QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR POWER SECTOR

Contents

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack - Junior Engineer-Power Distribution

SECTOR: Power

SUB-SECTOR: Distribution

OCCUPATION: Junior Engineer – Power Distribution

REFERENCE ID: PSS/Q3004

ALIGNED TO: NCO-2004/NIL

Junior Engineer – Power Distribution is responsible for power distribution system installation, operation & maintenance, testing & inspection of 33/11 substation to last mile consumer supply including distribution transformer, O/H Line, U/G cabling, GIS, SCADA, Metering, Billing and Collection etc.

Brief Job Description: Supervise and carry out installation, operation & maintenance, testing & inspection of 33/11 Substation to last mile consumer supply including distribution transformer

Personal Attributes: Work is performed indoors as well as outdoors in all weather conditions. Work requires the ability to perform engineering and coordination activities in the work place. Work also involve bending, walking, and standing for significant periods of time. Candidate will be exposed to different types of power supply areas and irregular terrain. Periodic night-time work is also required.

Job Details

Qualifications Pack Code	**PSS/Q3004**		
Job Role	**JUNIOR ENGINEER POWER DISTRIBUTION**		
Credits (NSQF)	**TBD**	**Version number**	**1.0**
Sector	**Power**	**Drafted on**	**15/01/2016**
Sub-sector	**Distribution**	**Last reviewed on**	**19/07/2016**
Occupation	**Junior Engineer**	**Next review date**	**19/07/2018**
NSQC Clearence Date	**Not Applicable**		

Job Role	**JUNIOR ENGINEER POWER DSITRIBUTION**
Role Description	Junior engineer – Power Distribution is responsible for understanding of power distribution system installation, operation & maintenance, testing & inspection of 33/11 Substation to last mile consumer supply including distribution transformer, O/H Line, U/G cabling, GIS, SCADA, Metering, Billing and Collection etc.
NSQF level	5
Minimum Educational Qualifications	Diploma in Engineering (Electrical)
Maximum Educational Qualifications	Not Applicable
Training (Suggested but not mandatory)	Not Applicable
Minimum Job Entry Age	20 Years
Experience	Not Applicable
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. PSS/N3007 Carry out Installation in power distribution systems 2. PSS/N3008 Carry out operation and maintenance of power distribution system 3. PSS/N2001 Use basic health and safety practices for power related work 4. PSS/N1336 Work effectively with others **Optional:** Not Applicable
Performance Criteria	As described in the relevant OS units

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential achieving the objectives of the function.
Job role	Job role defines unique set of functions that together form a unique employment opportunity in an organization.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve consistently while carrying out a function at the workplace. Occupational Standards as set of competencies is applicable both in Indian and overreaching global contexts.
Performance Criteria	Performance Criteria defined for a task are statements that together specify the standard of performance while carrying out the task.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises set of OS, together with the educational, training and other criteria that are required to perform a job role satisfactorily at workplace. A Qualifications Pack is assigned a unique qualification pack code for clear identification.
Knowledge and Understanding	Knowledge and Understanding are statements which together as a set specify the technical, generic, professional and organization specific knowledge that an individual needs to possess in order to perform and meet the required standards consistently.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates. It includes elements of operational knowledge contents defined in relation to functioning of an organization that a skilled professional need to possess specific to its precise areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific domain knowledge needed to accomplish the task in combination with other competencies. It is usually coined with specifically

	designated roles and responsibilities.
Core Skills/Generic Skills	Core Skills or Generic Skills as set are group of skills. It is key to working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include mainly communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
PPE	Personal Protective Equipment
KW	Kilowatt
V	Volt
KWH	Kilo Watt Hour
PTW	Permit to work
CPR	Cardiopulmonary Resuscitation
GIS	Geographical Information System
O/H	Overhead
U/G	Underground
GIS	Geographical information system
CBIP	Central Board of Irrigation and Power
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CPRI	Central Power Research Institute
CT	Current Transformer
DC	Direct Current
DISCOM	Distribution Company
DT	Distribution Transformer
E/F	Earth Fault
HT	High Tension
HVDS	High Voltage Distribution System
IE Act	Indian Electricity Act 2003
IS	Indian Standard
KV	Kilo Volt
LA	Lightening Arrestor
MD	Maximum Demand
MVA	Mega Volt Ampere
MW	Mega Watt
MWh	Mega Watt hour
O/C	Over Current
O/H	Over Head

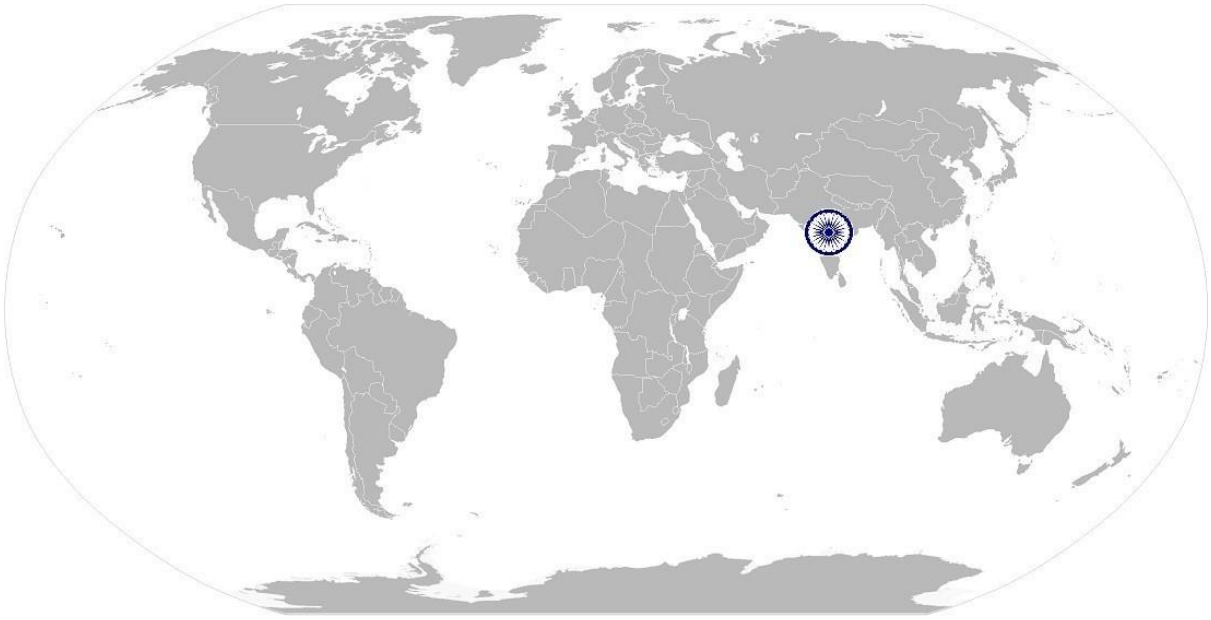
O&M	Operation & Maintenance
OPGW	Optical Ground Wire
PT	Potential Transformer
RMU	Ring Main Unit
SCADA	Supervisory Control and Data Acquisition
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SMS	Short Message Service
T&D	Transmission and Distribution
T/F	Transformer
VT	Voltage Transformer
XLPE	Cross Linked Poly Ethylene Cable

NOS

National Occupational Standards

PSS/N3007 **Carry out Installation in power distribution systems**

National Occupational Standard



Overview

This unit is about the power distribution system installation activities performed by a Junior Engineer

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PSS/N3007 **Carry out Installation in power distribution systems**

National Occupational Standard

Unit Code	**PSS/N3007**
Unit Title (Task)	**Carry out Installation in power distribution systems**
Description	Junior engineer will undertake installation, testing & commissioning of 33/11 substation, distribution transformer, O/H Line, U/G cabling, distribution transformer, release of new connection, consumer management, GIS, SCADA, Metering, etc. as per standards and design drawing. . Periodic /preventive and breakdown maintenance of all the aforesaid.
Scope	**This unit/task covers the following:** • power distribution system Installation

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Power distribution system Installation	The user/individual on the job needs to: PC1. apply understanding of power distribution system PC2. apply knowledge of type of distribution systems with respect to voltage level, network configuration (ring main/redial etc.) PC3. apply understanding of cables/conductors their size and specifications PC4. carry out erection and commissioning of substation PC5. carry out the route survey for O/H line or U/G cable distribution supply PC6. carry out installation of distribution transformer PC7. supervise erection of line poles, substation, O/H line or U/G cable, switchgear etc. PC8. plan and execute service line connection for customers PC9. ensure that all the tools & equipment needed for erection or installation are available at site PC10. undertake meter installation at customer premises PC11. apply knowledge of SCADA and GIS Mapping PC12. ensure proper earthing of equipment for healthy operation PC13. undertake installation of protection devices- surge protection device, over voltage protection etc. PC14. read and understand network schematic, line diagrams and related technical drawings PC15. coordinate and manage all the logistics, material planning and handling related issues PC16. monitor power supply from substation during work in progress PC17. test and inspect transformer, switchgear etc. on post commissioning PC18. have operational familiarity with tools and tackles PC19. be responsible for mobilizing resources PC20. coordinate with seniors and also monitor with workers/helpers

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PSS/N3007 **Carry out Installation in power distribution systems**

Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. relevant legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions KA2. relevant health and safety requirements applicable in the work place KA3. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities KA4. reporting structure, inter-dependent functions, lines and procedures in the work area KA5. how to engage with specialists for support in order to resolve incidents and service requests KA6. importance of working in a clean and safe environment KA7. relevant people and their responsibilities within the work area KA8. escalation matrix and procedures for reporting work and employment related issues
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. common electricity terminology and correct interpretation of the same terminology: e.g. Current, Voltage, Resistance, Kilowatt (kw), Kilowatt hour (kwh) KB2. distribution system plant and equipment KB3. entire value chain of distribution system KB4. technical parameter and its function of power distribution equipment KB5. smart grid, AMR, AMI and automation system KB6. metering, billing and collection system also customer care service KB7. importance of reporting problems in a timely manner KB8. ratings and specifications of cables, fuses, switches and wires KB9. handling all machineries, equipment & vehicles KB10. appropriate judgment and initiative pertaining to work methods and tools KB11. technical manuals, blueprints, schematics, diagrams, plans, specifications estimate time, material and equipment needed to complete assignments KB12. quality parameters, quality assessment based on physical parameters KB13. metering system and its installation KB14. service line connection process
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. note the information communicated by the supervisor or engineer SA2. note down observations (if any) related to the process SA3. use basic IT skills including report preparation and data analysis

PSS/N3007 **Carry out Installation in power distribution systems**

	Reading Skills
	The user/individual on the job needs to know and understand how to: SA4. read and interpret the process required for various types of operations SA5. read and interpret and process flowchart for all operations SA6. read manuals and operation documents to understand the Equipment used into operation
	Verbal Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA7. discuss task lists, schedules and activities with the supervisor SA8. effectively communicate with the team members SA9. communicate clearly with the customer on the issues faced during query/fault
B. Professional Skills	**Decision Making**
	The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision making process SB2. take decisions with systematic course of actions and/or response
	Plan and Organize
	The user/individual on the job needs to know and understand: SB3. planning and organization of tasks to meet deadlines SB4. record keeping, documentation
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB5. build customer relationships and use customer centric approach
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB6. seek and comprehend operation related inputs for clarification SB7. find ways of modifying difficult operating stages to make it operation friendly
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB8. apply domain information to set and define operation parameters that ensures economy and quality of the product
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB9. critically evaluate operation parameters in relation to product features intended SB10. develop a holistic and comprehensive profile of products based on segregated discrete process stages

NOS Version Control

NOS

National Occupational Standards

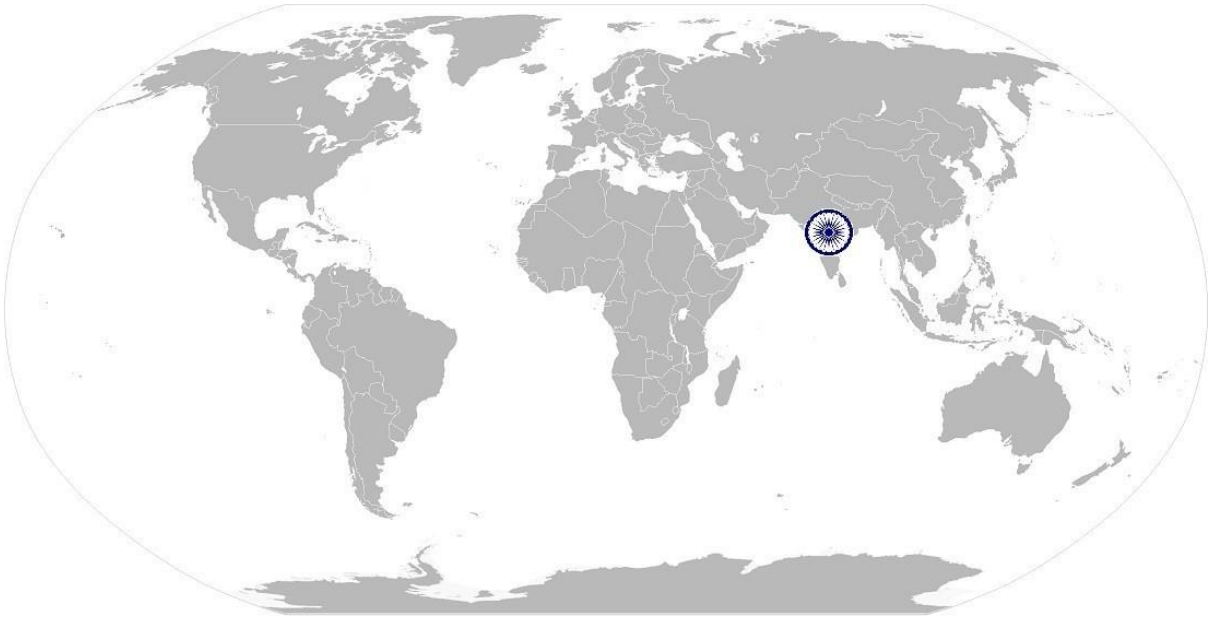
PSS/N3007 **Carry out Installation in power distribution systems**

NOS Code	PSS/N3007		
Credits (NSQF)	TBD	Version number	1.0
Industry	Power	Drafted on	15/01/2016
Industry Sub-sector	Distribution	Last reviewed on	19/07/2016
Occupation	Junior Engineer	Next review date	19/07/2018

Back to Top

PSS/N3008 Carry out operation and maintenance of power distribution system

National Occupational Standard



Overview

This unit is about the operation and maintenance work by junior engineer distribution.

PSS/N3008 **Carry out operation and maintenance of power distribution system**

National Occupational Standard

Unit Code	**PSS/N3008**
Unit Title (Task)	**Carry out operation and maintenance of power distribution system**
Description	This section covers the operation and maintenance of distribution system like transformer, substation, O/H line, U/G cable, switchgear, service cable ,meters and associated components etc. while ensuring healthy operation of distribution system equipment.
Scope	**This unit/task covers the following:** • primary Inspection for maintenance • testing of the system • repairing and replacement • activity specific safety
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Primary Inspection for maintenance	The user/individual on the job needs to : PC1. inspect substation equipment, power transformer, distribution transformer, switchgear, overhead lines, insulators and other related equipment for identification of faults, possible wear and tear and to assess requirement of proactive preventive maintenance and breakdown maintenance on need basis PC2. carry out/monitor/supervise maintenance related activities pertaining to equipment installed in sub stations PC3. apply understanding of revenue process management viz. release of new connection, meter installation, meter reading, bill generation, bill distribution, revenue collection PC4. apply understanding of various consumer categories and applicable tariffs PC5. carry out/monitor/supervise maintenance of O/H line and U/G cable PC6. check all the intersections & joints(termination) in the wiring or cable PC7. check the running parameter of distribution system as per design standard PC8. monitor working condition of transformer(overloading/under loading) and other equipment PC9. locate the conduit, cables & other undergoing devices to perform maintenance work PC10. apply understanding of metering technologies (electronic meter, Automated meter reading, smart meter etc.) PC11. monitor performance of critical system such as Remote Terminal Units , Remote Metering Units and other automation system PC12. carry out routine maintenance

PSS/N3008 Carry out operation and maintenance of power distribution system

Testing of the system	The user/individual on the job needs to : PC13. carry out all the testing equipment like tester, multimeter, control cable etc. PC14. test the system parameter to know abnormal condition of the system PC15. test the healthiness of connected equipment PC16. maintain log of system condition (parameters) PC17. undertake software upgradation and testing
Repairing & replacement	The user/individual on the job needs to: PC18. carry out repair and replacement of faulty/ unhealthy equipment PC19. troubleshoot faulty system PC20. upgrade or modify the existing unhealthy equipment/system PC21. carry out general routine repair work PC22. implement technical change in equipment/system
Activity specific safety	PC23. use of PPE: e.g. safety helmet, safety glove, safety shoe, climbing harness, lanyard and tool belt (when climbing), earth rod (discharge rod), safety rope ,ladder etc.
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. relevant legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions KA2. relevant health and safety requirements applicable in the work place KA3. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities KA4. reporting structure, inter-dependent functions, lines and procedures in the work area KA5. how to engage with specialists for support in order to resolve incidents and service requests KA6. importance of working in a clean and safe environment KA7. relevant people and their responsibilities within the work area KA8. escalation matrix and procedures for reporting work and employment related issues

PSS/N3008 Carry out operation and maintenance of power distribution system

B. Technical Knowledge	The individual on the job needs to know and understand: KB1. common electricity terminology and correct interpretation of the same terminology: e.g. current, voltage, resistance, kilowatt (kw), kilowatt hour(kwh) KB2. various test/inspection of power distribution system equipment KB3. routine and preventive maintenance of distribution system equipment KB4. O&M process of each equipment of distribution system KB5. automation system , AMR and AMI KB6. smart grid, knowledge of SCADA and other communication system KB7. importance of reporting problems in a timely manner KB8. ratings and specifications of cables, fuses, switches and wires KB9. handling of all machineries, equipment & vehicles KB10. appropriate judgment and initiative pertaining to work methods and tools KB11. technical manuals, blueprints, schematics, diagrams, plans, specifications estimate time, material and equipment needed to complete assignments KB12. quality parameters, quality assessment based on physical parameters
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. note the information communicated by the supervisor or engineer SA2. note down observations (if any) related to the process of installation, operation and maintenance of Power distribution system
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. read and interpret the process required for various types of operations related to power distribution system SA4. read and interpret and process flowchart for all operations related to power distribution system SA5. read manuals and operation documents to understand the Equipment used into operation
	Verbal Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA6. discuss task lists, schedules and activities with the supervisor SA7. effectively communicate with the team members SA8. communicate clearly with the customer on the issues faced during query/fault
B. Professional Skills	**Decision Making**
	The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision making process SB2. take decisions with systematic course of actions and/or response

PSS/N3008 **Carry out operation and maintenance of power distribution system**

	Plan and Organize
	The user/individual on the job needs to know and understand: SB3. planning and organization of tasks to meet deadlines
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB4. build customer relationships and use customer centric approach
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB5. seek and comprehend operation related inputs for clarification SB6. find ways of modifying difficult operating stages to make it operation friendly
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. apply domain information to set and define operation parameters that ensures economy and quality of the product
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB8. critically evaluate operation parameters in relation to product features intended SB9. develop a holistic and comprehensive profile of products based on segregated discrete process

NOS Version Control

NOS Code	PSS/N3008		
Credits (NSQF)	TBD	Version number	1.0
Industry	Power	Drafted on	15/01/2016
Industry Sub-sector	Distribution	Last reviewed on	19/07/2016
Occupation	Junior Engineer	Next review date	19/07/2018

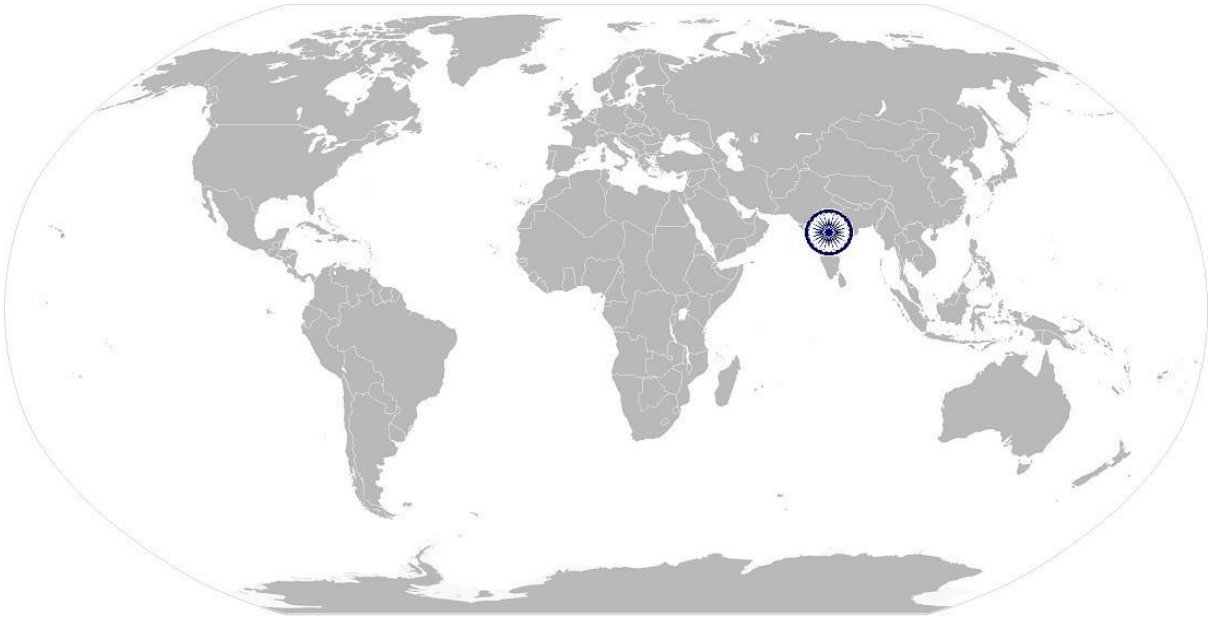
Back to Top

NOS

National Occupational Standards

PSS/N2001 **Use basic health and safety practices for power related work**

National Occupational Standard



Overview

This unit covers health, safety and security for power related work. This includes procedures and practices that candidates need to follow to maintain a healthy, safe and secure work environment in power distribution system.

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PSS/N3008 **Carry out operation and maintenance of power distribution system**

National Occupational Standard

Unit Code	**PSS/N2001**
Unit Title (Task)	**Use basic health and safety practices for power related work**
Description	This unit covers health, safety and security for power related work. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment. It covers responsibilities towards self, others, assets and the environment. .
Scope	**This unit/task covers the following:** • health and safety • fire safety • emergencies, rescue and first-aid procedures
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Health and safety	The user/individual on the job needs to: PC1. use protective clothing/equipment for specific tasks and work conditions PC2. state the name and location of people responsible for health and safety in the workplace PC3. state the names and location of documents that refer to health and safety in the workplace PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace PC5. follow electrical safe working procedures such as Tag out/Lock out and display PTW (Permit To Work), PC6. follow warning signs (danger, out of service, etc.) while working with electrical systems PC7. use standard safe working practices when working at heights, confined areas and trenches PC8. test any electrical equipment and system using insulated testing devices before touching them PC9. ensure positive isolation of electrical equipment & system as per given standards PC10. recognize any abnormalities in electrical equipment or system 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 PC12. state methods of accident prevention in the work environment of the job role PC13. state location of general health and safety equipment in the workplace PC14. inspect for faults, set up and safely use of scaffolds and elevated platforms and ladder PC15. lift, carry and transport heavy objects & tools safely using correct procedures from storage to workplace and vice versa PC16. inspect Grid station and its equipment routinely for any signs of oil and water leakage

PSS/N3008 Carry out operation and maintenance of power distribution system

	PC17. store flammable materials and machine lubricating oil safely and correctly PC18. check that the emission and pollution control devices are working properly in line with environmental policy standards PC19. apply good housekeeping practices at all times PC20. identify common hazard signs displayed in various areas PC21. retrieve and/or point out documents that refer to health and safety in the workplace PC22. inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly
Fire safety	The user/individual on the job needs to: PC23. use the various appropriate fire extinguishers on different types of fires correctly PC24. distinguish types of fire PC25. demonstrate rescue techniques applied during fire hazard PC26. demonstrate good housekeeping in order to prevent fire hazards PC27. demonstrate the correct use of a fire extinguisher
Emergencies, rescue and first-aid procedures	The user/individual on the job needs to: PC28. demonstrate how to free a person from electrocution PC29. administer appropriate first aid to victims were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc. PC30. demonstrate basic techniques of bandaging PC31. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments PC32. perform and organize loss minimization or rescue activity during an accident in real or simulated environments 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 PC34. demonstrate the artificial respiration and the CPR Process 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 PC36. complete a written accident/incident report or dictate a report to another person, and send report to person responsible PC37. demonstrate correct method to move injured people and others during an emergency
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace KA2. names and location of documents that refer to health and safety in the workplace

PSS/N3008 Carry out operation and maintenance of power distribution system

B. Technical Knowledge	The individual on the job needs to know and understand: KB1. meaning of "hazards" and "risks" KB2. health and safety hazards commonly present in the work environment and related precautions KB3. possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible KB4. possible causes of risk and accident KB5. methods of accident prevention KB6. safe working practices when working with tools and machines KB7. safe working practices while working at various hazardous sites KB8. where to find all the general health and safety equipment in the workplace KB9. various dangers associated with the use of electrical equipment KB10. positive isolation of electrical equipment and system KB11. safe handling and disposal of hazardous power plant wastes KB12. use of emission and pollution control devices and measures taken to control pollution KB13. various safety procedures and equipment used to work at heights, trenches and confined places KB14. safe working practices specific to working with electrical equipment & system e.g. lock out/ tag out, PTW, etc. KB15. preventative and remedial actions to be taken in the case of exposure to toxic materials KB16. importance of using protective clothing/equipment and other insulated work gear while handling electrical system and equipment KB17. precautionary activities taken to prevent fire accident KB18. various causes of fire KB19. techniques of using the different fire extinguishers KB20. different methods of extinguishing fire KB21. different materials used for extinguishing fire KB22. emergency rescue techniques applied during a fire hazard KB23. various types of safety signs and what they mean KB24. appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. note the information communicated by the officer incharge SA2. note down observations (if any) related to the operation/maintenance
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. read and interpret the process required for different types of manuals for maintenance SA4. read and interpret the flowchart of all parts of an assembly

PSS/N3008 Carry out operation and maintenance of power distribution system

	SA5. read manuals and documents to understand the product-details & how they can be used
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA6. discuss task lists, schedules and activities with the colleague/supervisor SA7. effectively communicate with the team members SA8. attentively listen and comprehend the information given by the colleague/supervisor/contractor SA9. communicate clearly with the colleague on the issues faced during query/fault
B. Professional Skills	**Decision Making**
	The user/individual on the job needs to know and understand how to: SB1. follow colleague/contractor rule-based decision making process SB2. take decisions with systematic course of actions and/or response
	Plan and Organize
	The user/individual on the job needs to know and understand: SB3. planning and organization of tasks to meet deadlines
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB4. build customer relationships and use customer centric approach
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB5. seek and comprehend operation related inputs for clarification SB6. find ways of modifying difficult operating stages to make it operation friendly
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. work systematically and logically to resolve the issues and identify causation and anticipate unexpected results SB8. quick approach and solution towards faults repairing
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB9. critically evaluate operation parameters in relation to system normality SB10. develop a holistic and comprehensive profile of grid station on segregated discrete process stages

PSS/N3008 Carry out operation and maintenance of power distribution system

NOS Version Control

NOS Code	PSS/N2001		
Credits (NSQF)	TBD	Version number	1.0
Industry	Power	Drafted on	04/06/2016
Industry Sub-sector	Distribution	Last reviewed on	19/07/2016
Occupation	Junior Engineer	Next review date	19/07/2018

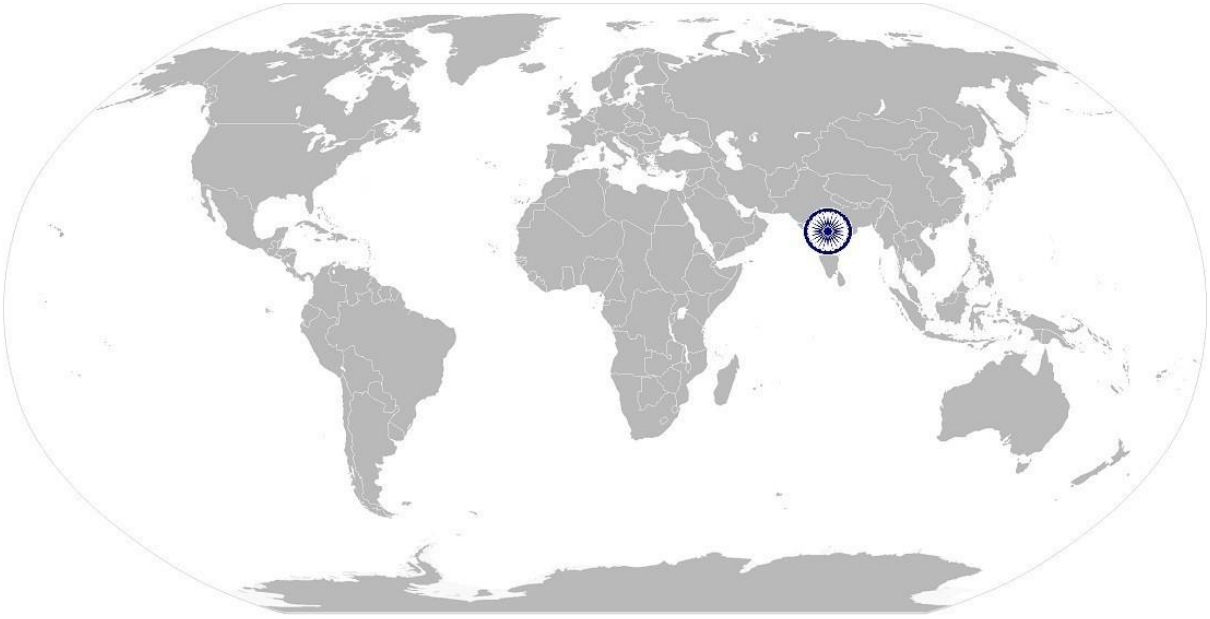
Back to Top

NOS

National Occupational Standards

PSS/N1336 Work effectively with others

National Occupational Standard



Overview

This unit covers basic practices that improve effectiveness of working with others in an organizational set-up

PSS/N1336 **Work effectively with others**

National Occupational Standard

Unit Code	**PSS/N1336**
Unit Title (Task)	**Work effectively with others**
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace. These cover areas such as communication etiquette, discipline, listening, handling conflict and grievances.
Scope	This unit/task covers the following: • working with others

Performance Criteria(PC) w.r.t. the Scope

Element	**Performance Criteria**
Working with others	The user/individual on the job should be able to: PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt PC3. give information to others clearly, at a pace and in a manner that helps them to understand PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks PC6. display appropriate communication etiquette while working PC7. display active listening skills while interacting with others at work PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism PC9. demonstrate responsible and disciplined behavior at the workplace PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict

Knowledge and Understanding (K)

A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the work area KA3. relevant people and their responsibilities within the work area KA4. escalation matrix and procedures for reporting work and employment related issues

PSS/N1336 **Work effectively with others**

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. various categories of people that one is required to communicate and co-ordinate with in the organization KB2. importance of effective communication in the workplace KB3. importance of teamwork in organizational and individual success KB4. various components of effective communication KB5. key elements of active listening KB6. value and importance of active listening and assertive communication KB7. barriers to effective communication KB8. importance of tone and pitch in effective communication KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer KB11. importance of ethics for professional success KB12. importance of discipline for professional success KB13. what constitutes disciplined behavior for a working professional KB14. common reasons for interpersonal conflict KB15. importance of developing effective working relationships for professional success KB16. how to express and address grievances appropriately and effectively KB17. importance and ways of managing interpersonal conflict effectively
Skills (S) (Optional)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. note the information communicated by the officer incharge SA2. note down observations (if any) related to the operation/maintenance
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. read and interpret the process required for different types of manuals SA4. read and interpret the flowchart of all parts of an assembly SA5. read manuals and documents to understand the product-details & how they can be used
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA6. discuss task lists, schedules and activities with the colleague/supervisor SA7. effectively communicate with the team members SA8. attentively listen and comprehend the information given by the colleague/supervisor/contractor SA9. communicate clearly with the colleague on the issues faced during query/fault
B. Professional Skills	**Decision Making**
	The user/individual on the job needs to know and understand how to: SB11. follow colleague/contractor rule-based decision making process

PSS/N1336 **Work effectively with others**

	SB12. take decisions with systematic course of actions and/or response
	Plan and Organize
	The user/individual on the job needs to know and understand: SB13. planning and organization of tasks to meet deadlines
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB14. build customer relationships and use customer centric approach
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB15. seek and comprehend operation related inputs for clarification find ways of modifying difficult operating stages to make it operation friendly
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB16. work systematically and logically to resolve the issues and identify causation and anticipate unexpected results. Quick approach and solution towards faults repairing
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB17. critically evaluate operation parameters in relation to system normality develop a holistic and comprehensive profile of grid station on segregated discrete process stages

NOS Version Control

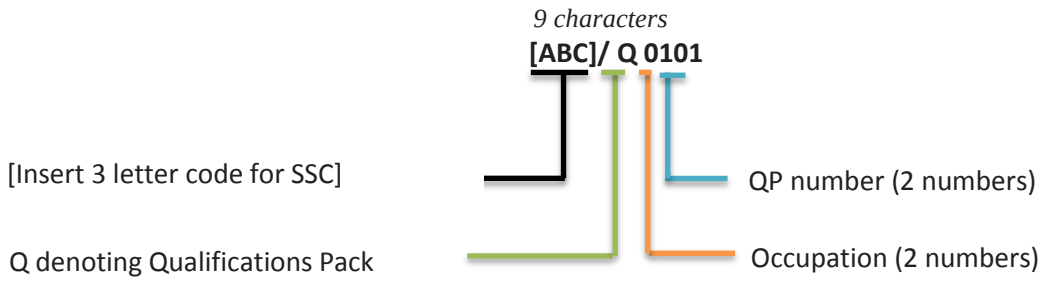
NOS Code	PSS/N1336		
Credits (NSQF)	TBD	Version number	1.0
Industry	Power	Drafted on	04/06/2016
Industry Sub-sector	Distribution	Last reviewed on	19/07/2016
Occupation	Junior Engineer	Next review date	19/07/2018

Back to Top

Annexure

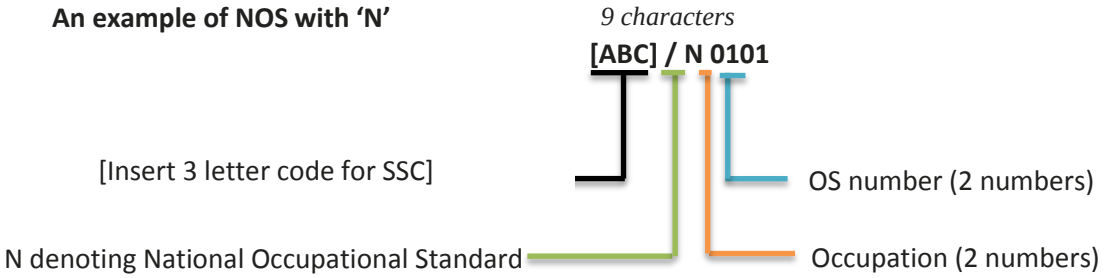
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
[Insert Name of Sub-sector1, Font: Calibri (Body), size 11, Bold]	[Insert range]
[Insert Name of Sub-sector2, Font: Calibri (Body), size 11, Bold]	[Insert range]
[Insert Name of Sub-sector3, Font: Calibri (Body), size 11, Bold]	[Insert range]
[Insert Name of Sub-sector4, Font: Calibri (Body), size 11, Bold]	[Insert range]
…	…

Sequence	Description	Example
Three letters	Industry name	[ABC, Font: Calibri (Body), size 11]
Slash	/	/
Next letter	Whether **Q**P or **N**OS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Junior Engineer- Power Distribution

Qualification Pack PSS/Q3004

Sector Skill Council Power

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 center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center 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

		Marks Allocation			
Assessable Outcomes	**Assessment Criteria for Outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
1. PSS/N3007 Carry out Installation in power distribution systems	PC1. apply understanding of power distribution system	**100**	6	2	4
	PC2. apply knowledge of type of distribution systems with respect to voltage level, network configuration (ring main/redial etc.)		6	2	4
	PC3. apply understanding of cables/conductors their size and specifications		6	2	4
	PC4. carry out erection and commissioning of substation		6	2	4
	PC5. carry out the route survey for O/H line or U/G cable distribution supply		6	2	4

PC6.	carry out installation of distribution transformer	6	2	4
PC7.	supervise of erection of line poles, substation, O/H line or U/G cable, switchgear etc.	6	2	4
PC8.	plan and execute service line connection for customers	4	1	3
PC9.	ensure that all the tools & equipment needed for erection or installation are available at site	4	1	3
PC10.	undertake meter installation at customer premises	4	1	3
PC11.	apply knowledge of SCADA and GIS Mapping	6	2	4
PC12.	ensure proper earthing of equipment for healthy operation	4	1	3
PC13.	undertake installation of protection devices- surge protection device, over voltage protection etc.	4	1	3
PC14.	read and understand network schematic, line diagrams and related technical drawings	6	2	4
PC15.	coordinate and manage all the logistics, material planning and handling related issues	4	1	3
PC16.	monitor power supply from substation during work in progress	4	1	3
PC17.	test and inspect transformer, switchgear etc. on post commissioning	4	1	3
PC18.	have operational familiarity with tools and tackles	4	1	3
PC19.	be responsible for mobilizing	4	1	3

		resources				
		PC20. coordinate with seniors and also monitor with workers/helpers		3	1	2
		PC21. use of PPE: e.g. safety helmet, safety glove, safety shoe, climbing harness, lanyard and tool belt (when climbing), earth rod (discharge rod), safety rope ,ladder etc.		3	1	2
				100	**30**	**70**
2.	**PSS/N3008 Operation and Maintenance**	PC1. inspect substation equipment, power transformer, distribution transformer, switchgear, overhead lines, insulators and other related equipment for identification of faults, possible wear and tear and to assess requirement of proactive preventive maintenance and breakdown maintenance on need basis	**100**	5	2	3
		PC2. carry out/monitor/supervise maintenance related activities pertaining to equipment installed in sub stations		5	2	3
		PC3. apply understanding of revenue process management viz. release of new connection, meter installation, meter reading, bill generation, bill distribution, revenue collection		5	2	3
		PC4. apply understanding of various consumer categories and applicable tariffs		5	2	3
		PC5. carry out/Monitor/supervise maintenance of O/H line and U/G cable		5	2	3
		PC6. check all the intersections & joints(termination) in the wiring or cable		5	2	3

PC7.	check the running parameter of distribution system as per design standard	5	2	3
PC8.	monitor working condition of transformer(overloading/under loading) and other equipment	5	1	4
PC9.	locate the conduit, cables & other undergoing devices to perform maintenance work	4	1	3
PC10.	apply understanding of metering technologies (electronic meter, Automated meter reading, smart meter etc.)	4	1	3
PC11.	monitor performance of critical system such as Remote Terminal Units , Remote Metering Units and other automation system	4	1	3
PC12.	carry out routine maintenance	4	1	3
PC13.	carry out all the testing equipment like tester, multimeter, control cable etc.	4	1	3
PC14.	test the system parameter to know abnormal condition of the system	4	1	3
PC15.	test the healthiness of connected equipment	4	1	3
PC16.	maintain log of system condition (parameters)	4	1	3
PC17.	software upgradation and testing	4	1	3
PC18.	carry out repair and replacement of faulty/ unhealthy equipment	4	1	3
PC19.	troubleshoot faulty system	4	1	3
PC20.	upgrade or modify the existing	4	1	3

			unhealthy equipment/system				
		PC21.	carry out general routine repair work		4	1	3
		PC22.	implement technical change in equipment/system		4	1	3
		PC23.	use of PPE: e.g. safety helmet, safety glove, safety shoe, climbing harness, lanyard and tool belt (when climbing), earth rod (discharge rod), safety rope ,ladder etc.		4	1	3
					100	**30**	**70**
3.	**PSS/N2001 Use basic health and safety practices for power related work**	PC1.	use protective clothing/equipment for specific tasks and work conditions	**100**	2		2
		PC2.	state the name and location of people responsible for health and safety in the workplace		3	1	2
		PC3.	state the names and location of documents that refer to health and safety in the workplace		3	1	2
		PC4.	identify job-site hazardous work and state possible causes of risk or accident in the workplace		2	1	1
		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		3	1	2

	devices before touching them			
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 others	3	1	2
PC12.	state methods of accident prevention in the work environment of the job role	3	1	2
PC13.	state location of general health and safety equipment in the workplace	3	1	2
PC14.	inspect for faults, set up and safely use of scaffolds and elevated platforms and ladder	3	1	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 Grid station and its equipment routinely for any signs of oil and water leakage	3	1	2
PC17.	store flammable materials and machine lubricating oil safely and correctly	3	1	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	2		2
PC20. identify common hazard signs displayed in various areas	3	1	2
PC21. retrieve and/or point out documents that refer to health and safety in the workplace	3	1	2
PC22. inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly	3	1	2
PC23. use the various appropriate fire extinguishers on different types of fires correctly	3	1	2
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	2		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 were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.	3	1	2
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	2		2

		during an accident in real or simulated environments				
		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
		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		1		1
		PC36. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		1		1
		PC37. demonstrate correct method to move injured people and others during an emergency		1		1
				100	**30**	**70**
4.	**PSS/N1336 Work efficiently 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 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 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
			100	**30**	**70**