Model Curriculum

QP Name: Construction Electrician - LV

QP Code: CON/Q0603

QP Version: 5.0

NSQF Level: 4

Model Curriculum Version: 5.0

Construction Skill Development Council of India|| CPB-201 and 202, Tower 4B, DLF Corporate Park, Mehrauli-Gurgaon Rd, DLF Phase 3, Gurugram, Haryana, 122002

Table of Contents

Training Parameters

Sector	Construction Skill Development Council of India
Sub-Sector	Real Estate and Infrastructure Construction
Occupation	Construction Electrical Works
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7411.0100
Minimum Educational Qualification and Experience	12th grade pass OR Completed 2nd year of 3-year diploma after 10th (in Electrical Engineering) OR Pursuing 2nd year of 3-year diploma after 10th (in Electrical Engineering) OR 10th grade pass and pursuing continuous schooling OR 11th grade pass with 1-year relevant experience OR 10th grade pass with 2-year relevant experience OR 8th grade pass with 4-year relevant experience OR Previous relevant qualification of NSQF Level 3 (Assistant Electrician) with 3-year relevant experience
Pre-Requisite License or Training	N.A.
Minimum Job Entry Age	18 Years
Last Reviewed On	30/04/2025
Next Review Date	30/04/2028
NSQC Approval Date	08/05/2025
QP Version	5.0
Model Curriculum Creation Date	30/04/2025
Model Curriculum Valid Up to Date	30/04/2028
Model Curriculum Version	5.0
Minimum Duration of the Course	450 hours
Maximum Duration of the Course	450 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Carry out preparatory works prior to cable laying
- Lay cable and carry out electrification of construction equipment
- Perform repairing and maintenance of cables and construction equipment
- Perform concealed / exposed wiring and electrification
- Install and maintain electrical fixtures/ fittings, earthing arrangement and home appliances
- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.
- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.
- Identify various hazards at construction site.
- Use PPE's relevant to construction electrician task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration (Hrs)	Practical Duration (Hrs)	On-the-Job Training Duration (Mandatory) (Hrs)	Total Duration (Hrs)
CON/N0608: Lay (single/ three-phase) cable and provide electrification for equipment at construction sites NOS Version No.: 5.0 NSQF Level: 4	**20:00**	**55:00**	**15:00**	**90:00**
Module 1: Introduction to the job role of Construction Electrician LV	05:00	00:00	00:00	05:00
Module 2: Lay (single/ three phase) cable and provide electrification for equipment at construction sites	15:00	55:00	15:00	85:00

CON/N0609: **Inspect electrical maintenance of construction equipment as per requirement** **NOS Version No.: 5.0** **NSQF Level: 4**	**25:00**	**50:00**	**15:00**	**90:00**
Module 3: Inspect and maintain construction equipment as per requirement	25:00	50:00	15:00	90:00
CON/N0610: **Carry out LV electrical wiring and assist the foreman in building electrification works** **NOS Version No.: 5.0** **NSQF Level: 4**	**30:00**	**90:00**	**30:00**	**150:00**
Module 4: Carry out LV electrical wiring and assist in building electrification works	30:00	90:00	30:00	150:00
CON/N9001: **Work according to personal health, safety and environment protocol at construction site** **NOS Version No.: 3.0** **NSQF Level: 4**	**05:00**	**25:00**	**00:00**	**30:00**
Module 5: Follow safety norms as defined by organization, adopt healthy and safe work practices	05:00	25:00	00:00	30:00
CON/N8001: **Work effectively in a team to deliver desired results at the workplace** **NOS Version No.: 3.0** **NSQF Level: 4**	**05:00**	**25:00**	**00:00**	**30:00**
Module 6: Communicate effectively at workplace	05:00	25:00	00:00	30:00
CON/N8002: **Plan and organize work to meet expected outcome** **NOS Version No.: 4.0** **NSQF Level: 4**	**05:00**	**25:00**	**00:00**	**30:00**
Module 7: Prioritize activities and organize resources	05:00	25:00	00:00	30:00
DGT/VSQ/N0101: **Employability Skills (30 Hours)** **NOS Version No.: 1.0** **NSQF Level: 2**	**30:00**	**00:00**	00:00	**30:00**
Module 8: Employability Skills	30:00	00:00	00:00	30:00
Total Duration	**120:00**	**270:00**	**60:00**	**450:00**

Module Details

Module 1: Introduction to the job role of Construction Electrician - LV

Terminal Outcomes:

- Explain the role and responsibilities of Construction Electrician - LV
- Discuss the career progression for the Construction Electrician - LV

Duration: *05:00*	**Duration:** *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the role and responsibilities of the construction electrician LV. • Define the personal attributes required in construction electrical works. • Explain future possible progression and career development options of a construction electrician LV.	.
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	
N.A	

Module 2: Lay (single/ three phase) cable and provide electrification to equipment

Mapped to CON/N0608, v.5.0

Terminal Outcomes:

- Carry out preparatory works prior to cable laying
- Lay cable and carry out electrification of construction equipment

Duration: *15:00*	**Duration**: *55:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Interpret electrical drawings and specification for cable laying and equipment installation work. • Explain the concept of AC, DC, units of measurement of electrical entities, single phase circuit, 3-phase circuit, electric measuring devices, etc. • Discuss applicable Indian standard codes of practice for electrical works. • Explain wiring symbols used in single and three phase electrical diagrams. • Explain techniques of interpreting electrical diagrams/ schematics regarding electrical circuits and manufacturer's instructions • Discuss the working of MCB, RCCB, ELCB, various electrical circuits, capacitors, inductors. etc. • Discuss different method of earthing. • Explain quantity estimation of required resources from electric circuit diagram and details provided. • Explain safety and environmental norms related to LV electrical works at construction sites. • Explain standard method and sequence of electrical cable laying at construction site. • Describe acceptance criteria followed for selection of materials, fixtures or tools used in cable laying. • Explain permits and checklists required prior to and after cable laying activity. • Explain the safety parameters required to be checked for poles or trenches used for laying of cable. • Explain type of cables (single/ 3 phase) used as per electrical load requirement. • Explain standard practice of safeguarding installed electrical equipment from external damaging effects.	• Estimate the quantity of required electrical materials/ consumables for cable laying activity time requirement for cable laying activity. • Demonstrate the process of isolation of power source at the construction site as per electrical safety norms. • Demonstrate how to conduct cable laying as per plan ensuring all quality and safety aspects. • Perform joining of cable by straight through joint and termination of cable using appropriate tools. • Demonstrate installation of components like circuit breakers, starters, relays, etc. as per the requirements. • Demonstrate the methods to connect the cables to power source and electrical equipment/ machinery as per manufacturers guidelines and standard practices. • Demonstrate methods to provide earthing for the various equipment. • Demonstrate electrical testing methods during inspection and trial run of the installed equipment.

Classroom Aids:
Computer, printer, projector, white board/ flip chart, marker and duster
Tools, Equipment and Other Requirements
Pliers, Screw Drivers (set), Crimping tools, Wire strippers, Neon tester, Ammeter, Voltmeter, Wattmeter, Ohmmeter, Digital Multimeter, Megger, Tong tester, Measuring tape, Spirit level Marking tools, Drilling machine, Cutting machine, Chasing machine, Electrical socket (set), Tungsten bulb/ CFL/FSL bulb, Halogen lamp, wall socket, Simple switchboard, Mains breaker switch, Earth Leakage Circuit Breaker (ELCB), Miniature Circuit Breaker (MCB), Helmet, Face shield, Safety goggles, Safety shoes, Safety belt, Insulated rubber gloves, Ear plugs, Particle masks, Reflective jackets, Safety message boards, Fire extinguishers, Sand buckets, pliers, hammers, hacksaws, chisels, spanners (set), wrenches, measuring tape, spirit level, plumb-bob, mason's line, multi-meter, voltage tester, drilling machine, hand cutting machine, cables, wires, sockets, switches, lights, conduits (flexible and rigid), raceways, vibrators, bar cutting machine, bar bending machine, water pumps

Module 3: Inspect and maintain construction equipment as per requirement

Mapped to CON/0609, v.5.0

Terminal Outcomes:

- Perform repairing and maintenance of cables and construction equipment.

Duration: *25:00*	**Duration*: 50:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain working principle and power rating of electrical circuits, MCB, RCCB, ELCB, components and fixtures used in construction equipment. • Explain type of connections and tests to be carried out in capacitive, inductive AC and DC circuits. • Explain different types of motors, their uses and working principles. • Explain about star, delta connection and their uses in electrical circuits. • Discuss the working principle of various type of starters used in DC motors such as 3point, 4 point etc. as well as that used 3 phase squirrel cage induction motors such as DOL, Star-Delta etc. • Explain working principle of different types of 3 phase transformers, connections (star- star, delta-delta, delta-star) and their components. • Explain the application of transformers and relevant terminologies like magnetic flux, winding, current and voltage ratio, core and shell construction, etc. • Describe different methods of earthing including measurement of earth resistance by earth tester, testing of earth Leakage by ELCB and relay, etc.	• Demonstrate appropriate tests to diagnose electrical faults of equipment. • Demonstrate how to repair or replace faulty parts of circuits according to the power rating and manufacturer's guideline. • Use appropriate starters according to the specification and power rating of motors during maintenance. • Demonstrate how to carry out winding in armatures of motor as per specification of motor. • Inspect and rectify faults detected in earthing of construction equipment referring to manufacturer's guidelines. • Inspect leakage, faults in LV single/ three phase power distribution wirings as per directions and standard practices. • Demonstrate how to operate and inspect transformers to detect faults under close supervision. • Demonstrate how to join damaged armoured cables (bearing heavy electricity loads) using straight through joints efficiently. • Demonstrate documentation of readings, and conclusions of tests performed.
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	
Screw driver set, measuring tape, spirit level, plumb-bob, mason's line, cutting machine, drilling machine, Pliers, Screw Drivers (set), Crimping tools, Wire strippers, Neon tester, Ammeter, Voltmeter, Wattmeter, Ohmmeter, Digital Multimeter, Megger, Tong tester, Measuring tape, Spirit level, Marking tools, Drilling machine, Cutting machine, Chasing machine, Electrical socket (set), Tungsten bulb/ CFL/FSL bulb, Halogen lamp, wall socket, Simple switchboard, Mains breaker switch, Earth Leakage Circuit Breaker (ELCB), Miniature Circuit Breaker (MCB), rigid conduits, flexible conduit, clamps for conduits, screws, helmet , safety shoes , safety belt, cotton hand gloves, goggles, Reflective jackets, safety message boards, Fire extinguishers, Sand buckets	

Module 4: Carry out LV electrical wiring and assist in building electrification works

Mapped to CON/N0610, v5.0

Terminal Outcomes:

- Perform concealed / exposed wiring and electrification.
- Install and maintain electrical fixtures/ fittings, earthing arrangement and home appliances.

Duration: *30:00*	**Duration**: *90:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe statutory guidelines provided by ISI for LV wiring operations. • List common electrical wiring accessories, their specifications in line with National Electrical Codes (NEC) guidelines. • Explain applicable manufacturer's guidelines/ specifications for use of hand/power tools and measuring devices. • Explain applicable manufacturer's guidelines/ specifications for use of electrical fittings and fixtures. • Explain specification, colour coding of cables to be used in wiring system according to load on circuit requirement. • Explain properties of different components used in electrical earthing work. • Explain standard practices of cable laying through conduits. • Explain area of application and specification of protective devices like fire alarm, MCB, ELCB, MCCB in house wiring. • Explain the lighting arrangement which enables maximum use of natural lights. • Explain standard house wiring procedure and best practices.	• Interpret drawings, circuit diagrams and/or related schematics for single and three phase LV house wiring system. • Calculate electrical material requirements based on electrical fittings and layouts. • Prepare budget for household wiring. • Demonstrate how to lay flexible conduit pipes through RCC structures (slabs, beams, walls) or through chased wall (brick wall) surface. • Demonstrate installation of electrical fixtures, fittings (such as DBs, switch boards, switches, sockets, lights and wall brackets) at specified locations. • Perform necessary tests to ensure safe condition of electrical circuit during and post wiring activity using appropriate tools. • Demonstrate how to measure earth resistance and leakage using appropriate electrical devices. • Demonstrate electrical earthing work for household appliances adopting standard procedure and using appropriate earthing components. • Demonstrate how to establish new LV connection as per circuit load requirement. • Demonstrate installation of household appliances including fan, water pump, refrigerator, fire alarm system, security systems, etc. • Demonstrate documentation of relevant readings and filling up checklist.
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	

Wall chasing chisel, hammer, hacksaw, file marking tools, table vice, Stock and die set, Pipe , cutter to cut pipes, Hand brooms, Shovels, Screw driver set, measuring tape, spirit level, plumb- bob mason's line, cutting machine, drilling machine, power source, rigid conduits, flexible conduit, clamps for conduits, screws, Pliers, Screw Drivers (set), Crimping tools, Wire strippers, Neon tester, Ammeter, Voltmeter, Wattmeter, Ohmmeter, Digital Multimeter, Megger, Tong tester, Measuring tape, Spirit level, Marking tools, Drilling machine, Cutting machine, Chasing machine, Electrical socket (set), Tungsten bulb/ CFL/FSL bulb, Halogen lamp, wall socket, Simple switchboard, Mains breaker switch, Earth Leakage Circuit Breaker (ELCB), Miniature Circuit Breaker (MCB), Helmet, Face shield, Safety goggles, Safety shoes, Safety belt, Insulated rubber gloves, Ear plugs, Particle masks, Reflective jackets, Safety message boards, Fire extinguishers, Sand buckets

Module 5: Follow safety norms as defined by organization, adopt healthy and safe work practices

Mapped to CON/N9001, v 3.0

Terminal Outcome:

- Identify various hazards at construction site.
- Use PPE's relevant to construction electrician task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Duration: *05:00*	**Duration**: *25:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works. • Recall the safety control measures and actions to be taken under emergency situation. • Explain the classes of fire and types of fire extinguishers. • Explain the importance of participation of workers in safety drills. • Explain the reporting procedure to the concerned authority in case of emergency situations. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories. • Explain different types of waste at construction sites and their disposal method. • Explain the purpose and importance of vertigo test at construction site. • List out basic medical tests required for working at construction site. • Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites. • Explain the importance of housekeeping works. • List different types of infectious disease that can spread/ originate at a construction site • Discuss the ways of transmission of the various infectious disease. • Explain the methods to check the spread	• Demonstrate the operating procedure of the fire extinguishers. • Demonstrate use of PPEs as per work requirements. • Demonstrate vertigo test. • Demonstrate safety techniques to be adopted in case of accidents. • Demonstrate safe waste disposal practices followed at construction site. • Demonstrate safe housekeeping practices. • Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization. • Demonstrate the methods to clean and disinfect all materials, tools and supplies before and after use. • Demonstrate the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.

of the infectious disease. • Describe the symptoms and cure of the various infectious disease.	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
Leather Hand Gloves, Jump suit, Wire brush, Hand & Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board	

Module 6: Communicate effectively at workplace

Mapped to CON/N8001, v3.0

Terminal Outcomes:

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.

Duration: *05:00*	**Duration**: *25:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the effects and benefits of timely actions relevant to the task at hand with examples. • Explain the importance of teamwork and its effects relevant to the task at hand with examples. • Explain the importance of proper and effective communication and its adverse effects in case of failure of proper communication. • Discuss about gender and its related concept: gender equality, gender equity (group work) • Discuss different types of disabilities (physical, mental, intellectual or sensory impairment). • Discuss the activities sensitive to the cultural diversity, disabilities and gender neutrality at the workplace. • Discuss the basic rules and regulations related to gender sensitivity, disabilities, and cultural diversity, with their impact on operations of a workplace. • Discuss how to take initiative in resolving issues among co-workers in a given situation. • Discuss reporting procedure followed at the workplace.	• Apply effective communication skills while interacting with co-workers, trade seniors and others during the assigned task. • Use appropriate writing skills and verbal communication reporting as per commonly applicable organisational norms. • Demonstrate teamwork skills during assigned task. • Demonstrate acceptable interpersonal transactions with individuals having disabilities (physical, mental, intellectual or sensory impairment) or cultural diversity. • Demonstrate the process modifications required to make the workplace free from gender biases.
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	

Module 7: Prioritize activities and organize resources

Mapped to CON/N8002, v4.0

Terminal Outcomes:

- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.

Duration: *05:00*	**Duration**: *25:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain methods to upkeep, store and stack tools, materials used for domain specific works. • Explain the process of planning of the given tasks and activities relevant to the trade/job role within defined scope and duration. • Explain the procedure adopted for prioritizing an activity and sequencing of activities. • Explain the work plan and flow of activities in sequence for the assigned work. • Explain basic concept of labour productivity and work productivity. • Explain requisition of resources, reporting for requirement of resources orally and in written to concerned authority. • Explain how to minimise wastage of resources. • Explain the plan for waste collection and disposal after task.	• Identify the work target and plan activities to achieve the desired productivity. • Demonstrate requisition of resource citing an example. • Demonstrate the planning for various activities relevant to task as per the scope and schedule. • Demonstrate how to organise the required tool, manpower and material resources for the assigned task. • Select required quantity of materials, tools or devices for defined work activities. • Demonstrate how to prioritize all works/ activities to maximise output. • Demonstrate optimum use of resources while performing domain specific work activities. • Demonstrate waste collection and disposal as per organisational norms. • Demonstrate completion of work within stipulated time and plan.
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	

Module 8: Employability Skills (30 Hours)

Mapped to DGT/VSQ/N0101, *v 1.0*

Duration: *30:00*
Key Learning Outcomes
Introduction to Employability Skills Duration: 1 Hour After completing this programme, participants will be able to: 1. Discuss the importance of Employability Skills in meeting the job requirements **Constitutional values - Citizenship Duration: 1 Hour** 2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. 3. Show how to practice different environmentally sustainable practices **Becoming a Professional in the 21st Century Duration: 1 Hour** 4. Discuss 21st-century skills. 5. Display a positive attitude, self-motivation, problem-solving, time management skills and continuous learning mindset in different situations. **Basic English Skills Duration: 2 Hours** 6. Use appropriate basic English sentences/phrases while speaking **Communication Skills Duration: 4 Hours** 7. Demonstrate how to communicate in a well-mannered way with others. 8. Demonstrate working with others in a team **Diversity & Inclusion Duration: 1 Hour** 9. Show how to conduct oneself appropriately with all genders and PwD 10. Discuss the significance of reporting sexual harassment issues in time **Financial and Legal Literacy Duration: 4 Hours** 11. Discuss the significance of using financial products and services safely and securely. 12. Explain the importance of managing expenses, income, and savings. 13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws **Essential Digital Skills Duration: 3 Hours** 14. Show how to operate digital devices and use the associated applications and features, safely and securely 15. Discuss the significance of using the internet for browsing, and accessing social media platforms, safely and securely **Entrepreneurship Duration: 7 Hours** 16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges **Customer Service Duration: 4 Hours** 17. Differentiate between types of customers 18. Explain the significance of identifying customer needs and addressing them 19. Discuss the significance of maintaining hygiene and dressing appropriately **Getting ready for Apprenticeship & Jobs Duration: 2 Hours** 20. Create a biodata 21. Use various sources to search and apply for jobs 22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview 23. Discuss how to search and register for apprenticeship opportunities

On-the-Job Training

Mapped to Construction Electrician - LV, v 5.0

CON/N0608: Lay (single/ three phase) cable and provide electrification to equipment, v 5.0, Mandatory Duration: 15:00
Location: On Site
Terminal Outcomes: • Estimate the quantity of required electrical materials/ consumables for cable laying activity time requirement for cable laying activity. • Demonstrate the process of isolation of power source at the construction site as per electrical safety norms. • Demonstrate how to conduct cable laying as per plan ensuring all quality and safety aspects. • Perform joining of cable by straight through joint and termination of cable using appropriate tools. • Demonstrate installation of components like circuit breakers, starters, relays, etc. as per the requirements. • Demonstrate the methods to connect the cables to power source and electrical equipment/ machinery as per manufacturers guidelines and standard practices. • Demonstrate methods to provide earthing for the various equipment. • Demonstrate electrical testing methods during inspection and trial run of the installed equipment.
CON/N0609: Inspect and maintain construction equipment as per requirement, v 5.0, Mandatory Duration: 15:00
Location: On Site
Terminal Outcomes: • Demonstrate appropriate tests to diagnose electrical faults of equipment. • Demonstrate how to repair or replace faulty parts of circuits according to the power rating and manufacturer's guideline. • Use appropriate starters according to the specification and power rating of motors during maintenance. • Demonstrate how to carry out winding in armatures of motor as per specification of motor. • Inspect and rectify faults detected in earthing of construction equipment referring to manufacturer's guidelines. • Inspect leakage, faults in LV single/ three phase power distribution wirings as per directions and standard practices. • Demonstrate how to operate and inspect transformers to detect faults under close supervision. • Demonstrate how to join damaged armored cables (bearing heavy electricity loads) using straight through joints efficiently. • Demonstrate documentation of readings, and conclusions of tests performed.
CON/N0610: Carry out LV electrical wiring and assist in building electrification works, v 5.0, Mandatory Duration: 30:00
Location: On Site
Terminal Outcomes: • Interpret drawings, circuit diagrams and/or related schematics for single and three phase LV house wiring system. • Calculate electrical material requirements based on electrical fittings and layouts. • Prepare budget for household wiring. • Demonstrate how to lay flexible conduit pipes through RCC structures (slabs, beams, walls) or through chased wall (brick wall) surface. • Demonstrate installation of electrical fixtures, fittings (such as DBs, switch boards, switches,

sockets, lights and wall brackets) at specified locations.

- Perform necessary tests to ensure safe condition of electrical circuit during and post wiring activity using appropriate tools.
- Demonstrate how to measure earth resistance and leakage using appropriate electrical devices.
- Demonstrate electrical earthing work for household appliances adopting standard procedure and using appropriate earthing components.
- Demonstrate how to establish new LV connection as per circuit load requirement.
- Demonstrate installation of household appliances including fan, water pump, refrigerator, fire alarm system, security systems, etc.

Annexure

Trainer Requirements

Trainer Prerequisites					
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Preferable Training Experience**	
		Years	***Specialization***	***Years***	***Specialization***
B.E./B. Tech	Electrical Engineering	2	Site Execution (Electrical Work)	1	Construction Electrical Work
OR					
Diploma	Electrical Engineering	3	Site Execution (Electrical Work)	1	Construction Electrical Work
OR					
ITI	Relevant Trade	6	Site Execution (Electrical Work)	1	Construction Electrical Work
OR					
Graduation	in any Stream	6	Site Execution (Electrical Work)	1	Construction Electrical Work
OR					
Ex-Army Graduate	in any Stream	6	Site Execution (Electrical Work)	1	Construction Electrical Work

Trainer Certification	
Domain Certification	**Platform Certification**
Recommended that the Trainer is certified for the Job Role: "Construction Electrician – LV", mapped to the Qualification Pack: "CON/Q0603, v5.0". The minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and skills)", mapped to the Qualification Pack: "MEP/Q2601, v3.0". The minimum accepted score is 80%.

Assessor Requirements

Assessor Prerequisites			
Minimum Educational Qualification	**Specialisation**	**Relevant Industry Experience**	
		Years	***Specialization***
B.E. / B.Tech	Electrical Engineering	2	Construction Electrical Work
OR			
Diploma	Electrical Engineering	5	Construction Electrical Work
OR			
ITI	Relevant Trade	7	Construction Electrical Work

Assessor Certification	
Domain Certification	**Platform Certification**
Recommended that the Assessor is certified for the Job Role: "Construction Electrician – LV", mapped to the Qualification Pack: "CON/Q0603, v5.0". The minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Assessor (VET and skills)", mapped to the Qualification Pack: "MEP/Q2701, v3.0". The minimum accepted score is 80%.

Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

1. **Assessment system Overview:**

   Assessment is done through CSDCI affiliated Assessment Agencies. Assessors are trained & certified by CSDCI after Training Of Assessor (TOA) program. Assessments is conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas. The assessment will have both theory and practical components in 30:70 ratio for **Construction Electrician - LV** job role.

   During the practical task, trainees are assessed on their workmanship, quality of finished product and time management. They will be graded for all their assessments based on the approved assessment strategy which is signed off by CSDCI. The Assessor submits an assessment plan to CSDCI prior to assessments.
   The assessment plan contains the following information:

   - What will be assessed, i.e. the competency based on each NOS based on theory and practical questions
   - How assessment will occur i.e. methods of assessment
   - When the assessment will occur
   - Duration of assessment
   - Where the assessment will take place i.e. context of the assessment (workplace/simulation)
   - The criteria for decision making i.e. those aspects that will guide judgments
   - Where appropriate, any supplementary criteria used to make a judgment on the level of performance.

2. **Testing Environment:**
   - Training partner shares the batch start date and end date, number of trainees and the job role.
   - Assessment will be fixed for a day after the end date of training. It could be next day or later. Assessment will be conducted at the training venue/test center.
   - The knowledge/theory assessments is conducted with proper seating arrangements with enough space between the candidates to prevent mal-practicing.
   - Question set for theory and practical will be distributed to each candidate by the Assessor. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject. The skill /practical assessments will be conducted in the approved test centers. The training provider will ensure adequate tools and materials are available to conduct the practical test.
   - If number of candidates are more than 30, more assessors will be organized on same day to complete the assessment.
   - The assessment has to comprise of two components, namely:
     - Knowledge assessment (theory/viva assessment)
     - Skill assessment (practical/hands-on skill assessment)

3. **Mode of assessment:**
   - Demonstration/Practical for Performance /Skill Assessment
   - Synoptic multiple-choice question test
   - Viva for Knowledge Assessment

4. **Performance/skill assessment:**
   - The performance/skill assessment will be conducted through demonstration/practical
   - For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.
   - The assessment is conducted in a simulated working environment. Due to this fact, the assessors must

note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

5. **Knowledge Assessment:**
   - The knowledge assessments are conducted through written test/ viva.
   - Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which are prepared externally and externally marked, meaning by agency having no link with training partners. The test may be conducted by the assessor in the oral mode, if required, considering the lack of reading and comprehending acumen (skills) of trainees. In such cases, the assessor will mention it on top of the MCQ submitted to CSDCI.
   - The assessment strategy, weightage and duration of assessment for **Construction Electrician - LV** is summarized below

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ/Viva	30	1.5
skill	Summative	Structured Practical Task	70	5.5

6. **Assessment Quality Assurance framework:**
   - CSDCI has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criterion under knowledge and skill. The criteria ensure quality assurance as it ensures valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment body develop questions based on CSDCI issued assessment criteria.
   - Evidences in the form of answer sheets in case of knowledge assessments are collected. For skill assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. CSDCI does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.
   - The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit is conducted by CSDCI to monitor assessment.

7. **Methods of Validation:**
   - Unless the trainee is registered, the person cannot undergo assessment. To further ensure that the person registered is the person appearing for assessment, ID verification is carried out. Aadhar card number is part of registering the candidate for training. This forms the basis of further verification during the assessment.
   - Assessor conducts the assessment through theory and practical questions developed in accordance with the assessment criteria and guidelines issued by CSDCI. This too is verified by random audits carried out by CSDCI.
   - Evidences for assessments are to be collected and submitted to CSDCI for verification as per demand.
   - Assessment agency is responsible to put details in SIP. CSDCI will also validate the data and result received from the assessment agency.

8. **Method of assessment documentation and access:**
   - The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by CSDCI assessment team. After upload, only CSDCI can access this data.
   - CSDCI approves the results within five days after which results are uploaded on SIDH by Assessment Agency.

9. On the Job:

- On job training (OJT), candidates undergo training and leaning at actual workplace for a fixed period of time and a certain weightage of assessment is allocated out of total skill weightage of Qualification Pack for undergoing OJT as stipulated by CSDCI. This OJT score and assessors' end point score are combined to arrive at final Marking/grading of trainees' skill test. The OJT score is determined by Supervisor of company under which candidates undergo on job training.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
MSDE	Ministry of Skill Development and Entrepreneurship
NCVET	National Council for Vocational Education and Training
NSDC	National Skill Development Corporation
CSDCI	Constriction Skill Development Council of India
SIDH	Skill India Digital Hub
AB	Awarding Body
SSC	Sector Skill Council
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
DDU-GKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
SANKALP	Skill Acquisition and Knowledge Awareness for Livelihood Promotion
STRIVE	Skills Strengthening for Industrial Value Enhancement
JSS	Jan Shikshan Sansthan
STT	Short Term Training
RPL	Recognition of Prior Learning
NAPS	National Apprenticeship Promotion Scheme
AA	Assessment Agency
TP	Training Provider / Training Partner
TC	Training Centre
ITI	Industrial Training Institute
NSQC	National Skill Qualification Committee
NSQF	National Skills Qualification Framework
Q-File	Qualification File
QP	Qualification Pack
MC	Model Curriculum
NOS	National Occupational Standards
PC	Performance Criteria
KU	Knowledge and Understanding
GS	Generic Skills
MCQ	Multiple Choice Question
EHS	Environment Health and Safety
PPE	Personal Protective Equipment
QA/QC	Quality Assurance / Quality Control
LT	Low Tension (Electrical wiring system up to 1kV)
HT	High Tension (Electrical wiring system above 1kV)
MCB	Miniature Circuit Breaker
ELCB	Earth Leakage Circuit Breaker
RCCB	Residual Current Circuit Breaker
RCBO	Residual Current Breaker with Overcurrent
ACSR	Aluminium Conductor Steel Reinforced
PVC	Polyvinyl Chloride (used in electrical wiring insulation)
XLPE	Cross-Linked Polyethylene (used in power cables)
SMPS	Switched Mode Power Supply
IP Rating	Ingress Protection Rating (for electrical enclosures)
VFD	Variable Frequency Drive (used for motor speed control)
DOL Starter	Direct-On-Line Starter (used for motors)

CT	Current Transformer
PT	Potential Transformer
LED	Light Emitting Diode
UPS	Uninterruptible Power Supply
DG Set	Diesel Generator Set