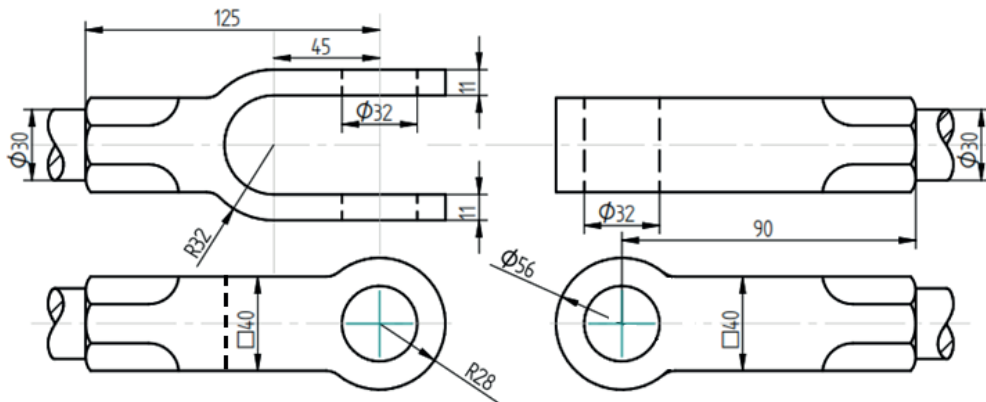
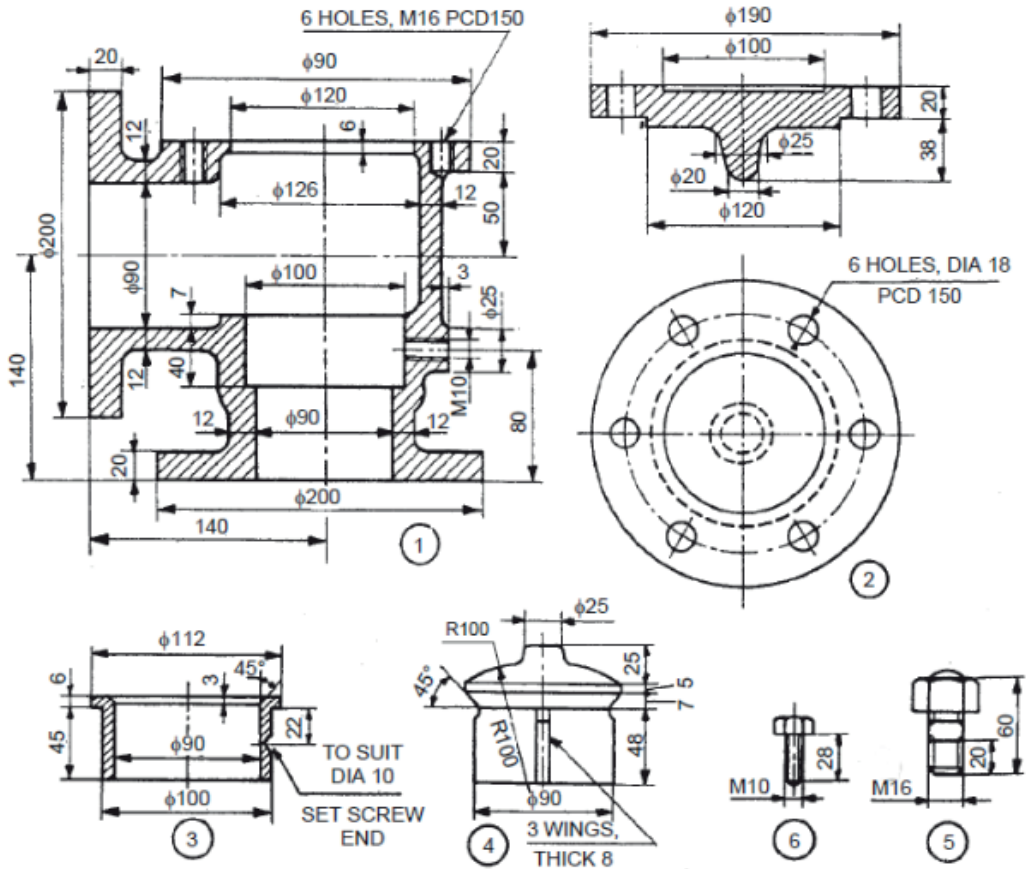


Figure 1.

Task:

Analyse the fault and in writing propose design solutions for the component that will restore alignment and prevent lateral movement at the joint.

- 2) A key control valve in the gravity-fed irrigation system, which distributes water to the vegetable gardens, malfunctioned, causing uneven water distribution across the fields. The replacement ordered by the manager arrived disassembled and without any additional documentation to guide the reassembly, except for the illustrations shown in Figure 2. The manager now intends to hire a part-time staff member with drawing skills who can assist with the producing clear and accurate illustrations that will enable his technicians reinstall and maintain the system



Parts list

No.	Name	Matl	Qty
1	Body	Brass	1
2	Cover	Brass	1
3	Valve seat	Bronze	1
4	Valve	Brass	1
5	Stud with nut	MS	6
6	Set screw	MS	1

Figure 2.

Task;

Generate the drawings that will ensure the suitable candidate for the job.

Technical Drawing**Paper III**

November 2025

Time: 3 hours

UGANDA ADVANCED CERTIFICATE OF EDUCATION**TECHNICAL DRAWING****Paper III****Building Construction**

Time: 3 hours

Instructions to candidates:

This question paper consists of two scenario items (the theory item and the drawing item)

Answer all the tasks.

Answer item 1 in the answer booklet and item 2 in the drawing paper A2

- 1) The Bukoola Community Development Group intends to build affordable housing for its research staff, with the project set to be in Buweela village. The acquired site in Buweela features low-lying sloping land covered with shrubs and tree stumps. Each home will include a sleeping area, a living/dining area, a kitchen and a washroom. The project supervisor is responsible for obtaining site preparation documents, which will serve as the basis for releasing the initial project funding.

Task.

Prepare a writing that constitutes information that is required to initiate site development.

- 2) Kapeha, a farmer in Maja village, decided to build a school on one of his terraced plots of land. He plans to begin with an administration block stretching from the raised area down towards the roadside to allow space for other buildings. The block will contain the Head Teacher's office, reception area, bursar's office, Deputy Head Teacher's office, and washrooms.

After reviewing Kapeha's sketches, a friend appreciated the idea but was concerned that the ground on the sketches did not match the steepness of the land. He advised Kapeha to consult a draftsman to prepare working drawings that clearly show the terrain. He added that the first draft should include the room layout (floor plan), a vertical section of the building, at least one side view (elevation), and a pictorial impression to help visualize the proposed block

Task.

Produce the drawings that Kapeha will need to appreciate the design of the administration block he intends to build.

4. Assessment Rubrics

4.1 Paper One - Geometrical Drawing

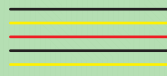
Out put	Basis	4	3	2	1
1) Paper layout	Line types and annotations	In addition to (borderline, title block, and prints name, personal number, random number), the learner prints all. i.e; scale, title, date, client	In addition to (borderline, title block, and prints name, personal number, random number), the learner prints any three of; scale, date, client and title.	In addition to (borderline, title block, and prints name, personal number, random number), the learner prints any one of; scale, date, client and title.	The learner presents the borderline, title block, prints name, personal number and random number.
Geometrical Drawings	Graphical presentations of; i) Views a) Front	In addition to construction lines and outlines, a learner	In addition to the construction lines and outline, a	In addition to presenting construction lines or the outlines, the	In addition to the construction lines, a learner presents less

	b) Plan c) End ii) Development iii) Isometric iv) Auxiliary view v) Curve of interpenetration	comprehensively presents at least $\frac{4}{5}$ of the procedures, required in coming up with a complete product that is fit for purpose.	learner presents less than $\frac{4}{5}$ to $\frac{3}{5}$ of the procedure demonstrating general drawing skill and has a complete product that is fit for purpose.	learner has less than $\frac{3}{5}$ to $\frac{1}{5}$ of the required procedures demonstrating a partial drawing skills and, has an incomplete product but trajectories to purpose.	than $\frac{1}{5}$ of the procedures expressing limited drawing skills and the made product is not fit for purpose.
Structural Drawing	Graphical representations; i) Space diagram ii) Polar diagram iii) Link polygon iv) Stress diagram v) Shear force vi) Vector diagram	Produces correct results that inform decision making on the structural members or figures and makes comprehensive drawings for at	Produces correct results that inform decision making on the structural members or figures and produces drawings that	makes part drawings for at least $\frac{2}{5}$ of the expected graphical presentations that address the issue raised in the scenario and task and the results do	makes drawings that provide limited or no link that addresses the issue raised in the scenario and task and the results do

	Results; i) Reactions ii) Force magnitude iii) Force type / nature iv) Resultant / equilibrant.	least $\frac{4}{5}$ of the expected graphical presentations that address the issue raised in the scenario and task.	generally capture least $\frac{3}{5}$ but less than $\frac{4}{5}$ of the expected graphical presentations that address the issue raised in the scenario and task.	results also provide partial information to decision making on the structural members	not inform decision making on the structural members
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4.2 Paper Two - Mechanical Construction

Output	Basis	4	3	2	1
Write up	1) Interpretation of mechanical concepts 2) Comprehension of Mechanical fasteners and Power transmission system elements. with respect to: i) Operational procedures ii) Failures identification Trouble shooting / Maintenance criteria	The learner demonstrates a comprehensive understanding of the task (identifies all the required mechanical concepts from the scenario) in line with the item in the task	The learner demonstrates a general understanding of the task (identifies the main mechanical concepts from the scenario) in line with the item in the task	The learner demonstrates partial understanding of the task (identifies some of the required mechanical concepts from the scenario) in line with the item in the task	The learner demonstrates partial understanding of the task (identifies very few or none of the required mechanical concepts from the scenario) in line with the item in the task



Write up	Mechanical concepts (body)	i) The learner explains at least $\frac{4}{5}$ the detailed indicators of the designated concepts required from the scenario.	iv) The learner generally explains the mechanical concepts v) Presents less than $\frac{3}{5}$ to $\frac{2}{5}$ of the detailed indicators of the designated mechanical concepts of the task.	i) The learner partly explains the mechanical concepts ii) presents less than $\frac{2}{5}$ to $\frac{1}{5}$ of the indicators of the designated mechanical concepts.	ii) The learner provides limited explanation of the mechanical concepts iii) Fails to address the task meaningfully iv) No connection among ideas and context is ignored or misunderstood
	1) Mechanical fasteners 2) Power transmission components sketched. 3) Power transmission operations explained. 4) Mechanical failures identified with solutions. 5) Machine maintenance procedure given	i) Shows strong connections between ideas relevant to the task in the context of the scenario,	vi) There is logic in the indicators presented. vii) the ideas presented with minor lapses which do not hinder	iii) Attempts to address the task but without a clear order. iv) Indicators may not clearly align with the task.	

		iii) has a logical explanation, shows and safe use of tools and supports the explanation with appropriate sketches.	understanding of the concept presentation lacks sufficient depth and lacks a smooth flow.	Presentation is disjointed and lacks depth	Presentation is incoherent or fragmented
Making Informed Judgement; Use the acquired knowledge to form an informed opinion/ conclusion or judgement on the mechanical concepts in line with the scenario and task	Forms an Opinion/conclusion that is highly informed, and well-reasoned; based on comprehensive understanding and application of knowledge of mechanical concepts	Forms an opinion/conclusion that is generally relevant and based on knowledge; reasoning is adequate but lacks justification for the mechanical concepts	Forms an opinion/conclusion on that shows limited use of knowledge; reasoning is weak with minimal evidence or clarity.	Forms an opinion/conclusion that is unclear, unsupported, or irrelevant; no evident use of acquired knowledge or reasoning.	

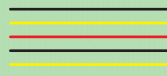
Mechanical drawing paper layout	Line types and annotations	i) In addition to (borderline, title block, and prints name, personal number, random number), the learner prints all. i.e; scale, title, date, client	i) In addition to (borderline, title block, and prints name, personal number, random number), the learner prints any three of; scale, date, client and title.	i) The learner presents the borderline, title block, prints name, personal number and random number.
Mechanical drawings	Graphical presentations 1) Sectional views; (Exploded drawings, Assembly drawings)	ii) The learner graphically presents comprehensively at least $\frac{4}{5}$ of the required indicators of	ii) The learner graphically presents general views addressing less than $\frac{4}{5}$ to $\frac{3}{5}$ of the required	i) The learner graphically presents less than $\frac{1}{5}$ or no indicators of the Mechanical

	2) Pictorial (Freehand Isometric Sketches) 3) Loci / cams; (cycloid, helix, involute, spirals, etc.).	the Mechanical drawings with most of the key appropriate details as per the scenario / task (Scales used dimensions and tolerances, parts lists, symbols, line types, concept design).	indicators of the Mechanical drawing with some of the key appropriate details (Scales used dimensions and tolerances, parts lists, symbols, line types, concept design).	$\frac{1}{5}$ of the required procedures demonstrating a partial drawing skills and, has an incomplete product but trajectory to purpose.	drawing with limited details.
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4.3 Paper Three - Building Construction

Output	Basis	4	3	2	1
Write up	Interpretation of mechanical concepts Comprehension of the concepts of the building processes and understanding of the client's brief. with respect to:	Demonstrates a comprehensive understanding of concepts of the building process called for in scenario and the task call for.	Demonstrates general understanding of concepts of the building process in line with the scenario and the tasks	Demonstrates partial understanding of concepts the building process in line with the scenario and the tasks	Demonstrates limited understanding of concepts of the building process in line with the scenario and the tasks
Write up	Building Construction process concepts; 1) Planning and Design	i) The learner comprehensively explains at least $\frac{4}{5}$ the detailed indicators of the building	viii) The learner generally explains the building construction concepts	i) The learner partly explains the building construction concepts	i) The learner provides limited explanation of the building concepts

2) Site Preparation	construction concepts required from the scenario.	ix) Presents less than $\frac{3}{5}$ to $\frac{2}{5}$ of the detailed indicators of the designated building concepts of the task.	ii) presents less than $\frac{2}{5}$ to $\frac{1}{5}$ of the indicators of the designated building concepts.	ii) presents less than $\frac{1}{5}$ the indicators of the designated building concepts.
3) Foundation construction.				
4) Floor construction	ii) Shows strong connections between the concepts relevant to the task in the context of the scenario,	x) There is logic in the indicators presented.	iii) Attempts to address the task but without a clear order.	iii) Fails to address the task meaningfully
5) Wall construction	iii) has a logical explanation, shows and safe use of tools and supports the explanation with appropriate sketches.	xi) the ideas presented with minor lapses which do not hinder understanding of the concept	iv) Indicators may not clearly align with the task.	iv) No connection among ideas and context is ignored or misunderstood
6) Roof construction		xii) presentation lacks sufficient depth and lacks a smooth flow.	v) Presentation is disjointed and lacks depth	v) Presentation is incoherent or fragmented



	Making Informed Judgement Use the acquired knowledge to form an informed opinion/conclusion or judgement on the building construction concepts in line with the scenario and task	Forms an Opinion/conclusion that is highly informed, and well-reasoned; based on comprehensive understanding and application of knowledge of building construction concepts	Forms an opinion/conclusion that is generally relevant and based on knowledge; reasoning is adequate but lacks justification for the building Construction concepts	Forms an opinion/conclusion that shows limited use of knowledge; reasoning is weak with minimal evidence or clarity.	Forms an opinion/conclusion that is unclear, unsupported, or irrelevant; no evident use of acquired knowledge or reasoning.
Drawings	Architectural drawings and layout;	In addition to (borderline, title block, and prints name, personal	In addition to (borderline, title block, and prints name, personal	In addition to (borderline, title block, and prints name, personal	The learner presents the borderline, title block, prints name,

1) Layout block, annotations, labels)	number, random number), the learner prints all. i.e; scale, title, date, client	number, random number), the learner prints any three of; scale, date, client and title.	number, random number), the learner prints any one of; scale, date, client and title.	personal number and random number.
Architectural drawings 1) Ground Plans 2) Elevations 3) Sectional drawings 4) Pictorial sketch	The learner graphically presents comprehensively at least $\frac{4}{5}$ of the required indicators of the architectural drawings with most of the key appropriate details as per the scenario / task (Scales used dimensions and tolerances, parts lists, symbols, line types, concept design).	The learner graphically presents general views addressing less than $\frac{4}{5}$ to $\frac{3}{5}$ of the required indicators of the architectural drawing with some of the key appropriate details (Scales used dimensions and tolerances, parts lists, symbols, line types, concept design).	In addition to presenting construction lines or the outlines, the learner has less than $\frac{3}{5}$ to $\frac{1}{5}$ of the required procedures demonstrating a partial drawing skills and, has an incomplete product but trajectories to purpose.	ii) The learner graphically presents less than $\frac{1}{5}$ or no indicators of the architectural drawing with limited details.

5. Performance Level Descriptors

5.1 Paper One - Geometrical Drawing

Construct	Performance Level	Descriptor
1) Applying geometric spatial visualization skills to analyze, interpret, represent engineering components in 2D and 3D, develop patterns and intersections relevant to manufacturing.	Exceptional	Produces precise 2D and 3D geometrical drawings and graphically develops and joins the surfaces of engineering components that thoroughly guide the making process
	Outstanding	Produces clear 2D and 3D geometrical drawings, graphically develops and joins surfaces of engineering components that adequately support the making process
	Satisfactory	Produces 2D and 3D drawings with sufficient detail, makes appropriate drawings for; surface pattern layout and joining that provide basic guidance for the making process.
	Basic	Produces geometrical drawings with some correct features, though accuracy and detail are inconsistent and also graphically presents surface pattern layout and joining which do not inform the making process due to noticeable errors
	Elementary	Produces incomplete 2D and 3D sketches and makes inconsistent drawings for; surface pattern lay out and the joining of engineering components, which do not support the making process.

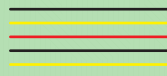
2) Applying principles of statics to identify, represent, and resolve forces acting on structural elements using graphical and calculus methods to determine equilibrium, reactions and internal forces for accurate interpretation of structural behavior.	Exceptional	Critically Analyses forces acting on structures and graphical and calculably establishes and recommend a state of safety and stability for practical applications
	Outstanding	Satisfactorily analyses forces acting on structures, graphical and calculably establishes and recommend a state of safety and stability for practical applications
	Satisfactory	Analyzes forces acting on structures, graphically establishes their internal distribution and establishes their state of safety and stability for practical applications
	Basic	Identifies forces acting on structures and determines internal force distribution noticeable errors using graphical methods only.
	Elementary	Identifies forces on structures but struggles to determine internal force distribution.

5.2 Paper Three - Building Construction

Construct	Performance Level	Descriptor
3) Applying architectural and structural design knowledge and practical construction skills to develop, interpret, and implement building plans for bungalow-type houses, ensuring safety and compliance with design and client requirements.	Exceptional	Well interprets and applies client needs in selecting appropriate building materials, adequately communicating the building process and drafts suitable building drawings.
	Outstanding	Identifies and interprets client needs and uses them to select most of the required building materials, well explains the building process and produces clear building drawings with minor inaccuracies.
	Satisfactory	Identifies client requirements and uses them to select common building materials and produce understandable building drawings but with limited knowledge of the building process
	Basic	Recognizes client preferences but applies them inconsistently when selecting materials and explaining the building processes and drafts building drawings with observable inconsistencies
	Elementary	Interprets some client needs but shows limited understanding of building construction materials and processes and produces inappropriate building drawings

5.3 Paper Two - Mechanical Construction

Construct	Performance Level	Descriptor
4) Assembling mechanical components within a system, illustrating internal features and functional relationships to guide machinists, welders and fabricators in producing parts according to design specifications and assist in fault identification and maintenance decision-making	Exceptional	Produces precise assembly drawings and uses detailed views to clarify internal features and component relationships in machines and adequately selects and uses appropriate mechanical fasteners and transmission components for part production.
	Outstanding	Produces accurate assembly drawings with most views clearly detailed and generally correct representation of internal features and component relationships and suitably selects and uses mechanical fasteners and transmission components for part production.
	Satisfactory	Produces assembly drawings with considerable details of internal features and component relationships; selects common mechanical fasteners and transmission components
	Basic	Produces basic assembly drawings with limited detail and unclear representation of internal features and identifies few appropriate mechanical fasteners and transmission components.



	Elementary	Produces some machine assembly drawings but provides no detail of their internal features and cannot select appropriate mechanical fasteners and transmission components.
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ISBN 978-9913-06-114-8



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