National Occupational Skill Standard (NOSS)

Occupational Title : **Aluminum Fabricator**

Level : **2**

Sector : **Mechanical Engineering**

Sub - Sector : **Fabrication works**

NOSS ID/NSCO ID :

ISCO NO :

Council for Technical Education and Vocational Training

NATIONAL SKILL TESTING BOARD

Madhyapur Thimi-17, Sanothimi, Bhaktapur, Nepal

Developed: 26-06-2025 (12-03-2082)

DACUM Panel:

No	Name	Designation	Organization
1.	Mr. Keshab Rahbahak	Member	Aluminum Fabricator, ANS Aluminum Workshop Pepsicola, Kathmandu
2.	Mr. Ramesh Tamakhu	Member	Sr. Aluminum Fabricator, New Gen Aluminum Dallu, Kathmandu
3.	Mr. Hari Bhakta Shrestha	Member	Sr. Aluminum Fabricator, Aluminum Architect Baneshwor, Kathmandu
4.	Mr. Kanchha Shrestha	Member	Sr. Aluminum Fabricator, Siddhi Binayak Aluminum Nayathimi, Bhaktapur
5.	Mr. Ram Kaji Prajapati	Member	Aluminum Fabricator, Siddhi Binayak Aluminum Nayathimi, Bhaktapur
6.	Mr. Gyan Sundar Shrestha	Member	Sr. Aluminum Fabricator, Jyoti Aluminum Center Thimi, Bhaktapur
7.	Mr. Bhakta Krishna Pate Shrestha	Member	Jyoti Aluminum Center Thimi, Bhaktapur
8.	Mr. Panchha Krishna Shrestha	Member	Aluminum Fabricator, Jyoti Aluminum Center Thimi, Bhaktapur

DACUM Facilitators/Co-Facilitators

1. Mr. Tulsi K.C, Sr. Skill Testing Officer, National Skill Testing Board, Sanothimi, Bhaktapur
2. Mr. Ishwar Chandra Ghimire, Skill Testing Officer, National Skill Testing Board, Sanothimi, Bhaktapur

DACUM Workshop on 13-14 January, 2013

DACUM Verification Panel:

No	Name	Designation	Organization
1.	Mr. Rajendra Shrestha	Member	Sr. instructor, BSET Balaju, Kathmandu
2.	Mr. Rajan Basnet	Member	Workshop Incharge, UCEP Sanothimi, Bhaktapur
3.	Mr. Bhakta Man Nakarmi	Member	Instructor, IOE, Pulchowk, Lalitpur
4.	Mr. Hari Bhakta Shrestha	Member	Sr. Aluminum Fabricator, Aluminum Architect Baneshwor, Kathmandu
5.	Mr. Ramesh Tamakhu	Member	Sr. Aluminum Fabricator, New Gen Aluminum Dallu, Kathmandu
6.	Mr. Dinesh Prajapati	Member	Instructor, Skill Nepal Lalitpur
7.	Mr. Hom Prasad Dangi	Member	Aluminum Fabricator, A One Aluminum Fabricator Pvt. Ltd., Baneshwor, Kathmandu
8.	Mr. Kanchha Shrestha	Member	Sr. Aluminum Fabricator, Siddhi Binayak Aluminum Nayathimi, Bhaktapur

DACUM Facilitators/Co-Facilitators

1. Mr. Tulsi K.C, Sr. Skill Testing Officer, National Skill Testing Board, Sanothimi, Bhaktapur
2. Mr. Ishwar Chandra Ghimire, Skill Testing Officer, National Skill Testing Board, Sanothimi, Bhaktapur

The Occupational Profile (OP) developed by

No	Name	Designation	Organization
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2.	Dr. Kul Bahadur Basnet	Member	National Skill Testing Board Sanothimi, Bhaktapur
3.	Mr. Raj Kumar Shrestha	Member	United Engineering Works Kupandol, Lalitpur
4.	Mr. Binay Manandha	Member	Thapathali Campus Thapathali, Kathmandu
5.	Mr. Hari Bhakta Shrestha	Member	Sr.Aluminum Fabricator, Aluminum Architect Baneshwor, Kathmandu
6.	Mr. Ramesh Tamakhu	Member	Sr. Aluminum Fabricator, New Gen Aluminum Dallu, Kathmandu
7.	Mr. Suresh Bhaila	Member Secretary	Sr. Skill Testing Officer, NSTB Sanothomi, Bhaktapur
8.	Mr. Tulsi K.C	Member	Sr. Skill Testing Officer, NSTB Sanothimi, Bhaktapur
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Recommended by Mechanical Technical Sub Committee Meeting: 20 February, 2013

The National Occupational Skill Standard Developed by:

No	Name	Designation	Organization
1.	Mr. Rabindra Nath Bhattarai	Coordinator	Mechanical Technical Sub Committee National Skill Testing Board, Sanothimi, Bhaktapur
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6.	Mr. Surendra Nakarmi	Member	Saugat Mechanical Workshop Pvt. Ltd. Sanogaun, Lalitpur
7.	Mr. Ganesh Tamang	Member	Lama Aluminum Pvt. Ltd. Tikathali, Lalitpur
8.	Mr. Ganesh Sapkota	Member Secretary	Mechanical Technical Sub Committee National Skill Testing Board, Sanothimi, Bhaktapur
9.	Mr. Suresh Maharjan	Member	Sr. Skill Testing Officer National Skill Testing Board, Sanothimi, Bhaktapur
10.	Mr. Surya Prasad Adhikari	Member	Skill Testing Officer National Skill Testing Board, Sanothimi, Bhaktapur

Recommended by Mechanical Technical Sub Committee: 26 June 2025 (12 Ashadh 2082)

1	**Occupational Title: Aluminum Fabricator** **Level: 2**
2	**Job Description:** Aluminum fabricator L-2, fabricates and installs aluminum doors, fabricates and installs aluminum windows, fabricates and installs aluminum wall partitions, fabricates and installs aluminum glazing works, and repairs and maintains aluminum structures.
3	**UNITS OF COMPETENCY:** 1. Fabricate and install aluminum doors 2. Fabricate and install aluminum windows 3. Fabricate and install aluminum wall partitions 4. Fabricate and install aluminum glazing works 5. Repair and maintain aluminum structures 6. Perform communication 7. Develop professionalism ***Note: Units 6 and 7 are not for testing purpose.***
4	**Qualifying Notes/Prerequisites:** • Physical Requirements: Sound health • Entry Requirements: As per NSTB rules **Additional Information:** • Assessment Types: Performance test only • Assessment Duration: 8 to 10 hrs. (Full competency only) • Recommended Group Size: 8 to 10 candidates

5	**Unit No: 1** **Unit Title: Fabricate and install aluminum doors**	**Unit code:**
	Elements of competency	**Performance standards**
	1.1 Prepare tools, equipment and materials	1.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 1.1.2 Tools and equipment set and prepared as per task requirements. 1.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.
	1.2 Perform freehand sketch	1.2.1 Worksite visually inspected and ***types of doors*** discussed and finalized with clients. 1.2.2 Door dimension measured and clearly recorded. 1.2.3 Freehand sketch of doors prepared covering all details of ***door components***. 1.2.4 Prepared freehand sketch shared with concerned authority for feedback and approval.
	1.3 Prepare estimate	1.3.1 Details of material listed based on working drawing. 1.3.2 Materials cost estimated based on market price. 1.3.3 Time and labour cost estimated based on job. 1.3.4 Total cost of aluminum doors estimated as per workplace format and informed to clients.
	1.4 Fabricate door components	1.4.1 Section size of door components determined as per drawing. 1.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 1.4.3 Door components measured and clearly marked in required ***angles*** and dimension. 1.4.4 Door components cut precisely along the mark in required angle and dimension. 1.4.5 Slots and holes created at required points for joints and fixing. 1.4.6 Cut edges and surfaces de-burred and smoothened.

		1.4.7 Fabricated components labelled with ***relevant information*** and stored in designated area.
	1.5 Assemble door components	1.5.1 Fabricated frame/shutter components arranged in assembly sequence. 1.5.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 1.5.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumb, and level. 1.5.4 Gasket fixed properly or silicon evenly applied to prevent movement of panel. 1.5.5 Completed frame/shutter stored in designated area.
	1.6 Install door frame	1.6.1 ***Debris*** removed from installation sites and disposed safely. 1.6.2 Door frame installation site measured and verified with frame dimension. 1.6.3 Frame placed in designated location in line, level, and plumb. 1.6.4 Fixing holes marked and drilled on the wall or structure. 1.6.5 Frame fixed securely using screw and anchors. 1.6.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 1.6.7 Protective film/stickers removed from structure and cleaned. 1.6.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and surface smoothened.
	1.7 Install shutter	1.7.1 Shutter checked for measurement, squareness, and alignment with the door frame. 1.7.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 1.7.3 Hardware accessories positioned, aligned, and fixed firmly on shutter.

		1.7.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 1.7.5 Operation of hardware accessories checked and adjusted as per requirement. 1.7.6 Protective films/stickers removed from structure and cleaned. 1.7.7 Gaps between shutter and panel sealed with silicon paste and gasket. 1.7.8 Installation details recorded as per workplace procedures.
	1.8 Clean workplace	1.8.1 Unused materials collected and stored in designated place. 1.8.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated area. 1.8.3 Workplace cleaned neatly and waste disposed as per ***3R's principle*** in designated area.
6	**Task Performance Requirements (Tools, Equipment and Materials):** • Measuring tape, steel ruler, marker, pencil, working table, try square, hacksaw, circular saw, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, Allen key, center punch, clamp, punching machine, labeling sticker, screw, rivet, bolt, anchor, gasket, guide, hardware accessories, jig saw, aluminum profile (78, 90 and 100 series), panel (board, glass, ACP), aluminum cutting machine, paper cutter, bevel protractor, water level, spirit level, silicon gun, silicon paste, polyurethane (PU) foam, glass cutter, glass holder, plumb bob, hammer, spanners, chisel, lubricant, tool kit box, cleaning cloth, brush, dust bin, dust pan, broom, first aid kit, and personal protective equipment (PPE).	
7	**Safety and Hygiene (Occupational Health and Safety):** • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from fire and electrical hazards. • Maintain good ventilation. • Dispose aluminum scraps, burrs, and used abrasives safely.	

8	Required Knowledge		
	Technical Knowledge	**Applied Calculation**	**Graphical Information**

	• Tools, equipment and materials
	  ○ Types
	  ○ Uses
	  ○ Safe handling
	  ○ Storage
	• Aluminum profile
	  ○ Introduction and properties of aluminum
	  ○ Application
	  ○ Types
	  ○ Series and standard dimension
	• Freehand sketch and symbols
	• Estimating and costing
	• Fabricating door components
	  ○ Types of aluminum door
	  ○ Components of flush and sliding doors and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, punching, riveting, and screwing technique
	  ○ De-burring and edge finishing technique
	  ○ Types of joints
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Hardware accessories and fittings ○ Labeling and storing • Assembling door frame and shutter ○ Assembly sequence ○ Fixing, joining and fastening methods ○ Paneling methods ○ Quality inspection, adjustment, and alignment technique • Frame and shutter installation ○ Worksite inspection ○ Preparation of openings ○ Frame positioning and alignment ○ Securing frame ○ Shutter fitting and installation ○ Hardware installation ○ Surface sealing and finishing • Cleaning and waste management • Recordkeeping and documentation • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**					
	Unit: 1 **Unit Title: Fabricate and install aluminum doors**					
	Candidate Details			**Assessors Detail**		
	Candidate's Name: Registration Number: Symbol No: Test Centre: Test Date:			Assessors' Name 1. 2. 3.		ID/License No:
Element of competency	**Performance Standards**			**Standard Met**	**Standard Not Met**	**Evidence Type**	**Comments**
1.1 Prepare tools, equipment and materials	1.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 1.1.2 Tools and equipment set and prepared as per task requirements. 1.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.						
1.2 Perform freehand sketching	1.2.1 Worksite visually inspected and ***types of doors*** discussed and finalized with clients. 1.2.2 Door dimension measured and clearly recorded. 1.2.3 Freehand sketch of doors prepared covering all details of ***door components***.						

	1.2.4 Prepared freehand sketch shared with concerned authority for feedback and approval.				
1.3 Prepare estimate	1.3.1 Details of material listed based on working drawing. 1.3.2 Materials cost estimated based on market price. 1.3.3 Time and labour cost estimated based on job. 1.3.4 Total cost of aluminum doors estimated as per workplace format and informed to clients.				
1.4 Fabricate door components	1.4.1 Section size of door components determined as per drawing. 1.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 1.4.3 Door components measured and clearly marked in required ***angles*** and dimension. 1.4.4 Door components cut precisely along the mark in required angle and dimension. 1.4.5 Slots and holes drilled or punched at required points for joints and fixing. 1.4.6 Cut edges and surfaces de-burred and smoothened. 1.4.7 Fabricated components labelled with ***relevant information*** and stored in designated area.				
1.5 Assemble door components	1.5.1 Fabricated frame/shutter components arranged in				

	assembly sequence. 1.5.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 1.5.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumb, and level. 1.5.4 Gasket fixed properly or silicon evenly applied to prevent movement of panel. 1.5.5 Completed frame/shutter stored in designated area.				
1.6 Install door frame	1.6.1 ***Debris*** removed from installation sites and disposed safely. 1.6.2 Door frame installation site measured and verified with frame dimension. 1.6.3 Frame placed in designated location in line, level, and plumb. 1.6.4 Fixing holes marked and drilled on the wall or structure. 1.6.5 Frame fixed securely using screw and anchors. 1.6.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 1.6.7 Protective films/stickers removed from structure and cleaned.				

	1.6.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and surface smoothened.				
1.7 Install shutter	1.7.1 Shutter checked for measurement, squareness, and alignment with the door frame. 1.7.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 1.7.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 1.7.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 1.7.5 Operation of hardware accessories checked and adjusted as per requirement. 1.7.6 Protective films/stickers removed from structure and cleaned. 1.7.7 Gaps between shutter and panel board sealed with silicon paste. 1.7.8 Installation details recorded as per workplace procedures.				
1.8 Clean workplace	1.8.1 Unused materials collected and stored in designated place. 1.8.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated area. 1.8.3 Workplace cleaned neatly and waste disposed as per ***3R's***				

	principle in designated area.				

WT- Written Test **OQ**- Oral Question **PT-** Practical Test **DO** – Direct Observation **SR**- Supervisor's report **SN**–Simulation

RP- Role Play **PG –**Photographs **VD**- Video **CT** – Certificates **TS** – Testimonials (Reward) **PP** – Product Produced

CS – Case Study

Range Statement

Variable	Range
Personal protective equipment	*May include but not limited to:* • Helmet • Safety glasses/goggles • Mask • Apron • Gloves • Earmuff • Safety shoes
Types of door	*May include but not limited to:* • Flush door • Swing door • Hanging sliding door • Bottom sliding door • Aluminum glass door • Folding door • Double door

Door components	*May include but not limited to:*
	• Frame
	  ○ Head (Top)
	  ○ Sill (Bottom)
	  ○ Jamb or post (sides)

	○ Slide rail ○ Guide rail • Shutter ○ Top rail ○ Middle rail ○ Bottom rail ○ Stiles (two sides posts) • Panel ○ Glass ○ Board ○ Aluminum composite panel (ACP)
Angles	*May include but not limited to:* • 45 degree • 90 degree
Relevant information	*May include but not limited to:* • Dimension • Part number • Job number
Appropriate joints	*May include but not limited to:* • Screw port joint • Rivet joint
Debris	*May include but not limited to:* • Dust • Loose materials

	• Excess mortar
Hardware accessories	*May include but not limited to:* • Hinge • Sliding roller • Handle • Tower bolt • Al-drop set • Micro lock • Door closer • Door stopper • Floor spring • Tie rod • Mortise lock
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 2** **Unit Title: Fabricate and install sliding aluminum windows**	**Unit code:**
	Elements of competency	**Performance standards**
	2.1 Prepare tool, equipment and materials	2.1.1 ***Personal protective equipment (PPE)*** used in accordance with task requirements. 2.1.2 Tools and equipment set and prepared as per task requirements. 2.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.
	2.2 Perform freehand sketching	2.2.1 Worksite visually inspected and types of ***sliding windows*** discussed and finalized with clients. 2.2.2 Dimension of windows measured and clearly recorded. 2.2.3 Freehand sketch of windows prepared covering all details of ***window frame and shutter components***. 2.2.1 Prepared sketch shared with concerned authority for feedback and approval.
	2.3 Prepare estimate	2.3.1 Details of material listed based on working drawing. 2.3.2 Materials cost estimated based on market price. 2.3.3 Time and labour cost estimated based on job. 2.3.4 Total cost of aluminum sliding windows estimated as per workplace format and informed to clients.
	2.4 Fabricate window frame and shutter components	2.4.1 Section size of window frame and shutter components determined as per drawing. 2.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 2.4.3 Window frame and shutter components measured and clearly marked in required ***angles*** and dimension.

		2.4.4 Window frame and shutter components cut precisely along the mark in required angles and dimension. 2.4.5 Slots and holes created at designated locations on profile. 2.4.6 Cut edges and surfaces de-burred and smoothened. 2.4.7 Fabricated components labelled with ***relevant information*** and stored in designated area.
	2.5 Assemble window frame and shutter components	2.5.1 Fabricated frame/shutter components arranged in assembly sequence. 2.5.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 2.5.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumb, and level. 2.5.4 Gasket tightly fixed to prevent movement of panel. 2.5.5 Completed frame/shutter stored in designated area.
	2.6 Install window frame	2.6.1 ***Debris*** removed from installation sites and disposed safely. 2.6.2 Window frame installation site measured and verified with frame dimension. 2.6.3 Frame placed in designated location in line, level, and plumb. 2.6.4 Fixing holes marked and drilled on the wall or structure. 2.6.5 Frame fixed securely using screw and anchors. 2.6.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 2.6.7 Protective films/stickers removed from structure and cleaned. 2.6.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and

		seal surface smoothened.
	2.7 Install shutter	2.7.1 Shutter checked for measurement, squareness, and alignment with the window frame. 2.7.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 2.7.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 2.7.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 2.7.5 Operation of hardware accessories checked and adjusted as per requirement. 2.7.6 Protective films/stickers removed from structure and cleaned. 2.7.7 Gaps between shutter and panel board sealed with silicon paste. 2.7.8 Installation details recorded as per workplace procedures.
	2.8 Clean workplace	2.8.1 Unused materials collected and stored in designated place. 2.8.2 Tools and equipment cleaned and stored in designated place. 2.8.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.
6	**Task Performance Requirements (Tools, Equipment and Materials):** • Measuring tape, steel ruler, marker, pencil, working table, try square, hacksaw, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, center punch, clamp, punching machine, labeling sticker, screw, rivet, anchor, gasket, guide, hardware accessories, jig saw, aluminum profile (78, 90 and 100 series), panel (glass, wire mesh), aluminum cutting machine, paper cutter, bevel protractor, water level, spirit level, silicon gun, silicon paste, polyurethane (PU) foam, glass cutter, glass holder, gasket fixing roller, plumb bob, hammer, chisel, lubricant, tool kit box, cleaning cloth, brush, dust bin, dust pan, broom, fire extinguisher, first aid kit, and personal protective equipment (PPE).	

7	**Safety and Hygiene (Occupational Health and Safety):** • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from fire and electrical hazards. • Maintain good ventilation. • Dispose aluminum scraps, burrs, and used abrasives safely.

8	Required Knowledge		
	Technical Knowledge	**Applied Calculation**	**Graphical Information**

	• Tools, equipment and materials
	  ○ Types
	  ○ Uses
	  ○ Safe handling
	  ○ Storage
	• Aluminum profile
	  ○ Introduction and properties of aluminum
	  ○ Application
	  ○ Types
	  ○ Series and standard dimensions
	• Freehand sketching and symbols
	• Estimating and costing
	• Fabricating window components
	  ○ Types of aluminum window
	  ○ Components of windows frame, shutter, and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, punching, riveting, and screwing technique
	  ○ De-burring and edge finishing technique
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Types of joints ○ Hardware accessories and fittings ○ Labeling and storing • Assembling window frame and shutter ○ Assembly sequence ○ Fixing, joining and fastening methods ○ Glazing methods ○ Quality inspection, adjustment and alignment technique • Frame and shutter installation ○ Worksite inspection ○ Preparation of openings ○ Frame positioning and alignment ○ Securing frame ○ Shutter fitting and installation ○ Hardware installation ○ Surface sealing and finishing • Storing technique of tools, equipment and materials • Cleaning and waste management • Record keeping and documentation • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**					
	Unit: 2 **Unit Title: Fabricate and install sliding aluminum windows**					
	Candidate Details		**Assessors Detail**			
	Candidate's Name: Registration Number: Symbol No: Test Centre: Test Date:		Assessors' Name 1. 2. 3.		ID/License No:	
Element of competency	**Performance Standards**		**Standard Met**	**Standard Not Met**	**Evidence Type**	**Comments**
2.1 Prepare tool, equipment and materials	2.1.1 ***Personal protective equipment (PPE)*** used in accordance with task requirements. 2.1.2 Tools and equipment set and prepared as per task requirements. 2.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.					
2.2 Perform freehand sketching	2.2.1 Worksite visually inspected and types of ***sliding windows*** discussed and finalized with clients. 2.2.2 Dimension of windows measured and clearly recorded. 2.2.3 Freehand sketch of windows prepared covering all details					

	of ***window frame and shutter components***. 2.2.4 Prepared sketch shared with concerned authority for feedback and approval.				
2.3 Prepare estimate	2.3.1 Details of material listed based on working drawing. 2.3.2 Materials cost estimated based on market price. 2.3.3 Time and labour cost estimated based on job. 2.3.4 Total cost of aluminum sliding windows estimated as per workplace format and informed to clients.				
2.4 Fabricate window frame and shutter components	2.4.1 Section size of window frame and shutter components determined as per drawing. 2.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 2.4.3 Window frame and shutter components measured and clearly marked in required ***angles*** and dimension. 2.4.4 Window frame and shutter components cut precisely along the mark in required angles and dimension. 2.4.5 Slots and holes created at designated locations on profile. 2.4.6 Cut edges and surfaces de-burred and smoothened. 2.4.7 Fabricated components labelled with ***relevant information*** and stored in designated area.				
2.5 Assemble window frame and shutter	2.5.1 Fabricated frame/shutter components arranged in				

components	assembly sequence. 2.5.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 2.5.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumb, and level. 2.5.4 Gasket tightly fixed to prevent movement of panel. 2.5.5 Completed frame/shutter stored in designated area.				
2.6 Install window frame	2.6.1 ***Debris*** removed from installation sites and disposed safely. 2.6.2 Window frame installation site measured and verified with frame dimension. 2.6.3 Frame placed in designated location in line, level, and plumb. 2.6.4 Fixing holes marked and drilled on the wall or structure. 2.6.5 Frame fixed securely using screw and anchors. 2.6.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 2.6.9 Protective films/stickers removed from structure and cleaned. 2.6.7 Gaps between frame and wall sealed with silicon				

	paste/Polyurethane (PU) foam and seal surface smoothened.				
2.7 Install shutter	2.7.1 Shutter checked for measurement, squareness, and alignment with the window frame. 2.7.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 2.7.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 2.7.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 2.7.5 Operation of hardware accessories checked and adjusted as per requirements. 2.7.6 Protective films/stickers removed from structure and cleaned. 2.7.7 Gaps between shutter and panel board sealed with silicon paste. 2.7.8 Installation details recorded as per workplace procedures.				
2.8 Clean workplace	2.8.1 Unused materials collected and stored in designated place. 2.8.2 Tools and equipment cleaned and stored in designated place. 2.8.3 Workplace cleaned and waste disposed as per ***3R's***				

	principle in designated location.				

WT- Written Test **OQ**- Oral Question **PT-** Practical Test **DO** – Direct Observation **SR**- Supervisor's report **SN**–Simulation

RP- Role Play **PG –**Photographs **VD**- Video **CT** – Certificates **TS** – Testimonials (Reward) **PP** – Product Produced

CS – Case Study

Range Statement

Variable	Range
Personal protective equipment	*May include but not limited to:* • Helmet • Safety glasses/goggles • Mask • Apron • Gloves • Earmuff • Safety shoes

Sliding windows	*May include but not limited to:*
	• Sliding windows
	  ○ Three panel 25/50/25
	  ○ Four panel
	  ○ Top fix
	  ○ Bottom fix
	  ○ Top and bottom fix

Window frame and shutter components	*May include but not limited to:*
	• Frame
	  ○ Head (Top)
	  ○ Sill (Bottom)
	  ○ Jamb or post (sides)
	  ○ Mullion
	• Shutter

	○ Top rail ○ Bottom rail ○ Stiles (two sides posts) • Panel ○ Glass ○ Wire mesh
Angles	*May include but not limited to:* • 35 degrees • 45 degrees • 90 degrees
Relevant information	*May include but not limited to:* • Dimension • Part number • Job number
Appropriate joints	*May include but not limited to:* • Screw port joint • Rivet joint
Debris	*May include but not limited to:* • Dust • Loose materials • Excess mortar
Hardware accessories	*May include but not limited to:* • Sliding roller • Handle

	• Auto lock • Centre lock • Weather strip brush • Louver blade set • Top guide • Bottom guide
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 3** **Unit Title: Fabricate and install aluminum wall partitions**	**Unit code:**
	Elements of competency	**Performance standards**
	3.1 Prepare tool, equipment and materials	3.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 3.1.2 Tools and equipment set and prepared as per task requirements. 3.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.
	3.2 Perform freehand sketch	3.2.1 Worksite visually inspected and types of ***aluminum wall partition*** discussed and finalized with clients. 3.2.2 Dimension of wall partition installation measured and clearly recorded. 3.2.3 Freehand sketch of wall partition prepared with ***opening structures*** covering all details of ***partition components***. 3.2.4 Prepared sketch shared with concerned authority for feedback and approval.
	3.3 Prepare estimate	3.3.1 Details of material listed based on working drawing. 3.3.2 Materials cost estimated based on market price. 3.3.3 Time and labour cost estimated based on job. 3.3.4 Total cost of aluminum partition works estimated as per workplace format and informed to clients.
	3.4 Fabricate wall partition components	3.4.1 Section size and quantity of partition components and ***opening structure components*** determines as per drawing. 3.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 3.4.3 Partition components and opening structures components measured and cutting lines

		clearly marked to required ***angles*** and dimension. 3.4.4 Partition components and opening structures components cut precisely along the mark in required angle and dimension. 3.4.5 Cut edges and surfaces de-burred and smoothened. 3.4.6 Prepared components labelled with ***relevant information*** and stored safely in designated area.
	3.5 Assemble partition components	3.5.1 Fabricated partition components and opening structures components arranged in assembly sequence. 3.5.2 Location for fixing angle, drilling and joints clearly marked on partition components as per drawing. 3.5.3 Holes drilled at required points for joining and angle fixed. 3.5.4 Partition frame components joined using ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 3.5.5 Windows frame fabricated as per drawing size maintaining straightness, plumb, and squareness. 3.5.6 Door, window, and ventilations shutter fabricated as per drawing size maintaining straightness, plumb, and squareness. 3.5.7 Panel fitted into door, windows and ventilations shutter without damaging panel surface. 3.5.8 Drilled and screwed surfaces deburred and smoothened.

	3.6 Install partition	3.6.1 Partition area cleaned and partition frame arranged for installation. 3.6.2 Partition layout marked on wall, ceiling, and floor for fixing of partition frame. 3.6.3 Partition frame placed and fixed in designated location and remaining partition components assembled sequentially in line, level, and plumb. 3.6.4 Windows frame fitted into partition frame in designated location maintaining plumb, straightness, and squareness. 3.6.5 Panel fitted into partition frame without damaging the surface and partition clip fixed securely. 3.6.6 Shutter of door, window and ventilation fitted into frame using ***hardware accessories*** and their functionality checked and adjusted. 3.6.7 Gaps between frame and structure sealed using silicone or PU foam. 3.6.8 Gaps between frame and panel sealed using silicone or gasket. 3.6.9 Finished partition checked for strength, alignment, and neatness. 3.6.10 Protective films/stickers removed from structure and cleaned. 3.6.11 Installation details recorded as per workplace procedure.
	3.7 Clean workplace	3.7.1 Unused materials collected and stored in designated place. 3.7.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated area. 3.7.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.

6	**Task Performance Requirements (Tools, Equipment and Materials):** • Measuring tape, steel ruler, marker, pencil, working table, try square, hacksaw, circular saw, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, center punch, clamp, labeling sticker, screw, rivet, anchor, gasket, jig saw, aluminum profile (partition series), panel (board, glass, ACP, mesh), hardware accessories, aluminum cutting machine, paper cutter, Allen key, bevel protractor, water level, spirit level, silicon gun, silicon paste, polyurethane (PU) foam, glass cutter, glass holder, plumb bob, hammer, chisel, sand paper, lubricant, tool kit box, cleaning cloth, brush, dust bin, dust pan, broom, fire extinguisher, first aid kit, and personal protective equipment (PPE).
7	**Safety and Hygiene (Occupational Health and Safety):** • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from fire and electrical hazards. • Maintain good ventilation. • Dispose aluminum scraps, burrs, and used abrasives safely.

8	Required Knowledge		
	Technical Knowledge	**Applied Calculation**	**Graphical Information**

	• Tools, equipment and materials
	  ○ Types
	  ○ Uses
	  ○ Safe handling
	  ○ Storage
	• Aluminum profile
	  ○ Introduction and properties of aluminum
	  ○ Application
	  ○ Types
	  ○ Series and standard dimension
	• Freehand sketching and symbols
	• Estimating and costing
	• Fabricating wall partition components
	  ○ Types of partition
	  ○ Components of partition and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, riveting, and screwing technique
	  ○ De-burring and edge finishing technique
	  ○ Use of joint
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Labeling and storing • Assembling partition frame ○ Assembly sequence ○ Fixing, joining and fastening methods ○ Quality inspection, adjustment and alignment technique • Partition installation ○ Worksite inspection ○ Frame positioning and alignment ○ Securing frame ○ Preparation of opening structures, and installation. ○ Panel fitting and installation ○ Surface sealing and finishing • Storing technique of tools, equipment and materials • Cleaning and waste management • Record keeping and documentation • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**				
	Unit: 3 **Unit Title: Fabricate and install aluminum wall partitions**				
	Candidate Details		**Assessors Detail**		
	Candidate's Name: Registration Number: Symbol No: Test Centre: Test Date:		Assessors' Name 1. 2. 3.		ID/License No:

Element of competency	**Performance Standards**	**Standard Met**	**Standard Not Met**	**Evidence Type**	**Comments**
3.1 Prepare tool, equipment and materials	3.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 3.1.2 Tools and equipment are set and prepared as per task requirements. 3.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.				
3.2 Perform freehand sketch	3.2.1 Worksite visually inspected and types of ***aluminum wall partition*** discussed and finalized with clients. 3.2.2 Dimension of partition wall installation measured and clearly recorded. 3.2.3 Freehand sketch of partition including wall prepared with				

	opening structures covering all details of ***partition components***. 3.2.4 Prepared sketch shared with concerned authority for feedback and approval.				
3.3 Prepare estimate	3.3.1 Details of material listed based on working drawing. 3.3.2 Materials cost estimated based on market price. 3.3.3 Time and labour cost estimated based on job. 3.3.4 Total cost of aluminum partition works estimated as per workplace format and informed to clients.				
3.4 Fabricate wall partition components	3.4.1 Section size and quantity of partition components and ***opening structure components*** determines as per drawing. 3.4.2 Aluminum profile collected to required quantity and inspected for physical damage. 3.4.3 Partition components and opening structures components measured and cutting lines clearly marked to required ***angles*** and dimension. 3.4.4 Partition components and opening structures components cut precisely along the mark in required angle and dimension. 3.4.5 Cut edges and surfaces de-burred and smoothened. 3.4.6 Prepared components labelled with ***relevant information***				

	and stored safely in designated area				
3.5 Assemble partition components	3.5.1 Fabricated partition components and opening structures components arranged in assembly sequence. 3.5.2 Location for fixing angle, drilling and joints clearly marked on partition components as per drawing. 3.5.3 Holes drilled at required points for joining and angle installation. 3.5.4 Partition frame components joined using ***appropriate joints*** in assembly sequence maintaining straightness, plum, and level. 3.5.5 Windows frame fabricated as per drawing size maintaining straightness, plumb, and squareness. 3.5.6 Door, window, and ventilations shutter fabricated as per drawing maintaining straightness, plum, and squareness. 3.5.7 Panel fitted into door, windows and ventilations shutter without damaging panel surface. 3.5.8 Drilled and nailing surfaces deburred and smoothened.				
3.6 Install partition	3.6.1 Partition area cleared and partition frame arranged for installation. 3.6.2 Partition layout marked on wall, ceiling, and floor for fixing of partition frame.				

	3.6.3 Partition frame placed and fixed in designated location and remaining partition components assembled sequentially in line, level, and plumb. 3.6.4 Windows frame fitted into partition frame in designated location maintaining plumb, straightness, and squareness. 3.6.5 Panel fitted into partition frame without damaging the surface and partition clip fixed securely. 3.6.6 Door, window and ventilations panel shutter fitted into frame using ***hardware accessories*** and their functionality checked and adjusted. 3.6.7 Gaps between frame and structure sealed using silicone or PU foam. 3.6.8 Gaps between frame and panel sealed using silicone or gasket. 3.6.9 Finished partition checked for strength, alignment, and neatness. 3.6.10 Stickers removed from structure and cleaned. 3.6.11 Installation details recorded as per workplace procedure.				
3.7 Clean workplace	3.7.1 Unused materials collected and stored in designated place. 3.7.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated area.				

	3.7.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.				

WT- Written Test **OQ**- Oral Question **PT-** Practical Test **DO** – Direct Observation **SR**- Supervisor's report **SN**–Simulation

RP- Role Play **PG –**Photographs **VD**- Video **CT** – Certificates **TS** – Testimonials (Reward) **PP** – Product Produced

CS – Case Study

Range Statement

Variable	Range
Personal protective equipment	*May include but not limited to:* • Helmet • Safety glasses/goggles • Mask • Apron • Gloves • Earmuff • Safety shoes
Aluminum wall partition	*May include but not limited to:* • Half partition • Full partition • Curve partition
Opening structures	*May include but not limited to:* • Door • Window • Ventilation

Partition components	*May include but not limited to:*
	• Frame
	  ○ Vertical members
	  ○ Horizontal members
	  ○ Inclined members

	○ Curve Members • Panel ○ Glass ○ Board ○ ACP
Opening structure components	*May include but not limited to:* **Door** • Shutter ○ Top rail ○ Bottom rail ○ Stiles(two sides posts) • Panel ○ Glass ○ Board ○ ACP **Windows** • Frame ○ Head (Top) ○ Sill((Bottom) ○ Jamb or post (Sides) • Shutter ○ Top rail ○ Bottom rail ○ Stiles(two sides posts) • Panel ○ Glass ○ Board ○ ACP ○ Mesh **Ventilation** • Shutter ○ Top rail ○ Bottom rail ○ Stiles(two sides posts) • Panel ○ Glass ○ Board ○ ACP
Angles	*May include but not limited to:* • 45 degrees • 90 degrees • Variable angle (inclined and curved)

Relevant information	*May include but not limited to:* • Dimension • Part number • Job number
Appropriate joints	*May include but not limited to:* • Screw port joint • Rivet joint
Hardware accessories	*May include but not limited to:* • Hinge • Sliding roller • Handle • Auto lock • Centre lock • Weather strip brush • Louver blade set
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 4** **Unit Title: Perform aluminum glazing works**	**Unit code:**
	Elements of competency	**Performance standards**
	4.1 Prepare tool, equipment and materials	4.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 4.1.2 Tools and equipment set and prepared as per task requirements. 4.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.
	4.2 Perform freehand sketching	4.2.1 Worksite visually inspected and glazing requirements discussed and finalized with clients. 4.2.2 Dimension of glazing areas measured and clearly recorded. 4.2.3 Freehand sketch of glazing structures prepared covering all details of ***glazing frame components***. 4.2.4 Prepared sketch shared with concerned authority for feedback and approval.
	4.3 Prepare estimate	4.3.1 Details of material listed based on working drawing. 4.3.2 Materials cost estimated based on market price. 4.3.3 Time and labour cost estimated based on job. 4.3.4 Total cost of glazing works estimated as per workplace format and informed to clients.
	4.4 Fabricate glazing frame components	4.4.1 Required size and quantity of glazing frame components determines as per drawing. 4.4.2 Aluminum glazing profile collected to required quantity and inspected for physical damage. 4.4.3 Glazing profile measured and cutting lines clearly marked to required angles and dimension as per site conditions.

		4.4.4 Glazing profile cut precisely along the mark in required angle and dimension. 4.4.5 Cut edges and surfaces de-burred and smoothened. 4.4.6 Prepared glazing frame components labelled with ***relevant information*** and stored safely in designated area.
	4.5 Assemble glazing frame components	4.5.1 Fabricated glazing frame components arranged in assembly sequence. 4.5.2 Location for holes and joints measured and marked as per drawing. 4.5.3 Holes drilled at require points and angle fixed. 4.5.4 Frame components joined using ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 4.5.5 Completed frame stored in designated area.
	4.6 Install glazing frame	4.6.1 Glazing area inspected and debris, dust, and loose materials removed. 4.6.2 Trial fit of frame performed and openings adjusted as required. 4.6.3 Frame positioned into opening and securely fixed to designated location maintaining level, plumb, straightness, and squareness. 4.6.4 Ladder or simple scaffolding erected based on site condition and height requirements. 4.6.5 Additional glazing frame components sequentially installed in line, level, and plumb as per site condition and height requirements. 4.6.6 Trail fit of glass performed and fixed into designated frame location with double tape and silicon in plumb, straightness, and squareness. 4.6.7 Windows shutter fixed in line, level, and plumb. 4.6.8 Gaps between frame, shutter, and panel is sealed with appropriate ***sealing materials***.

		4.6.9 Protective films/stickers removed from frame structure and cleaned. 4.6.10 Completed glazing works inspected for neatness, and operation of openable windows. 4.6.11 Scaffolding dismantled safely and stored in designated area. 4.6.12 Installation details recorded as per workplace procedures.
	4.7 Clean workplace	4.7.1 Unused materials collected and stored in designated place. 4.7.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated place. 4.7.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.
6	**Task Performance Requirements (Tools, Equipment and Materials):** • Measuring tape, steel ruler, marker, pencil, working table, try square, hacksaw, circular hand saw, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, center punch, clamp, labeling sticker, screw, rivet, anchor, gasket, aluminum profile (Glazing series), glass, double tape, aluminum cutting machine, paper cutter, bevel protractor, water level, spirit level, silicon gun, silicon paste, polyurethane (PU) foam, glass cutter, glass holder, plumb bob, hammer, chisel, hardware accessories, lubricant, tool kit box, cleaning cloth, brush, dust bin, dust pan, broom, first aid kit, and personal protective equipment (PPE).	
7	**Safety and Hygiene (Occupational Health and Safety):** • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from fire and electrical hazards. • Maintain good ventilation. • Dispose aluminum scraps, burrs, and used abrasives safely.	

8	Required Knowledge		
	Technical Knowledge	**Applied Calculation**	**Graphical Information**

	• Tools, equipment and materials
	  ○ Types
	  ○ Uses
	  ○ Safe handling
	  ○ Storage
	• Aluminum glazing profile
	  ○ Introduction and properties of aluminum glazing profile
	  ○ Application
	  ○ Types
	  ○ Series and standard dimension
	• Freehand sketching and symbols
	• Estimating and costing
	• Fabricating glazing components
	  ○ Types of glazing works
	  ○ Components of glazing and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, riveting, and screwing technique
	  ○ De-burring and edge finishing technique
	  ○ Use of joint
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Labeling and storing • Assembling glazing frame ○ Assembly sequence ○ Preparation of openings/glazing area ○ Fixing, joining and fastening methods ○ Quality inspection, adjustment and alignment technique • Simple scaffolding works • Glazing frame installation and panel fixing ○ Worksite inspection ○ Frame positioning and alignment ○ Securing frame ○ Window frame installation ○ Hardware accessories installation ○ Glass, panel fitting and installation ○ Surface sealing and finishing • Dismantling process of simple scaffolding works • Storing technique of tools, equipment and materials • Cleaning and waste management • Record keeping and documentation • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**					
	Unit: 4 **Unit Title: Perform aluminum glazing works**					
	Candidate Details		**Assessors Detail**			
	Candidate's Name: Registration Number: Symbol No: Test Centre: Test Date:		Assessors' Name 1. 2. 3.		ID/License No:	
Element of competency	**Performance Standards**		**Standard Met**	**Standard Not Met**	**Evidence Type**	**Comments**
4.1 Prepare tool, equipment and materials	4.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 4.1.2 Tools and equipment set and prepared as per task requirements. 4.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.					
4.2 Perform freehand sketching	4.2.1 Worksite visually inspected and glazing requirements discussed and finalized with clients. 4.2.2 Dimension of glazing areas measured and clearly recorded. 4.2.3 Freehand sketch of glazing structures prepared covering all					

	details of ***glazing frame components***. 4.2.4 Prepared sketch shared with concerned authority for feedback and approval.				
4.3 Prepare estimate	4.3.1 Details of material listed based on working drawing. 4.3.2 Materials cost estimated based on market price. 4.3.3 Time and labour cost estimated based on job. 4.3.4 Total cost of glazing works estimated as per workplace format and informed to clients.				
4.4 Fabricate glazing frame components	4.4.1 Required size and quantity of glazing frame components determines as per drawing. 4.4.2 Aluminum glazing profile collected to required quantity and inspected for physical damage. 4.4.3 Glazing profile measured and cutting lines clearly marked to required angles and dimension as per site conditions. 4.4.4 Glazing profile cut precisely along the mark in required angle and dimension. 4.4.5 Cut edges and surfaces de-burred and smoothened. 4.4.6 Prepared glazing frame components labelled with ***relevant information*** and stored safely in designated area.				
4.5 Assemble glazing frame components	4.5.1 Fabricated glazing frame components arranged in assembly sequence.				

	4.5.2 Location for holes and joints measured and marked as per drawing. 4.5.3 Holes drilled at require points and angle fixed. 4.5.4 Frame components joined using ***appropriate joints*** in assembly sequence maintaining straightness, plumb, and level. 4.5.5 Completed frame stored in designated area.				
4.6 Install glazing frame	4.6.1 Glazing area inspected and debris, dust, and loose materials removed. 4.6.2 Trial fit of frame performed and openings adjusted/prepared as required. 4.6.3 Frame positioned into opening and securely fixed to designated location maintaining level, plumb, straightness, and squareness. 4.6.4 Ladder or simple scaffolding erected based on site condition and height requirements. 4.6.5 Additional glazing frame components sequentially installed in line, level, and plumb as per site condition and height requirements. 4.6.6 Trail fit of glass performed, and fixed into designated frame location with double tape and silicon in plumb,				

	straightness, and squareness. 4.6.7 Windows shutter fixed in line, level, and plumb. 4.6.8 Gaps between frame, shutter, and panel is sealed with appropriate ***sealing materials***. 4.6.9 Protective films/stickers removed from frame structure and cleaned. 4.6.10 Completed glazing works inspected for neatness, and operation of openable windows. 4.6.11 Scaffolding dismantled safely and stored in designated area. 4.6.12 Installation details recorded as per workplace procedures.				
4.7 Clean workplace	4.7.1 Unused materials collected and stored in designated place. 4.7.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated place. 4.7.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.				

WT- Written Test **OQ**- Oral Question **PT-** Practical Test **DO** – Direct Observation **SR**- Supervisor's report **SN**–Simulation
RP- Role Play **PG –**Photographs **VD**- Video **CT** – Certificates **TS** – Testimonials (Reward) **PP** – Product Produced
CS – Case Study

Range Statement

Variable	Range
Personal protective equipment	*May include but not limited to:* • Helmet • Safety glasses/goggles • Mask • Apron • Gloves • Earmuff • Safety shoes
Glazing frame components	*May include but not limited to:* • Vertical sections • Horizontal sections • Inclined sections
Relevant information	*May include but not limited to:* • Dimension • Part number • Job number
Appropriate Joints	*May include but not limited to:* • Screw port joint • Rivet joints

Sealing Materials	*May include but not limited to:* • Gasket • Silicon • PU foam
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 5** **Unit Title: Repair and maintain aluminum structures**	**Unit code:**
	Elements of competency	**Performance standards**
	5.1 Prepare tool, equipment and materials	5.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 5.1.2 Tools and equipment set and prepared as per task requirements. 5.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.
	5.2 Assess aluminum structures for defects	5.2.1 ***Aluminum structures*** visually inspected for defects. 5.2.2 Functionality of aluminum structures and hardware accessories checked. 5.2.3 ***Defects*** in aluminum structure and operations identified and recorded as per workplace procedures. 5.2.4 Customer requirement noted and suggestion provided based on condition of aluminum structures. 5.2.5 Cost of repair estimated and shared with clients.
	5.3 Perform maintenance works of aluminum structures	5.3.1 ***Minor damages*** are repaired using appropriate techniques. 5.3.2 ***Damaged components/portion*** carefully removed without damaging adjacent structures and fabricated or replaced with new components as per client's requirement. 5.3.3 New or repaired components installed in line, level, and plumb. 5.3.4 Repaired aluminum structures checked for functionality, alignment, and stability. 5.3.5 Repair and maintenance details are recorded as per workplace procedures.
	5.4 Clean workplace	5.4.1 Unused materials collected and stored in designated place. 5.4.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated place.

		5.4.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.
6	**Task Performance Requirements (Tools, Equipment and Materials):** • Measuring tape, steel ruler, marker, pencil, working table, try square, hacksaw, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, center punch, clamp, labeling sticker, screw, rivet, anchor, gasket, jig saw, aluminum profile, panel, glass, double tape, aluminum cutting machine, paper cutter, bevel protractor, water level, spirit level, silicon gun, silicon paste, polyurethane (PU) foam, glass cutter, glass holder, plumb bob, hammer, chisel, hardware accessories, lubricant, tool kit box, Allen key, cleaning cloth, brush, dust bin, dust pan, broom, first aid kit, and personal protective equipment (PPE).	
7	**Safety and Hygiene (Occupational Health and Safety):** • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from fire and electrical hazards. • Maintain good ventilation. • Dispose aluminum scraps, burrs, and used abrasives safely.	

8	Required Knowledge		
	Technical Knowledge	**Applied Calculation**	**Graphical Information**

	• Tools, equipment and materials
	  ○ Types
	  ○ Uses
	  ○ Safe handling
	  ○ Storage
	• Materials
	  ○ Types of aluminum profiles
	  ○ Types of glass
	  ○ Types of hardware accessories and fixtures
	  ○ Types of fasteners and fixings
	  ○ Types of sealing materials
	• Aluminum structures
	  ○ Introduction
	  ○ Types of defects
	  ○ Common defects and failures
	• Repair and maintenance
	  ○ Damage assessment
	  ○ Estimating and costing of repair works
	  ○ Repair techniques
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Dismantling and assembling procedure ○ Fabrication technique ○ Repairing aluminum structures ○ Installation and alignment ○ Finishing and cleaning • Documentation and reporting • Cleaning and waste management • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**					
	Unit: 5 **Unit Title: Repair and maintain aluminum structures**					
	Candidate Details			**Assessors Detail**		
	Candidate's Name: Registration Number: Symbol No: Test Centre: Test Date:			Assessors' Name 1. 2. 3.		ID/License No:
Element of competency	**Performance Standards**			**Standard Met**	**Standard Not Met**	**Evidence Type**	**Comments**
5.1 Prepare tool, equipment and materials	5.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 5.1.2 Tools and equipment set and prepared as per task requirements. 5.1.3 Tools, equipment, and materials collected and arranged in workplace allowing enough space to work.						
5.2 Assess aluminum structures for defects	5.2.1 ***Aluminum structures*** visually inspected for defects. 5.2.2 Functionality of aluminum structures and hardware accessories checked. 5.2.3 ***Defects*** in aluminum structure and operations identified and recorded as per workplace procedures.						

	5.2.4 Customer requirement noted and suggestion provided based on condition of aluminum structures. 5.2.5 Cost of repair estimated and shared with clients.				
5.3 Perform maintenance works of aluminum structures	5.3.1 ***Minor damages*** are repaired using appropriate techniques. 5.3.2 ***Damaged components/portion*** carefully removed without damaging adjacent structures and fabricated or replaced with new components as per client's requirement. 5.3.3 New or repaired components installed in line, level, and plumb. 5.3.4 Repaired aluminum structures checked for functionality, alignment, and stability. 5.3.5 Repair and maintenance details are recorded as per workplace procedures.				
5.4 Clean workplace	5.4.1 Unused materials collected and stored in designated place. 5.4.2 Tools and equipment cleaned, lubricated, maintained, and stored in designated place. 5.4.3 Workplace cleaned and waste disposed as per ***3R's principle*** in designated location.				

Range Statement

Variable	Range
Personal protective equipment	*May include but not limited to:* • Helmet • Safety glasses/goggles • Mask • Apron • Gloves • Earmuff • Safety shoes
Aluminum structures	*May include but not limited to:* • Door • Window • Ventilation • Partition • Structural glazing
Defects	*May include but not limited to:* • Physical damage • Deformed • Misalignment • Water leakage • Noise • Hardware malfunction (damaged hardware)

	• Operational fault
Minor damages	*May include but not limited to:* • Bend • Misalignment • Loosen parts/components • Wear and tear of gasket • Sealing defects (silicone, PU, gasket)
Damaged components	*May include but not limited to:* • Frames • Panels • Glass • Hardware accessories
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle