National Occupational Skill Standard (NOSS)

Occupational Title : **Aluminum Fabricator**

Level : **1**

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: 11-05-2025 (28-01-2082)

2045

DACUM Panel:

No	Name	Designation	Organization
1.	Mr. Dev Raj Rana	Member	G4 Construction & Engineering Consultancy Pvt. Ltd., Balkhu
2.	Mr. Sachit Raj Bhandari	Member	Alu Wood P. Ltd., Sanepa, Lalitpur
3.	Mr. Netra Basnet	Member	South Asian College of Modern Technology Pvt. Ltd., Lalitpur
4.	Mr. Dipesh Tuladhar	Member	Ganesh Aluminum Pvt. Ltd, Sanepa, Lalitpur
5.	Mr. Suresh Maharjan	Member	G4 Construction & Engineering Consultancy Pvt. Ltd. Balkhu, Kathmandu
6.	Mr. Raj Kumar Shrestha	Member	United Engineering Works Kupandol, Lalitpur
7.	Mr. Prem Kumar Shrestha	Member	G4 Construction & Engineering Consultancy Pvt. Ltd Balkhu, Lalitpur
8.	Mr. Nawang Palzor Sherpa	Member	World Link Technical Training Institute Gangabu, Ktm
9.	Mr. Suroj Maharjan	Member	World Link Technical Training Institute, Gangabu, Kathmandu
10.	**DACUM Facilitators** Mr. Ram Hari Devkota	Dy-Director,	National Skill Testing Board Sanothimi, Bhaktapur
11.	**DACUM Co - Facilitator** Mr. Ishwar Chandra Ghimire	Skill Testing Officer	National Skill Testing Board Sanothimi, Bhaktapur

DACUM Workshop held on August 20 & 21, 2010

DACUM Verification Panel:

No	Name	Designation	Organization
1.	Mr. Sachit Raj Bhandari	Member	Alu Wood P. Ltd, Sanepa, Lalitpur
2.	Mr. Hari Krishna Adhikari	Member	Febiko Aluminum, Kathmandu
3.	Mr. Devo Jyoti Chhetri	Member	Balaju School of Engineering and Technology Center Balaju, Kathmandu
4.	Mr. Raj Kumar Shrestha	Member	United Engineering Works Pvt. Ltd. Kupandol, Lalitpur
5.	Mr. Bhagawat B.K.	Member	B.K. Engineering Works, Kathmandu
6.	Mr. Bibek Pokhrel	Member	B & B Iron Engineering Works Shop Pvt. Ltd Kalanki, Lalitpur
7.	Mr. Jagat Bahadur Rokaya	Member	R & R Grace Fabricator, Kathmandu
8.	Mr. Kiran Chandra Adhikari	Member	R & R Grace Fabricator, Kathmandu
9.	Mr. Krishna Ram Neupane	Member	Febiko Aluminum, Kathmandu
10.	Mr. Nim Bahadur Tamrakar	Member	Highway Engineering, Lalitpur
11.	Mr. Raju Shrestha	Member	Shrestha Engineering Balkhu, Lalitpur
12.	**DACUM Facilitators** Mr. Ram Hari Devkota	Dy-Director,	National Skill Testing Board Sanothimi, Bhaktapur
13.	**DACUM Co - Facilitator** Mr. Ishwar Chandra Ghimire	Skill Testing Officer	National Skill Testing Board Sanothimi, Bhaktapur

Customized DACUM Workshop on August 23,2010

Technical Sub-Committee

No	Name	Designation	Organization
1.	Mr. Rabindra Nath Bhattarai	Coordinator	Mechanical Technical Sub Committee National Skill Testing Board, Sanothimi, Bhaktapur
2.	Mr. Chandra Bhakta Nakarmi	Member	National Skill Testing Board Sanothimi, Bhaktapur
3.	Mr. Raj Kumar Shrestha	Member	United Engineering Works, Kupandol, Lalitpu
4.	Mr. Bhakta Man Nakami	Member	Thapathali Campus, Kathmandu
5.	Mr. Krishna Prasad Neupane	Member	South Asian College of Modern Technology Pvt. Ltd., Lalitpur
6.	Mr. Deepak Prasad Poudel	Member	Dy-Director, NSTB, Sanothomi
7.	Mr. Ram Hari Devkota	Member Secretary	Dy-Director, NSTB, Sanothomi
8.	Mr. Ishwar Chandra Ghimire	Member	Skill Testing Officer, NSTB, Sanothimi
9.	Mr. Suresh Bhaila	Member secretary	Sr. Skill Testing Officer, NSTB, Sanothimi

Technical Sub Committee Meeting on: August 26, 2010

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
2.	Mr. Bhuvaneswor Dhungana	Director	National Skill Testing Board Sanothimi, Bhaktapur
3.	Er. Asbina Baral	Member	Ministry of Education Science and Technology (MoEST), Singhadurbar, Kathmandu.
4.	Mr. Amos Ale Magar	Member	Peace Technical Training Center Pvt. Ltd. Gwarko, Lalitpur
5.	Mr. Dhan Bahadur Thapa	Member	Appropriate Technical Service Tinkune, Kathmandu
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: 11 May 2025 (28 Baishakh 2082)

1	**Occupational Title: Aluminum Fabricator** **Level: 1**
2	**Job Description:** Aluminum Fabricator L1, prepares materials for aluminum fabrication works, fabricates and installs single panel flush and sliding aluminum doors, fabricates and installs casement windows, sliding windows, and louver, and performs aluminum partitions works.
3	**UNITS OF COMPETENCY:** 1. Prepare materials for aluminum fabrication works 2. Fabricate and install single panel flush and sliding aluminum doors 3. Fabricate and install casement windows, sliding windows, and louver 4. Perform aluminum partition works 5. Perform communication 6. Develop professionalism ***Note: Units 5 and 6 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: 4:00 to 5:30 (Full competency only) • Recommended Group Size: 8 to 10 candidates

5	**Unit No: 1** **Unit Title: Prepare materials for aluminum fabrication works**	**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 checked for serviceability and arranged in designated area. 1.1.3 Materials collected and arranged as per task requirements.
	1.2 Perform cutting	1.2.1 Required size of aluminum profiles/panels selected as per drawing. 1.2.2 Aluminum profile/panels measured and cutting lines clearly marked on profiles to the specified dimension and required angle. 1.2.3 Aluminum profile/panels clamped or held firmly to prevent movement during cutting. 1.2.4 Aluminum profile/panels cut along the mark line maintaining required angle and size. 1.2.5 Cut edges checked for dimensional accuracy and surface smoothness. 1.2.6 Burrs and sharp edges removed from cut piece. 1.2.7 Cut piece labelled with ***relevant information*** and stacked in designated location.
	1.3 Perform punching	1.3.1 Punching tools prepared based on required hole size and shape. 1.3.2 Aluminum profile measured and punching location marked. 1.3.3 Aluminum profile clamped or positioned securely on punching machine to avoid movement during punching. 1.3.4 Aluminum profile punched at marked location to required depth. 1.3.5 Punched hole inspected for size, position, and cleanliness. 1.3.6 Burrs removed and surface smoothened.
	1.4 Make screw port joints	1.4.1 Punching/drilling tools selected and prepared based on profile and joint type.

		1.4.2 Screw port location clearly marked on profile. 1.4.3 Aluminum profile clamped or held firmly to prevent movement during punching. 1.4.4 Holes prepared on marked location and checked for shape, size and depth. 1.4.5 Burrs removed and surface smoothened. 1.4.6 Punched/drilled aluminum profile aligned and placed over another profile with matching screw port. 1.4.7 Screw inserted and tightened in line and level without damaging profile surface, thread, and screw head. 1.4.8 Screw port joint checked for strength and alignment.
	1.5 Make rivet joints	1.5.1 Drilling tools selected and prepared based on profile and joint type. 1.5.2 Rivet location clearly marked on profile. 1.5.3 Aluminum profile clamped or held firmly to avoid movement during drilling. 1.5.4 Holes prepared on marked location and checked for shape and size. 1.5.5 Burrs removed and surface smoothened. 1.5.6 Rivet type and size selected as per thickness of aluminum profile. 1.5.7 Rivet gun prepared as per task requirements. 1.5.8 Aluminum profile/hardware components to be joined placed over each other and aligned with holes. 1.5.9 Rivet inserted into aligned holes and fixed. 1.5.10 Rivet joint checked for strength, alignment, and cleanliness.

	1.6 Perform grinding or filing	1.6.1 Grinding or filing tools prepared based on aluminum profile and required finish surface. 1.6.2 Grinding/filing area clearly marked and clamped tightly to prevent movement during grinding. 1.6.3 Grinding/filing performed smoothly across the surface maintaining profile shape and dimension. 1.6.4 Surface checked for smoothness and burrs removed from the surface.
	1.7 Clean workplace	1.7.1 Unused materials collected and stored in designated place. 1.7.2 Tools and equipment cleaned, lubricated, and stored in designated area. 1.7.3 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, aluminum cutting machine, clamps, punching machine, center punch, hammer, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, labeling sticker, screw, rivet, anchor, sand paper, jig saw, aluminum profile (78 and 90 series), panel (board, glass, ACP), paper cutter, bevel protractor, spirit level, glass cutter, tool kit box, lubricant, 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
	  ○ Types
	  ○ Series and standard dimension
	• Introduction to aluminum fabrication
	• Cutting
	  ○ Cutting tools and equipment
	  ○ Measuring and marking technique
	  ○ Cutting angles
	  ○ Use of set square and protractors
	  ○ Cutting techniques and methods
	  ○ Glass cutting technique
	  ○ Deburring and edge smoothening
	  ○ Labeling and storing
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	• Punching
	  ○ Introduction
	  ○ Types of punching tools and equipment
	  ○ Difference between punching and drilling
	  ○ Marking and positioning techniques
	  ○ Punching and drilling techniques and methods
	  ○ Clamping techniques
	  ○ Deburring and edge smoothening
	• Types of aluminum joints and their uses
	• Screw port joints
	  ○ Introduction
	  ○ Types of screw port joint methods (Punching, drilling)
	  ○ Screw port measurement and marking
	  ○ Selection of screws based on screw port and joint strength
	  ○ Techniques for aligning and joining two aluminum profiles
	  ○ Screwing techniques
	  ○ Deburring and edge smoothening
	• Rivet joints
	  ○ Introduction and purpose		

	○ Types of rivets ○ Riveting tools and equipment ○ Selection of rivet based on material thickness and joint strength ○ Preparation of profiles for riveting ○ Techniques for aligning and joining two aluminum profiles ○ Riveting techniques ○ Deburring and edge smoothening • Grinding and filing ○ Introduction and purpose ○ Types of grinding tools ○ Types of files ○ Grinding and filing techniques • Cleaning and waste management • Record keeping and documentation • Importance of first aid • Occupational health and safety rules and regulations		

9	**Assessment of Competency**					
	Unit: 1 **Unit Title: Prepare materials for aluminum fabrication 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**
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 checked for serviceability and arranged in designated area. 1.1.3 Materials collected and arranged as per task requirements.					
1.2 Perform cutting	1.2.1 Required size of aluminum profiles/panels selected as per drawing. 1.2.2 Aluminum profile/panels measured and cutting lines clearly marked on profiles to the specified dimension and ***required angle.***					

	1.2.3 Aluminum profile/panels clamped or held firmly to prevent movement during cutting. 1.2.4 Aluminum profile/panels cut along the mark line maintaining required angle and size. 1.2.5 Cut edges checked for dimensional accuracy and surface smoothness. 1.2.6 Burrs and sharp edges removed from cut piece. 1.2.7 Cut piece labelled with ***relevant information*** and stacked in designated location.				
1.3 Perform punching	1.3.1 Punching tools prepared based on required hole size and shape. 1.3.2 Aluminum profile measured and punching location marked. 1.3.3 Aluminum profile clamped or positioned securely on punching machine to avoid movement during punching. 1.3.4 Aluminum profile punched at marked location to required depth. 1.3.5 Punched hole inspected for size, position, and cleanliness. 1.3.6 Burrs removed and surface smoothened.				
1.4 Make screw port joints	1.4.1 Punching/drilling tools selected and prepared based on profile and joint type.				

	1.4.2 Screw port location clearly marked on profile. 1.4.3 Aluminum profile clamped or held firmly to prevent movement during punching. 1.4.4 Holes prepared on marked location and checked for shape, size and depth. 1.4.5 Burrs removed and surface smoothened. 1.4.6 Punched/drilled aluminum profile aligned and placed over another profile with matching screw port. 1.4.7 Screw inserted and tightened in line and level without damaging profile surface, thread, and screw head. 1.4.8 Screw port joint checked for strength and alignment.				
1.5 Make rivet joints	1.5.1 Drilling tools selected and prepared based on profile and joint type. 1.5.2 Rivet location clearly marked on profile. 1.5.3 Aluminum profile clamped or held firmly to avoid movement during drilling. 1.5.4 Holes prepared on marked location and checked for shape and size. 1.5.5 Burrs removed and surface smoothened. 1.5.6 Rivet type and size selected as per thickness of aluminum profile.				

	1.5.7 Rivet gun prepared as per task requirements. 1.5.8 Aluminum profile/hardware components to be joined placed over each other and aligned with holes. 1.5.9 Rivet inserted into aligned holes and fixed. 1.5.10 Rivet joint checked for strength, alignment, and cleanliness.				
1.6 Perform grinding or filing	1.6.1 Grinding or filing tools prepared based on aluminum profile and required finish surface. 1.6.2 Grinding/filing area clearly marked and clamped tightly to prevent movement during grinding. 1.6.3 Grinding/filing performed smoothly across the surface maintaining profile shape and dimension. 1.6.4 Surface checked for smoothness and burrs removed from the surface.				
1.7 Clean workplace	1.7.1 Unused materials collected and stored in designated place. 1.7.2 Tools and equipment cleaned, lubricated, and stored in designated area. 1.7.3 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
Relevant information	*May include but not limited to:* • Dimension • Part number • Job number
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 2** **Unit Title: Fabricate and install single panel flush and sliding doors**	**Unit code:**

Elements of competency	Performance standards
2.1 Prepare tools, equipment and materials	2.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 2.1.2 Tools and equipment checked for working condition and arranged in designated area. 2.1.3 Materials collected and arranged as per task requirements.
2.2 Fabricate flush and sliding door components	2.2.1 Section size of ***flush and sliding door components*** determined as per drawing. 2.2.2 Aluminum profile collected to required quantity and inspected for physical damage. 2.2.3 Flush and sliding door components measured and clearly marked in required ***angles*** and dimension. 2.2.4 Flush and sliding door components cut precisely along the mark in required angle and dimension. 2.2.5 Slots and holes drilled or punched at required point for joints and fixing. 2.2.6 Cut edges and surfaces deburred and smoothened. 2.2.7 Fabricated components labelled with ***relevant information*** and stored in designated area.
2.3 Assemble flush and sliding door components	2.3.1 Fabricated frame/shutter components arranged in assembly sequence. 2.3.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumbness, level and squareness. 2.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness. 2.3.4 Gasket tightly fixed to prevent movement of panel without damage.

		2.3.5 Completed frame/shutter stored in designated area.
	2.4 Install door frame	2.4.1 ***Debris*** removed from installation sites and disposed safely. 2.4.2 Door frame installation site measured and verified with frame dimension. 2.4.3 Frame placed in designated location in line, level, and plumb. 2.4.4 Fixing holes marked and drilled on the wall or structure. 2.4.5 Frame fixed securely using screw and anchors. 2.4.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 2.4.7 Stickers removed from structure and wiped. 2.4.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and surface smoothened.
	2.5 Install shutter	2.5.1 Shutter checked for measurement, squareness, and alignment with the door frame. 2.5.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 2.5.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 2.5.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 2.5.5 Operation of hardware accessories checked and adjusted as per requirement 2.5.6 Stickers removed from structure and wiped. 2.5.7 Gaps between shutter and panel board sealed with silicon paste.
	2.6 Clean workplace	2.6.1 Unused materials collected and stored in designated place. 2.6.2 Tools and equipment cleaned, lubricated, and stored in designated area. 2.6.3 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, file, grinder machine with wheel, screwdriver, rivet gun, pliers, drill machine with drill bit, center punch, clamp, punching machine, labeling sticker, screw, rivet, bolt, anchor, gasket, guide, hardware accessories, jig saw, aluminum profile (78 and 90 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, 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
	  ○ Types
	  ○ Series and standard dimension
	• 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
	  ○ Deburring and edge finishing technique
	  ○ Types of joints
	  ○ Hardware accessories and fittings
	  ○ Labeling and storing
	• Assembling door frame and shutter
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ 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 • 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 flush and sliding 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
2.1 Prepare tools, equipment and materials	2.1.1 ***Personal protective equipment*** (PPE) used in accordance with task requirements. 2.1.2 Tools and equipment checked for working condition and arranged in designated area. 2.1.3 Materials collected and arranged as per task requirements.				
2.2 Fabricate flush and sliding door components	2.2.1 Section size of ***flush and sliding door components*** determined as per drawing. 2.2.2 Aluminum profile collected to required quantity and inspected for physical damage. 2.2.3 Flush and sliding door components measured and clearly marked in required ***angles*** and dimension.				

	2.2.4 Flush and sliding door components cut precisely along the mark in required angle and dimension. 2.2.5 Slots and holes drilled or punched at required point for joints and fixing. 2.2.6 Cut edges and surfaces deburred and smoothened. 2.2.7 Fabricated components labelled with ***relevant information*** and stored in designated area.				
2.3 Assemble flush and sliding door components	2.3.1 Fabricated frame/shutter components arranged in assembly sequence. 2.3.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumbness, level and squareness. 2.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness. 2.3.4 Gasket tightly fixed to prevent movement of panel without damage. 2.3.5 Completed frame/shutter stored in designated area.				
2.4 Install door frame	2.4.1 ***Debris*** removed from installation sites and disposed safely. 2.4.2 Door frame installation site measured and verified with frame dimension.				

	2.4.3 Frame placed in designated location in line, level, and plumb. 2.4.4 Fixing holes marked and drilled on the wall or structure. 2.4.5 Frame fixed securely using screw and anchors. 2.4.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 2.4.7 Stickers removed from structure and wiped. 2.4.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and surface smoothened.				
2.5 Install shutter	2.5.1 Shutter checked for measurement, squareness, and alignment with the door frame. 2.5.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 2.5.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 2.5.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 2.5.5 Operation of hardware accessories checked and adjusted as per requirement 2.5.6 Stickers removed from structure and wiped.				

	2.5.7 Gaps between shutter and panel board sealed with silicon paste.				
2.6 Clean workplace	2.6.1 Unused materials collected and stored in designated place. 2.6.2 Tools and equipment cleaned, lubricated, and stored in designated area. 2.6.3 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

Flush and sliding 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
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle

5	**Unit No: 3** **Unit Title: Fabricate and install casement windows, sliding windows, and louver**	**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 checked for working condition and setup as per task requirements. 3.1.3 Materials collected and prepared as per task requirements.
	3.2 Fabricate window frame and shutter components	3.2.1 Section size of ***window frame and shutter components*** determined as per drawing. 3.2.2 Aluminum profile collected to required quantity and inspected for physical damage. 3.2.3 Window frame and ***shutter*** components measured and clearly marked in required angles and dimension. 3.2.4 Window frame and shutter components cut precisely along the mark in ***required angle***s and dimension. 3.2.5 Slots and holes created at designated locations on profile. 3.2.6 Cut edges and surfaces deburred and smoothened. 3.2.7 Fabricated components labelled with ***relevant information*** and stacked in designated area.
	3.3 Assemble window frame and shutter components	3.3.1 Fabricated frame/shutter components arranged in assembly sequence. 3.3.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumbness, level and squareness.

		3.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness. 3.3.4 Gasket tightly fixed to prevent movement of panel without damage. 3.3.5 Completed frame/shutter stored in designated area.
	3.4 Install window frame	3.4.1 ***Debris*** removed from installation sites and disposed safely. 3.4.2 Window frame installation site measured and verified with frame dimension. 3.4.3 Frame placed in designated location in line, level, and plumb. 3.4.4 Fixing holes marked and drilled on the wall or structure. 3.4.5 Frame fixed securely using screw and anchors. 3.4.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 3.4.7 Stickers removed from structure and wiped. 3.4.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and seal surface smoothened.
	3.5 Install shutter	3.5.1 Shutter checked for measurement, squareness, and alignment with the window frame. 3.5.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 3.5.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 3.5.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 3.5.5 Operation of hardware accessories checked and adjusted as per requirement 3.5.6 Stickers removed from structure and wiped. 3.5.7 Gaps between shutter and panel board sealed with silicon paste.

	3.6 Clean workplace	3.6.1 Unused materials collected and stored in designated place. 3.6.2 Tools and equipment cleaned and stored in designated place. 3.6.3 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 and 90 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, 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
	  ○ Types
	  ○ Grade
	  ○ Standard dimension
	  ○ Series
	• Fabricating window components
	  ○ Types of aluminum window
	  ○ Components of window and louver and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, punching, riveting, and screwing technique
	  ○ Deburring and edge finishing technique
	  ○ Types of joints
	  ○ Hardware accessories and fittings
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	○ Labeling and storing • Assembling door 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 • 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 casement windows, sliding windows, and louver**				
	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 checked for working condition and setup as per task requirements. 3.1.3 Materials collected and prepared as per task requirements.				
3.2 Fabricate window frame and shutter components	3.2.1 Section size of ***window frame and shutter components*** determined as per drawing. 3.2.2 Aluminum profile collected to required quantity and inspected for physical damage. 3.2.3 Window frame and shutter components measured and clearly marked in required angles and dimension.				

	3.2.4 Window frame and shutter components cut precisely along the mark in required angle and dimension. 3.2.5 Slots and holes created at designated locations on profile. 3.2.6 Cut edges and surfaces deburred and smoothened. 3.2.7 Fabricated components labelled with relevant information and stacked in designated area.				
3.3 Assemble window frame and shutter components	3.3.1 Fabricated frame/shutter components arranged in assembly sequence. 3.3.2 Frame components joined with ***appropriate joints*** in assembly sequence maintaining straightness, plumbness, level and squareness. 3.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness. 3.3.4 Gasket tightly fixed to prevent movement of panel without damage. 3.3.5 Completed frame/shutter stored in designated area.				
3.4 Install window frame	3.4.1 ***Debris*** removed from installation sites and disposed safely. 3.4.2 Window frame installation site measured and verified with frame dimension.				

	3.4.3 Frame placed in designated location in line, level, and plumb. 3.4.4 Fixing holes marked and drilled on the wall or structure. 3.4.5 Frame fixed securely using screw and anchors. 3.4.6 Horizontal and vertical alignment of the frame checked and adjusted as required. 3.4.7 Stickers removed from structure and wiped. 3.4.8 Gaps between frame and wall sealed with silicon paste/Polyurethane (PU) foam and seal surface smoothened.				
3.5 Install shutter	3.5.1 Shutter checked for measurement, squareness, and alignment with the window frame. 3.5.2 Location for ***hardware accessories*** clearly marked and drilled hole on frame and shutter. 3.5.3 Hardware accessories positioned, aligned, and fixed firmly on shutter. 3.5.4 Shutter fitted into frame using hardware accessories in line, level, and plumb. 3.5.5 Operation of hardware accessories checked and adjusted as per requirement 3.5.6 Stickers removed from structure and wiped.				

	3.5.7 Gaps between shutter and panel board sealed with silicon paste.				
3.6 Clean workplace	3.6.1 Unused materials collected and stored in designated place. 3.6.2 Tools and equipment cleaned and stored in designated place. 3.6.3 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

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

Shutter	*May include but not limited to:* • Sliding: 2 and 3 equal panel • Casement: single and double panel
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:* • 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 partition 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 checked for working condition and setup as per task requirements. 4.1.3 Materials collected and prepared as per task requirements.
4.2 Fabricate partition components	4.2.1 Required size and quantity of ***partition components*** determines as per drawing. 4.2.2 Aluminum profile collected to required quantity and inspected for physical damage. 4.2.3 Partition components measured and cutting lines clearly marked to ***required angles*** and dimension. 4.2.4 Partition components cut precisely along the mark in required angle and dimension. 4.2.5 Holes drilled or punched at required point for joints and fixing. 4.2.6 Cut edges and surfaces deburred and smoothened. 4.2.7 Prepared partition components labelled with ***relevant information*** and stored safely in designated area
4.3 Assemble partition components	4.3.1 Fabricated partition components arranged in assembly sequence. 4.3.2 Frame components joined using rivet joints in assembly sequence maintaining straightness, plumbness, level and squareness. 4.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness.

		4.3.4 Gasket tightly fixed to prevent movement of panel without damage.
	4.4 Install partition	4.4.1 Partition area cleared and partition components arranged for installation. 4.4.2 Layout carried out on wall, ceiling, and floor for installation of partition. 4.4.3 Frame placed and fixed in designated location in line, level, and plumb as per marked layout. 4.4.4 Panel fitted into frame without damaging the surface and partition clip fixed securely. 4.4.5 Stickers removed from structure and wiped. 4.4.6 Gaps between frame and panel sealed using silicone or gasket. 4.4.7 Gaps between frame and structure sealed using silicone or PU foam. 4.4.8 Finished partition checked for strength, alignment, and neatness.
	4.5 Clean workplace	4.5.1 Unused materials collected and stored in designated place. 4.5.2 Tools and equipment cleaned and stored in designated place. 4.5.3 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 (partition 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, 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
	  ○ Types
	  ○ Grade
	  ○ Standard dimension
	  ○ Series
	• Fabricating partition components
	  ○ Types of partition
	  ○ Components of partition and their functions
	  ○ Measuring, marking, and cutting technique
	  ○ Drilling, riveting, and screwing technique
	  ○ Deburring and edge finishing technique
	  ○ Use of rivet joint
	  ○ Labeling and storing
		• Calculate length of aluminum profile
		• Perform conversion of measurement unit
			• Read and interpret manufacturer' instruction
			• Read and interpret working drawing

	• Assembling partition frame
	  ○ Assembly sequence
	  ○ Fixing, joining and fastening methods
	  ○ Quality inspection, adjustment and alignment technique
	• Partition installation
	  ○ Worksite inspection
	  ○ Preparation of openings
	  ○ Frame positioning and alignment
	  ○ Securing frame
	  ○ Panel fitting and installation
	  ○ Surface sealing and finishing
	• 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 partition 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 checked for working condition and setup as per task requirements.				
	4.1.3	Materials collected and prepared as per task requirements.				
4.2 Fabricate partition components	4.2.1	Required size and quantity of ***partition components*** determines as per drawing.				
	4.2.2	Aluminum profile collected to required quantity and inspected for physical damage.				
	4.2.3	Partition components measured and cutting lines clearly marked to ***required angles*** and dimension.				

	4.2.4 Partition components cut precisely along the mark in required angle and dimension. 4.2.5 Holes drilled or punched at required point for joints and fixing. 4.2.6 Cut edges and surfaces deburred and smoothened. 4.2.7 Prepared partition components labelled with ***relevant information*** and stored safely in designated area				
4.3 Assemble partition components	4.3.1 Fabricated partition components arranged in assembly sequence. 4.3.2 Frame components joined using rivet joints in assembly sequence maintaining straightness, plumbness, level and squareness. 4.3.3 Panel fitted into shutter without damaging the surface and remaining shutter components fixed maintaining straightness, plumbness, level and squareness. 4.3.4 Gasket tightly fixed to prevent movement of panel without damage.				
4.4 Install partition	4.4.1 Partition area cleared and partition components arranged for installation. 4.4.2 Layout carried out on wall, ceiling, and floor for installation of partition.				

	4.4.3 Frame placed and fixed in designated location in line, level, and plumb as per marked layout. 4.4.4 Panel fitted into frame without damaging the surface and partition clip fixed securely. 4.4.5 Stickers removed from structure and wiped. 4.4.6 Gaps between frame and panel sealed using silicone or gasket. 4.4.7 Gaps between frame and structure sealed using silicone or PU foam. 4.4.8 Finished partition checked for strength, alignment, and neatness.				
4.5 Clean workplace	4.5.1 Unused materials collected and stored in designated place. 4.5.2 Tools and equipment cleaned and stored in designated place. 4.5.3 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

Partition components	*May include but not limited to:*
	• Frame
	  ○ Vertical members
	  ○ Horizontal members
	• Panel
	  ○ Glass
	  ○ Board
	  ○ ACP

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
3R's principle	*May include but not limited to:* • Reduce • Reuse • Recycle