



ASSESSMENT MATERIAL

EVIDENCE GUIDE

Qualification code:

LEN0123.v1

Level: 3

Credit: 80

Version: 1

Apply Building Electrician installation skills for solar PV systems

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgement Guide
4. List of required tools/ equipment's, material and context of assessment

ASSESSMENT AND ASSESSOR DETAILS

Competent

☐

Not Yet Competent

☐

Assessment

☐

Re-Assessment

☐

Assessor Name:

Assessor Code

Assessor Signature

Date

DD	MM							YYYY	

CANDIDATE DETAILS

Candidate Name:

First Name

Last Name

Father Name

Institute Name and District

CNIC #

OR

Registration Number:

Gender

Male

☐

Female

☐

Candidate Consent

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate Signature:

ASSESSMENT RESULTS SUMMARY FORM

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTTC**

NAVTTTC OFFICE ONLY

1. DATE FORM RECEIVED:

DD	MM							YYYY	

2. DATE ENTERED INTO DATABASE:

DD	MM							YYYY	

1

ASSESSMENT SUMMARY AND RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
NATURE OF ACTIVITY	WRITTEN	ORAL	PORTFOLIO	OBSERVATION	DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF: APPLY BUILDING ELECTRICIAN INSTALLATION SKILLS FOR SOLAR PV SYSTEMS	COMPETENT	NOT YET COMPETENT
Practical final project				✓	Complete supplied project brief related to application of Building Electrician installation skills for solar PV systems: • Install three phase wiring to start a three phase motor(3-hp) by using star delta starter in workshop • Design and install 500 W off-grid solar PV System on roof/ground of workshop		
Knowledge assessment	✓	✓			• Answer all questions the Assessment Panel will have following oral presentation of completed project brief		
Other requirements				✓	• All completed course assignments, projects and formative assessments including: ✓ Observations ✓ Demonstrations ✓ Questions and recorded answers ✓ Oral presentation of project to assessment panel ✓ Completed learner logbooks ✓ Completed work forms/records ✓ Completed job cards ✓ Evidence of participating in training programs ✓ Documented training outcomes such as reports and portfolio writing ✓ Measuring instrument calibration records		

2

CANDIDATE ASSESSMENT

Candidate Name..... Father Name

ALL WORK ASSESSED FOR THESE COMPETENCY STANDARDS MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **five hours** timeframe:

- Install three phase wiring to start a three phase motor(3-hp) by using star delta starter in workshop
- Design and install 500 W off-grid solar PV System on roof/ground of workshop

ACTIVITIES	CANDIDATE RESPONSE
1. Complete project brief of Install three phase wiring to start a three phase motor by using star delta starter in workshop under observation by Instructor 2. Complete project brief of Design and installation of 500 watt off-grid solar PV System on roof/ground of workshop under observation by Instructor	During a practical assessment, under observation by an assessor, I will correctly carry out: • Install three phase wiring to start a three phase motor by using star delta starter in workshop ✓ Draw wiring layout and measurements of three phase wiring. ✓ Estimate materials including specifications, rating of three phase wiring components. ✓ Select tools, equipment and materials for three phase wiring. ✓ Install conduit, GI pipes, PVC pipes and/or ducts of three phase wiring. ✓ Connect power cables, control cables (star delta starter) and fixtures of three phase wiring. ✓ Inspect power and control wiring of three phase wiring. ✓ Carry out testing of three phase wiring components and record results of three phase wiring. ✓ Balance the load according to distribution priorities and load management at distribution box. ✓ Commission of three phase wiring. ✓ Carry out final quality inspection of three phase wiring. ✓ Clean up and store tools, equipment and material of three phase wiring. • Design and installation of 500 watt off-grid solar PV System on roof/ground of workshop ✓ Conduct site visit to prepare plan for design and installation of 500 watt off-grid solar PV System on roof/ground of workshop. ✓ Estimate materials including specifications and rating of components. ✓ Select tools, equipment and materials. ✓ Choose appropriate array frame for the roof type and determine and set correct tilt angle and adjustments for design and installation of 500 watt off-grid solar PV System on roof/ground of workshop. ✓ Mark points for fixing of PV frame to install of 500 watt off-grid solar PV System. ✓ Mount a photovoltaic array. ✓ Install solar photovoltaic array and components in suitable location for installation of 500 watt off-grid solar PV System. ✓ Connect PV panels and electrical components and minimize cable route length to minimize power loss. ✓ Interpret and confirm installation as per drawing. ✓ Arrange for earthing less than 5 ohm for 500 watt. ✓ Carry out Electrical operational checks for 500 watt off-grid solar PV System on roof/ground of workshop. ✓ Perform electrical Test (Voc, Isc, IL, VL) and adjust component/or parts of 500 watt off-grid solar PV System. ✓ Perform final quality inspection of 500 watt off-grid solar PV System. ✓ Install the load of 500 watt i.e. search light to determine the power required generation. ✓ Commission the 500 watt off-grid solar PV System. ✓ Clean up and store tools, equipment and materials of 500 watt off-grid solar PV System on roof/ground of workshop.

3. Present completed project brief supplied by Instructor	• Oral presentation of project brief and completed project work to Assessment Panel. • Presentation to include: ✓ Requirements of brief ✓ Planning and preparation of project ✓ Problems encountered and how they were dealt with ✓ Project outcome/s ✓ Lessons learnt from undertaking project (reflective thinking) • Presentation to take no longer than 10 minutes
4. Answer all questions Assessor Panel will have following project presentation	My answers to questions are correct and demonstrate my understanding of the topics and their application.

3

ASSESSOR JUDGEMENT GUIDE

Candidate Name Father Name

INSTRUCTIONS FOR ASSESSMENT PANEL

THIS SECTION CONTAINS MINIMUM EVIDENCE REQUIREMENTS.

- This section contains minimum evidence requirement. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO	ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
1. Completes Practical task of all course assignments	During a practical assessment under observation by an assessor the candidate correctly carried out the following task		
Install three phase wiring to start a three phase motor by using star delta starter in workshop	Install three phase wiring to start a three phase motor by using star delta starter in workshop ✓ Draw wiring layout and measurements of three phase wiring. ✓ Estimate materials including specifications, rating of three phase wiring components. ✓ Select tools, equipment and materials for three phase wiring. ✓ Install conduit, GI pipes, PVC pipes and/or ducts of three phase wiring. ✓ Connect power cables, control cables (star delta starter) and fixtures of three phase wiring. ✓ Inspect power and control wiring of three phase wiring. ✓ Carry out testing of three phase wiring components and record results of three phase wiring. ✓ Balance the load according to distribution priorities and load management at distribution box.		
Design and installation of 500 watt off-grid solar PV System on roof/ground of workshop	✓ Commission of three phase wiring. ✓ Carry out final quality inspection of three phase wiring. ✓ Clean up and store tools, equipment and material of three phase wiring. Design and installation of 500 watt off-grid solar PV System on roof/ground of workshop ✓ Conduct site visit to prepare plan for design and installation of 500 watt off-grid solar PV System on roof/ground of workshop. ✓ Estimate materials including specifications and rating of components. ✓ Select tools, equipment and materials. ✓ Choose appropriate array frame for the roof type and determine and set correct tilt angle and adjustments for design and installation of 500 watt off-grid solar PV System on roof/ground of workshop.		

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES/NO		ASSESSOR COMMENTS ON CANDIDATE PERFORMANCE
	✓ Mark points for fixing of PV frame to install of 500 watt off-grid solar PV System. ✓ Mount a photovoltaic array. ✓ Install solar photovoltaic array and components in suitable location for installation of 500 watt off-grid solar PV System. ✓ Connect PV panels and electrical components and minimize cable route length to minimize power loss. ✓ Interpret and confirm installation as per drawing.			
	✓ Arrange for earthing less than 5 ohm for 500 watt. ✓ Carry out Electrical operational checks for 500 watt off-grid solar PV System on roof/ground of workshop. ✓ Perform electrical Test (Voc,Isc,IL,VL) and adjust component/or parts of 500 watt off-grid solar PV System. ✓ Perform final quality inspection of 500 watt off-grid solar PV System. ✓ Install the load of 500 watt i.e. search light to determine the power required generation. ✓ Commission the 500 watt off-grid solar PV System. ✓ Clean up and store tools, equipment and materials of 500 watt off-grid solar PV System on roof/ground of workshop.			
3. Present completed project brief to Assessment Panel	Oral presentation of project brief and completed project work to Assessment Panel. Presentation to include: • Requirements of brief • Planning and preparation of project • Problems encountered and how they were dealt with • Project outcome/s • Lesson learnt (reflective thinking) Presentation to take no longer than 10 minutes			
4. Answer all questions Assessment Panel will have following project presentation	Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application. Assessment Panel to document all questions asked, if any, and the answers here. Use extra pages as required and attach here.			

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

Instructions

This section contains information regarding;

- Context of the assessment
- List of required tools and equipment's.
- List of consumable items required during the service

1. Context of Assessment

This practical final project will be conducted in a Building Electrician's lab/workshop environment
Required tools, equipment and consumables will vary according to project brief.

2. List of tools and equipment required

S. No	Name of Items (tools and equipment's)	Quantity (No's)
1	Safety Hamlet	5
2	Insulated Pliers With Side Cutter	5
3	Insulated Long Nose Pliers With Side Cutter	5
4	Insulated wire Cutter	5
5	wire stripers	5
6	insulated screw drivers	5
7	High Insulated Rubber Hand Gloves	5
8	Insulated Work Bench	5
9	Power Supply	5
10	Main Switch	5
11	Tag Off / Log Off Nos	5
12	Drawing Board	5
13	Papers for Drawing	5
14	Led Pencil	5
15	Measuring Steel Tape	5
16	Steel Rule	5
17	PVC Pipes Different Size	5
18	Insulated Plier With Side Cutter	5
19	Insulated Long Nose Plier With Side Cutter	5
20	Insulated wire Cutter	5
21	Blow Lamp	5
22	Hacksaw	5
23	Measuring Steel Tap	5
24	Steel Wire	5
25	Milled Steel Wire	5
26	Calculator	5
27	Measuring Steel Tape	5
27	Steel Rule	5
28	Drawing Board	5
29	Switch Board	5
30	Distribution Board	5
31	Steel Rule	5
32	Insulated Plier With Side Cutter	5
33	Insulated Long Nose Plier With Side Cutter	5
34	Insulated wire Cutter	5
35	Flat Screw Driver	5
36	Level tool	5

37	Hammer of 2 Kg	5
38	Tong Tester Metter	5
39	Calculator	5
40	Micrometre 0 To 1	5
41	Insulated Plier With Side Cutter	5
42	Insulated Long Nose Plier With Side Cutter	5
43	Insulated wire Cutter	5
44	Screw Driver Different Size	5
45	Micrometre 0 To 1	5
46	Calculator	5
47	Different Electrical Item	5
48	Watt meter	5
49	Micrometre/SWG Gauge	5
50	Chisel 8'	5
51	Hammer 2kg	5
52	Insulated Plier With Side Cutter	5
53	Insulated Long Nose Plier With Side Cutter	5
54	Insulated wire Cutter	5
55	Screw driver Different Size	5
56	Earth Electrode	5
57	Boring Machine	1
58	8 SWG Size Wire	5
59	Bus Bar	5
60	Screw Wrench	5
61	Spanner Set	5
62	Earth Tester Meter	5
63	Hertz Meter	5
64	Thimble Press	5
65	Charge Controller	5
66	Battery Charger	5
67	Tong Tester (Clamp-On Meter) AC/DC	5
68	Compass	5
69	Megar meter (Analogue & Digital)	2
70	PV panel 500 watts with Mount stand	5
71	Battery 100 AH	5
72	Magnetic contactor	25
73	Cam Switch (STAR-DELTA)	5
74	Overload relay	5

3. List of consumable items required		
S. No	Consumable Items	Quantity
1	safety shoes	5
2	Safety Eyes Glass	5
3	safety gloves	5
4	Dungaree	5
5	Phase tester	5
6	Insulated Rubber Mat	5
7	Samad Bond	1 pack
8	Tag Off / Log Off Nos	5
9	Map OHS Precautions	1

10	Documents Related Drawing	as per requirements
11	Papers for Drawing	15
12	Led Pencil	15
13	Rubber	15
14	Permanent Marker	10
15	Tag Off / Log Off Nos	15
16	Solution Pak	1 pack
17	joints boxes	15
18	PVC Pipes Different Size	5 length
19	fan boxes	15
20	junctions boxes	15
21	Ball Point	10
22	job related documents	as per requirements
23	Papers for Drawing	15
24	Led Pencil	15
25	Rubber	15
26	switch board	15
27	Distribution Board as per Required	15
28	Drawing Map	1
29	Power Plug (Male, Female)	15
30	Plastic Board	15
31	Light Plug and Box	15
32	Main Supply Cable	2 coil
33	Phase tester	5
34	TV and Telephone Box	15
35	Paper for Documentation	15
36	Light Plug	15
37	Switch Board	15
38	TV Plug with Board	15
39	Marker	15
40	Chisel	15
41	PVC pipes	5 length
42	Switch Board with Box	15
43	PVC elbow	15
44	PVC Socket	15
45	PVC clamp	15
46	Volt Metter	15
47	Paper	15
48	Ballpoint	15
49	Cable According to Specification	As per requirement
50	Cable Size Table	5
51	Insulation Tester	5
52	Distribution Board as per Required	5
53	Cable Specification Table	5
54	Nut Bolt	3 dozen different sizes
55	earth wire	as per requirements
56	Copper Bus Bar	5
57	Conduit Pipe/ PVC Pipe	5 length
58	Nut Bolt	3 dozen