



Model Curriculum

Consumer Energy Meter Technician

SECTOR: POWER

SUB-SECTOR: DISTRIBUTION

OCCUPATION: CONSUMER ENERGY METER TECHNICIAN

REF ID: PSS/Q0107, VERSION 1.0

NSQF LEVEL: 3



**Certificate
COMPLIANCE TO
QUALIFICATION PACK- NATIONAL OCCUPATIONAL
STANDARDS**

is hereby issued by the

POWER SECTOR SKILL COUNCIL

for

MODEL CURRICULUM

Complying to National Occupational Standards of

Job Role/ Qualification Pack: **'Consumer Energy Meter Technician'** QP No. **'PSS/Q0107, NSQF Level 3'**

Date of Issuance :
Valid Up to* :

*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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Consumer Energy Meter Technician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Consumer Energy Meter Technician”, in the “Power” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Consumer Energy Meter Technician		
Qualification Pack Name & Reference ID.	Consumer Energy Meter Technician PSS/Q 0107		
Version No.	1.0	Version Update Date	26-03 –2017
Pre-requisites to Training	8th pass(10th and ITI certificate preferred)		
Training Outcomes	<ul style="list-style-type: none">• Gain familiarity with Energy Meter and installation and maintenance thereof: General introduction to trade, basic unit of measurement of Electric Energy, role of an energy meter technician activities covering installation, reading and understanding single phase and three phase meter in line with energy provider’s standard and policies• Identify and use basic tools, equipment & materials: Effectively identify, select & use the specified tools and equipment relevant to installation and maintenance and testing of Energy Meters (3phase and single phase CT Meters installation etc.)• Become well versed with Environment Health & Safety: Well versed with health and safety measures in terms of personal safety and equipment safety relevant to energy meter technician occupation with familiarity in usage of PPEs, First AID etc.• Handle Material & Store rightly: Right method stacking of relevant materials used for Consumer Energy Meters installation activities.		

This course encompasses 3 out of 3 National Occupational Standards (NOS) of “Consumer Energy Meter Technician” Qualification Pack issued by “Power Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction</p> <p>Theory Duration (hh:mm) 06:00</p> <p>Practical Duration (hh:mm) 02:00</p> <p>Corresponding NOS Code PSS N 0114</p>	<ul style="list-style-type: none"> • Functions of Power Distribution Companies • Relevant Legislation, Electricity act 2003, CERC, SERC. • Job role and responsibilities, Employment Terms, Employment opportunities. 	
2	<p>Basic of Electricity</p> <p>Theory Duration (hh:mm) 06:00</p> <p>Practical Duration (hh:mm) 04:00</p> <p>Corresponding NOS Code PSS N 0114</p>	<ul style="list-style-type: none"> • Explain the basic key concepts of Voltage, Current, Capacitance, Resistance, KVA, KWh. • Elements of power systems, transmission, distribution and generations. 	Voltmeter, Ammeter, Multimeter, Wattmeter, Resistor etc
3	<p>Usage of personal protective equipment, various types of electrical hazards defective Cords and wires, short circuits, damaged insulation etc.)</p> <p>Theory Duration (hh:mm) 04:00</p> <p>Practical Duration (hh:mm) 18:00</p> <p>Corresponding NOS Code PSS N 0114</p>	<ul style="list-style-type: none"> • To be able to familiarise usage of PPEs according to situation and identify electrical hazards situation and their rectification. 	Helmet, Gloves, Discharge rod, Safety rope, rubber mat, fire extinguisher, ladder, Neon tester
4	<p>List of required Tools and Equipment and their usage in installation of Meters and service lines</p>	<ul style="list-style-type: none"> • To be able to understand the usage of various tools and tackles during installation of Energy Meters including sealing and also installation of service lines 	Screw driver, combination plier, phase tester, digital multimeter, clip on meter, megger etc.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 25:00</p> <p>Corresponding NOS Code PSS N 0114</p>		
5	<p>Various types of Consumer Energy meters their usage and installation</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 61:00</p> <p>Corresponding NOS Code PSS N 0114</p>	<ul style="list-style-type: none"> To understand the functioning of various types of Energy Meters and their installation procedures. 	Single phase, three phase four wire, three phase four wire CT meter, three phase three wire, tri vector meter, HT meter.
6	<p>CEA Regulations 2006 regarding installation , operation and maintenance procedures for Energy Meters and Sealing practices</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 23:00</p> <p>Corresponding NOS Code PSS/N2001</p>	<ul style="list-style-type: none"> To understand various CEA Regulations relating to Meter specifications , installation, operation testing and maintenance of meters, sealing of meters etc. 	
7	<p>Recording metered data, Energy meter testing procedures and devices used</p> <p>Theory Duration (hh:mm) 11:00</p>	<ul style="list-style-type: none"> To accurately record metered data and get familiar with testing of meters 	AMR, CMRI, Hand held unit etc, Consumer meter testing with field calibrator, primary injection set for testing

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Practical Duration (hh:mm) 33:00</p> <p>Corresponding NOS Code PSS N 0114</p>		
8	<p>Abnormal tempering conditions in single phase and three phase meters and Anti tempering features, Specifications covering Rating, Accuracy class and other features of meters</p> <p>Theory Duration (hh:mm) 12:00</p> <p>Practical Duration (hh:mm) 38:00</p> <p>Corresponding NOS Code PSS N 0114</p>	<ul style="list-style-type: none"> To understanding the various issues relating to tempering of meters and the Anti tempering measures to be provided in the meters for checking theft of energy 	<p>Placing of various anti tampering material in meter viz Magnets, DC injectors, electrostatic discharge etc</p>
9	<p>Basic Health & Safety practices for power related work</p> <p>Theory Duration (hh:mm) 16:00</p> <p>Practical Duration (hh:mm) 34:00</p> <p>Corresponding NOS Code PSS/N2001</p>	<ul style="list-style-type: none"> To understand basic health and safety practices covering CEA safety regulations 2010, issue of permit to work etc. Usage of PPE Fire fighting, First-Aid 	<p>Helmet, Gloves, Discharge rod, Safety rope, rubber mat, fire extinguisher, ladder, Neon tester</p>
10	<p>Soft Skills</p> <p>Theory Duration (hh:mm) 20:00</p>	<ul style="list-style-type: none"> To work effectively in a team. Effective communication, good interpersonal relation, discipline behaviour, developing a positive attitude and building self-confidence. 	



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 12:00 Corresponding NOS Code CSC/N1336		
	Total Duration: Theory Duration 100:00 Practical Duration 250:00	Single phase, three phase four wire, three phase four wire CT meter, three phase three wire, tri vector meter, HT meter, AMR, CMRI.	

Grand Total Course Duration: 350 Hours 00 Minutes

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

Trainer Prerequisites for Job role: “Consumer Energy Meter Technician” mapped to Qualification Pack: “PSSC/Q 0107”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “PSSC/Q 0107”.
2	Personal Attributes	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	Minimum Educational Qualifications	ITI Electrician(Minimum) but preferably B.Tech(Electrical),3 year Diploma Electrical Engineering,
4a	Domain Certification	Certified for Job Role: “Consumer Energy Meter Technician” mapped to QP: “PSSC/Q 0107”. Minimum accepted score as per PSSC guidelines- 70%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score as per PSSC guidelines – 70%.
5	Experience	<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

Assessment Criteria for Consumer Energy Meter Technician	
Job Role	Consumer Energy Meter Technician
Qualification Pack	PSS/Q 0107
Sector Skill Council	Power SSC

Sr. No.	Guidelines for Assessment
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 70% 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



ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
1. PSS/ N 0114: MANUALLY REMOVE, CHANGE AND INSTALL LOW VOLTAGE, SINGLE AND THREE PHASE METERS	PC1. obtain job specification or work order from responsible authority	100	2	0	2
	PC2. select and use appropriate personal protective equipment (PPE) suitable to the work as per occupational health and safety guidelines		3	1	2
	PC3. select and use appropriate tools and equipment in accordance with the tasks		3	1	2
	PC4. confirm that the selected tools and equipment are safe and ready for use		2	0	2
	PC5. verify the distance between the poles or cables is correct		2	0	2
	PC6. check the underground and/or overhead cables are laid correctly as per work order		2	0	2
	PC7. plan and locate the area inside or outside the customer's premise after assessing possible risks		3	0	3
	PC8. check that the identified area is accessible to carry out installation, meter testing, commissioning, reading, recording and maintenance		2	0	2
	PC9. ensure the energy meter is correct, examined and tested, and meets all the parameters and specifications set by the Bureau of Indian Standards (BIS)		4	2	2
	PC10. follow safe working practices in accordance with instructions given in the organizational standards and regulations to prevent injury to self and others while carrying out work		4	1	3
	PC11. inspect the facility's wiring system and recognize any possible risks to be isolated such as faulty circuit, loose ends, naked wires, etc.		3	0	3
	PC12. check the consumer's wiring system for any common phase or looping of phase of two or more consumers		3	0	3
	PC13. inform all affected parties of the intended work plan in advance prior to disconnecting power supply line		2	0	2
	PC14. install the energy meter and required supportive equipment using appropriate insulated tools		6	2	4



ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
	and devices as per organizational procedures				
	PC15. equip the energy meter with various anti-tampering features as per regulations and organizational procedures		6	2	4
	PC16. establish immunity against various types of external factors in accordance with relevant regulations		4	1	3
	PC17. ensure the energy meter displays one of more of the following parameters depending upon the tariff requirement for different categories of consumers		4	1	3
	PC18. check that any replaced or repaired equipment are working properly and customer's problems are duly resolved efficiently		3	0	3
	PC19. check the energy meter for earth leakage indication as per relevant regulations		3	1	2
	PC20. test and calibrate the energy meter using appropriate testing devices in line with organizational quality standards and regulations		6	2	4
	PC21. identify and escalate unresolved problems to appropriate authority for rectifications		3	0	3
	PC22. establish the reason for changing the energy meter from responsible source in order to plan the work out		2	0	2
	PC23. identify the meter type, required tools and devices and the recommended removal procedures		5	2	3
	PC24. replace the same with a duly tested energy meter as per instructions given in organizational guidelines and regulations		4	1	3
	PC25. test to confirm that the replaced energy meter conforms to required work specifications		3	1	2
	PC26. record the metered data and maintain all the information related to the consumer's energy meter		2	0	2
	PC27. verify the accuracy of the metered data		3	0	3

ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
	PC28. maintain consumer meters' account history, installation date and testing details, calibration and replacement of meters in line with organizational standards and policies		3	1	2
	PC29. check that tools and devices used are disassembled and stored safely as per instructions		3	1	2
	PC30. dispose waste materials such as wires, tapes, plastic caps, etc. in line with safety and environmental procedures		3	1	2
	PC31. leave the work area is in safe conditions and clear of any hazardous substances		2	0	2
		Total	100	21	79
PSS/ N 2001: USE BASIC HEALTH AND SAFETY PRACTICES FOR POWER RELATED WORK	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, 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		3	1	2

ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
	installed alarm annunciation and/or noticing parameters from gauge/ indicator installed				
	PC11. carry out safe working practices while dealing with hazards to ensure the safety of self and others		3	1	2
	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 ladders		2	0	2
	PC15. lift, carry and transport heavy objects & tools safely using correct procedures from storage to workplace and vice versa		3	1	2
	PC16. inspect power plant and its equipment routinely for any signs of oil, water and/or steam leakage		3	0	3
	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		5	2	3
	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/behaviour of any equipment/system promptly		2	0	2
	PC23. use the various appropriate fire extinguishers on different types of fires correctly		3	1	2
	PC24. demonstrate rescue techniques applied during fire hazard		3	1	2
	PC25. demonstrate good housekeeping in order to prevent fire hazards		3	1	2
	PC26. demonstrate the correct use of a fire extinguisher		3	1	2



ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
	PC27. demonstrate how to free a person from electrocution		3	1	2
	PC28. administer appropriate first aid to victims wherever required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		2	0	2
	PC29. demonstrate basic techniques of bandaging		3	1	2
	PC30. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		3	1	2
	PC31. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC32. 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
	PC33. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC34. participate in emergency procedures		3	1	2
	PC35. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
	PC36. demonstrate correct method to move injured people and others during an emergency		3	1	2
		Total	100	25	75
PSS/ N 1336 (WORK EFFECTIVELY WITH OTHERS)	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		10	3	7



ASSESSMENT OUTCOME (NOS CODE AND DESCRIPTION)	ASSESSMENT CRITERIA (PC)	TOTAL MARKS	OUT OF	MARKS ALLOCATION	
				THEORY	SKILLS PRACTICAL
	in a positive manner, where required and possible				
	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7
	PC6. display appropriate communication etiquette while 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
	Total		100	30	70
	QP Total		300	76	224



Power Sector Skill Council

Central Board of Irrigation & Power, Malcha Marg, Chanakyapuri,
New Delhi – 110021

