



# Model Curriculum

## Assistant Technician: Street Light Installation & Maintenance

**SECTOR: POWER**  
**SUB-SECTOR: DISTRIBUTION**  
**OCCUPATION: Assistant Technician: Street Light  
Installation & Maintenance**  
**REF ID: PSS/Q6003, V1.0**  
**NSQF LEVEL: 3**



  

# Certificate

**COMPLIANCE TO  
QUALIFICATION PACK – NATIONAL OCCUPATIONAL  
STANDARDS**

is hereby issued by the  
**POWER SECTOR SKILL COUNCIL**

for  
**SKILLING CONTENT : PARTICIPANT HANDBOOK**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: 'Assistant Technician -Street Light Installation & Maintenance'  
QP No. PSS/Q6003 NSQF Level 3

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Date of Issuance: 10 October, 2018  
Valid up to\*: 10 October, 2018  
*\*Valid up to the next review date of the Qualification Pack or the  
'Valid up to' date mentioned above (whichever is earlier)*

  
Authorised Signatory  
(Power Sector Skill Council)



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# Assistant Technician: Street Light Installation & Maintenance

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Assistant Technician : Street Light Installation & Maintenance”, in the “Power” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	Assistant Technician: Street Light Installation & Maintenance		
<b>Qualification Pack Name &amp; Reference ID. ID</b>	Assistant Technician: Street Light Installation & Maintenance, PSS/Q6003		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	19-07-2018
<b>Pre-requisites to Training</b>	10th pass		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• <b>Gain Familiarity with Power distribution system and basics:</b> overview especially Distribution Sector. Understand basics of electricity terms used while carrying activities</li> <li>• <b>Carry out street light Installation activity::</b> this will include erection and commissioning of poles, fixtures, cables, junction boxes, feeder pillars, and other accessories associated to street light</li> <li>• <b>Perform operation and Maintenance of street light:</b> performing test and troubleshooting for faults and defects in street light, and carry out replacement of light</li> <li>• <b>Use basic health and safety practices for power related work:</b> includes procedure &amp; practices to follow to maintain healthy, safe &amp; secure work environment covering safety of self, others, assets, and the environment</li> <li>• <b>Work Effectively with others:</b> covering basic etiquette and competencies to demonstrate in their behaviour and interaction with others at workplace</li> </ul>		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Assistant Technician: Street light Installation & Maintenance” Qualification Pack issued by “Power Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<b>Introduction</b>  <b>Theory Duration</b> (hh:mm) 04:00  <b>Practical Duration</b> (hh:mm) 00:00  <b>Corresponding NOS Code</b> PSS/N6007	<ul style="list-style-type: none"> <li>Power sector scenario including generation, transmission, and distribution scenario of India.</li> <li>Functions of Power Distribution Companies</li> <li>Elements of power systems, transmission, distribution and generations.</li> <li>Familiarization with distribution network from substation to end consumer</li> </ul>	
2	<b>Organizational context</b> <b>Theory Duration</b> (hh:mm) 04:00  <b>Practical Duration</b> (hh:mm) 00:00  <b>Corresponding NOS Code</b> PSS/N6007	<ul style="list-style-type: none"> <li>Organization structure and reporting levels</li> <li>Duties and responsibilities of of Assistant Technician: street Light Installation &amp; Maintenance and their career progression</li> <li>Relevant Legislation, Electricity act 2003, CERC, SERC</li> <li>CEA guidelines</li> </ul>	
3	<b>Basic Of Electricity</b>  <b>Theory Duration</b> (hh:mm) 12:00  <b>Practical Duration</b> (hh:mm) 08:00  <b>Corresponding NOS Code</b> PSS/N6007	<ul style="list-style-type: none"> <li>Basic fundamentals of Electricals</li> <li>Explain the basic key concepts of Voltage, Current, Capacitance, Resistance, KVA, KWh.</li> <li>Circuit connections, voltage and current relationship in star &amp; delta configuration</li> <li>3 phase and 1 phase supply</li> <li>Energy parameters</li> <li>Types of energy meter and metering techniques</li> </ul>	Voltmeter, Ammeter, Wattmeter, basic components, etc.
4	<b>Installation</b>  <b>Theory Duration</b> (hh:mm) 15:00  <b>Practical Duration</b> (hh:mm) 41:00  <b>Corresponding NOS Code</b> PSS/N6007	<ul style="list-style-type: none"> <li>Street Light installation</li> <li>Demonstrate understanding of type of lightning devices including LED,</li> <li>Full technical specification</li> <li>Carry out root survey</li> <li>Handling all tools &amp; equipments</li> <li>Ensure proper wiring, connections</li> <li>Ensure proper installation of protection devices</li> <li>Replace and retrofitting</li> <li>Laying of Underground cable;</li> <li>Ensure supply connection</li> <li>Troubleshoot problems</li> </ul>	Street light accessories, Screw driver, combination plier, phase tester, digital multimeter, clip on meter, neon etc.,
5	<b>Operation and Maintenance</b>	<ul style="list-style-type: none"> <li>Primary inspection for</li> </ul>	Screw driver, combination plier,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Theory Duration</b> (hh:mm) 15:00</p> <p><b>Practical Duration</b> (hh:mm) 50:00</p> <p><b>Corresponding NOS Code</b> PSS/N6008</p>	<ul style="list-style-type: none"> <li>• Heck list for inspection</li> <li>• Testing of the system:</li> <li>• Testing equipment usage and measuring parameters and testing procedures</li> <li>• Repairing and replacement</li> </ul>	<p>phase tester, digital multimeter, clip on meter, neon, etc.,</p>
6	<p><b>Use of basic Health &amp; Safety practices at the work place</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 20:00</p> <p><b>Corresponding NOS Code</b> PSS/N 2001</p>	<ul style="list-style-type: none"> <li>• To understand basic health and safety practices covering CEA safety regulations 2010, issue of permit to work etc.</li> <li>• To study uses of PPE equipment's during at work site e.g. safety helmet, belt, shoes, protective glasses, earth rod, etc.</li> <li>• Retrieve and point out documentation that refers to safety, health policy and standard</li> <li>• Information to relevant authority for any abnormal situation/behaviour of any equipment's</li> <li>• Good housekeeping practises and disposal of waste</li> <li>• Identify common hazard , Storage of flammable materials and oils safely</li> <li>• Possible causes of risk or accident</li> <li>• Safe working practises when working with tools and machines</li> <li>• Electrical safe working procedures such as Tag out, Lockout, Permit to work</li> <li>• Recognize any abnormalities in system installed , alarms, noticing parameters</li> <li>• Fire safety, causes and precautionary activities. Use of appropriate fire extinguishers on different types of fires</li> <li>• Demonstrate rescue techniques applied during fire hazard, correct method to move injured people during emergency</li> <li>• Various types of safety signs and what they mean</li> <li>• Lift, carry and transport heavy objects, and tools, safely, using</li> </ul>	<p>Helmet, Gloves, rubber mat, ladder, neon tester, safety rope, first aid kit etc.</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>correct procedures from storage to workplace and vice versa</p> <ul style="list-style-type: none"> <li>Administer appropriate first aid to victims , bandaging heart attack, CPR, etc.</li> <li>Demonstrate how to free a person from electrocution</li> <li>Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</li> <li>Inform relevant authority about any abnormal situation</li> <li>Complete written accident report or dictate a report, send report to concern person responsible</li> </ul>	
7	<p><b>Work effectively with other's</b></p> <p><b>Theory Duration</b> (hh:mm) 5:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> PSS/N 1336</p>	<ul style="list-style-type: none"> <li>Working effectively in a team.</li> <li>Demonstrate good interpersonal relation, discipline behaviour, developing a positive attitude and building self-confidence.</li> <li>Receiving information and instruction from supervisor and fellow workers, pass on information</li> <li>Assist others to maximize effectiveness</li> <li>Problem escalation</li> <li>Demonstrate responsible, disciplined behavior's at workplace</li> <li>Display appropriate communication etiquette while working</li> <li>Communication And Writing Skills and their importance</li> <li>Basic Computer application</li> </ul>	
	<p><b>Total Duration</b></p> <p><b>Theory Duration</b> 65:00</p> <p><b>Practical Duration</b> 135:00</p>	<p><b>Unique Equipment Required:</b> LED Street light, tool kit, first aid kit, etc.</p>	

Grand Total Course Duration: **200Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by **POWER SECTOR SKILL COUNCIL**)

**Trainer Prerequisites for Job role: “Assistant Technician: Street Light Installation & Maintenance” mapped to Qualification Pack: “PSSC/Q 6003, v1.0”**

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “PSSC/Q 6003
2	<b>Personal Attributes</b>	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	<b>Minimum Educational Qualifications</b>	ITI in Electrical trade; Preferably B.Tech(Electrical) or 3 year Diploma in Electrical Engineering,
4a	<b>Domain Certification</b>	Certified for Job Role: “Assistant Technician: Street Light Installation & Maintenance” mapped to QP: “PSSC/Q 6003 v1.0”. Minimum accepted score as per PSSC guidelines- 80% for Trainer and 90% for Master Trainer
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score as per PSSC guidelines – 80% for Trainer and 90% for Master Trainer
5	<b>Experience</b>	<p>Engineer B.Tech. (Electrical) with at least 1-year relevant experience in power distribution either in the Power Distribution utility or with the turnkey /EPC contractors of the power distribution companies carrying out the work of erection of power distribution lines and sub stations etc.</p> <p>3 years Diploma in Electrical Engineering with at least 2-3 years’ relevant experience in power distribution either in the Power Distribution utility or with the turnkey /EPC contractors of the power distribution companies carrying out the work of erection of power distribution lines and sub stations etc.</p> <p>ITI Electrician with at least five-year relevant experience in power distribution either in the Power Distribution utility or with the turnkey /EPC contractors of the power distribution companies carrying out the work of erection of power distribution lines and sub stations etc.</p>





## Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	<b>Assistant Technician: Street Light Installation &amp; Maintenance</b>
<b>Qualification Pack</b>	<b>PSSC/Q 6003, v1.0</b>
<b>Sector Skill Council</b>	<b>Power</b>

<b>Sr. No.</b>	<b>Guidelines for Assessment</b>
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 50% in every NOS
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
<b>1.</b> <b>PSS/N60</b> <b>07</b> <b>Carry out Installation and replacement of street light</b>	PC1. apply understanding of all type of LED light – Wattage wise and Lumen level wise in detail	100	4	1	3
	PC2. apply knowledge of technical specification of various type of LED street lights		4	1	3
	PC3. carry out the root survey before street light pole installation and cable laying		4	2	2
	PC4. carry all the tools & equipment needed for erection or installation		2	0	2
	PC5. ensure proper wiring and connection for erection of street light fixture		5	2	3
	PC6. ensure installation of protection devices- surge protection device, voltage fluctuation, over voltage protection etc.		3	0	3
	PC7. apply knowledge of control switch and time for automatic switch off and switch on		3	0	3
	PC8. apply knowledge about the types/height of street light pole		5	2	3
	PC9. replace and retrofit the existing light with modern LED light		4	1	3
	PC10. check and replace street light component and drivers		5	2	3
	PC11. be able to give street light supply from distribution transformer		4	2	2
	PC12. ensure required PPE for the safety measures		4	0	4
	PC13. test light fixture and drivers, prior to installation		4	0	4
	PC14. apply operational familiarity				

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	with tools and tackles		4	0	4
	PC15. apply knowledge of types of underground cable ( 3 Core) for street light		5	2	3
	PC16. apply knowledge of process of laying cable and termination PC17.		4	0	4
	PC18. ensure supply connection from cable to fixture with proper earthing and transformer load balancing		4	0	4
	PC19. carry all the tools and equipment for digging and laying down the cable		5	2	3
	PC20. troubleshoot problems involving underground electrical wiring		4	1	3
	PC21. apply knowledge about the ratings and specifications of cables, fuses, switches and wires		2	1	1
	PC22. report to supervisor or engineer (if found) any problem in laying down the wiring		2	1	1
	PC23. check and perform primary testing on the cables and connections of street light		2	1	1
	Total		100	22	78
<b>2. PSS/N6008 Carry out operation and maintenance of street light</b>	PC1. check all the intersections, joints, junction box in the wiring or cable of LED street light	100	3	1	2
	PC2. check the ON-OFF switch/MCB		2	1	1
	PC3. check visually the LED bulb and head of street light		2	0	2

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC4. locate the conduit, cables & other undergoing devices to perform maintenance work		2	1	1
	PC5. checking lux level		2	1	1
	PC6. carry all the testing equipment like tester, multimeter, lux meter, wire, bulb etc.		2	1	1
	PC7. test the supply across the ON-OFF switch and across the all joints and intersections		2	0	2
	PC8. check continuity of cable		3	1	2
	PC9. test the lamp head by multimeter or tester for checking the continuity of supply		1	0	1
	PC10. test the fixture and other parts of street light system		1	0	1
	PC11. maintain and repair or replace photoelectric control relay and surge protection device for lighting system		1	0	1
	PC12. replace existing light with modern LED light and associated component		3	1	2
	PC13. troubleshoot problems involving underground electrical wiring		1	0	1
	PC14. repair, replace and modify street light equipment including heads, poles, controllers, lights, circuitry, switches, fuses, and cabinet parts		2	1	1
	PC15. assist in general electrical repair work		2	1	1
	PC16. help repair other electronic or electrical devices or equipment		2	1	1

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	TOTAL		100	26	74
<b>3. PSS/N2001</b> <b>Use basic health and safety practices for power related work</b>	PC1. use protective clothing/equipment for specific tasks and work conditions.	100	3	0	3
	PC2. state the name and location of people responsible for health and safety in the workplace		2	0	2
	PC3.state the names and location of documents that refer to health and safety in the workplace		2	0	2
	PC4.identify job-site hazardous work and state possible causes of risk or accident in the workplace		3	1	2
	PC5.follow electrical safe working procedures such as Tag out/Lock out and display PTW (Permit To Work),		3	1	2
	PC6.follow warning signs (danger, out of service, etc.) while working with electrical systems		3	1	2
	PC7. use standard safe working practices when working at heights, confined areas and trenches		3	1	2
	PC8. test any electrical equipment and system using insulated testing devices before touching them		3	1	2
	PC9. ensure positive isolation of electrical equipment & system as per given standards		3	1	2
	PC10. recognize any abnormalities in electrical equipment or system installed alarm annunciation and/or noticing parameters from gauge/ indicator installed		3	1	2
	PC11. carry out safe working practices while dealing with hazards to ensure the safety of self and		3	1	2

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	others				
	PC12. state methods of accident prevention in the work environment of the job role		2	0	2
	PC13. state location of general health and safety equipment in the workplace		2	0	2
	PC14. inspect for faults, set up and safely use of scaffolds and elevated platforms and ladder		2	0	2
	PC15. lift, carry and transport heavy objects & tools safely using correct procedures from storage to workplace and vice versa		2	1	1
	PC16. inspect Grid station and its equipment routinely for any signs of oil and water leakage		2	0	2
	PC17. store flammable materials and machine lubricating oil safely and correctly		2	0	2
	PC18. check that the emission and pollution control devices are working properly in line with environmental policy standards		3	1	2
	PC19. apply good housekeeping practices at all times		3	1	2
	PC20. identify common hazard signs displayed in various areas		2	0	2
	PC21. retrieve and/or point out documents that refer to health and safety in the workplace		2	0	2
	PC22. inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly		3	0	3

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC23. use the various appropriate fire extinguishers on different types of fires correctly		2	1	1
	PC24. distinguish types of fire		3	1	2
	PC25. demonstrate rescue techniques applied during fire hazard		3	1	2
	PC26. demonstrate good housekeeping in order to prevent fire hazards		3	1	2
	PC27. demonstrate the correct use of a fire extinguisher		3	1	2
	PC28. demonstrate how to free a person from electrocution		3	1	2
	PC29. administer appropriate first aid to victims where required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		3	0	3
	PC30. demonstrate basic techniques of bandaging		3	1	2
	PC31. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		3	1	2
	PC32. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC33. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		3	1	2

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC34. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC35. participate in emergency procedures Emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work		3	1	2
	PC36. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
	PC37. demonstrate correct method to move injured people and others during an emergency		3	1	2
	Total		100	24	76
<b>4. PSS/N1336 Work effectively with others</b>	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	3	7
	PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3. give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7
	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7
	PC6. display appropriate communication etiquette while				



Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
	working		10	3	7
	PC7. display active listening skills while interacting with others at work		10	3	7
	PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	3	7
	PC9. demonstrate responsible and disciplined behaviors at the workplace		10	3	7
	PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		10	3	7
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
	<b>QP TOTAL</b>		<b>400</b>	<b>102</b>	<b>298</b>



## **Power Sector Skill Council**

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