QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM INDUSTRY

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- Installation Engineer- L2 & L3

SECTOR: TELECOM

SUB-SECTOR: Network Managed Services

OCCUPATION: Project Engineering

REFERENCE ID: TEL/Q6301

ALIGNED TO: NCO-2015/3114.0901

Brief Job Description: An Installation engineer is responsible for installing L2 and L3 equipment in the site and carrying out site acceptance testing. As an optional responsibility the engineer may need to undertake commissioning of the site based on network topology.

Personal Attributes: Attention to detail, excellent problem-solving capabilities, strong quantitative abilities, strong interpersonal skills, ability to work with people, ability to multitask and track multiple projects simultaneously, dedication and willingness to stay current on changing technologies.

Job Details

Qualifications Pack Code	TEL /Q6301		
Job Role	**Installation Engineer- L2 & L3**		
Credits NSQF	TBD	**Version number**	1.0
Sector	Telecom	**Drafted on**	02/05/2013
Sub-sector	Network Managed Services	**Last reviewed on**	21/06/2018
Occupation	Project Engineer	**Next review date**	31/03/2019
NSQF Clearance on	**20/07/2015**		

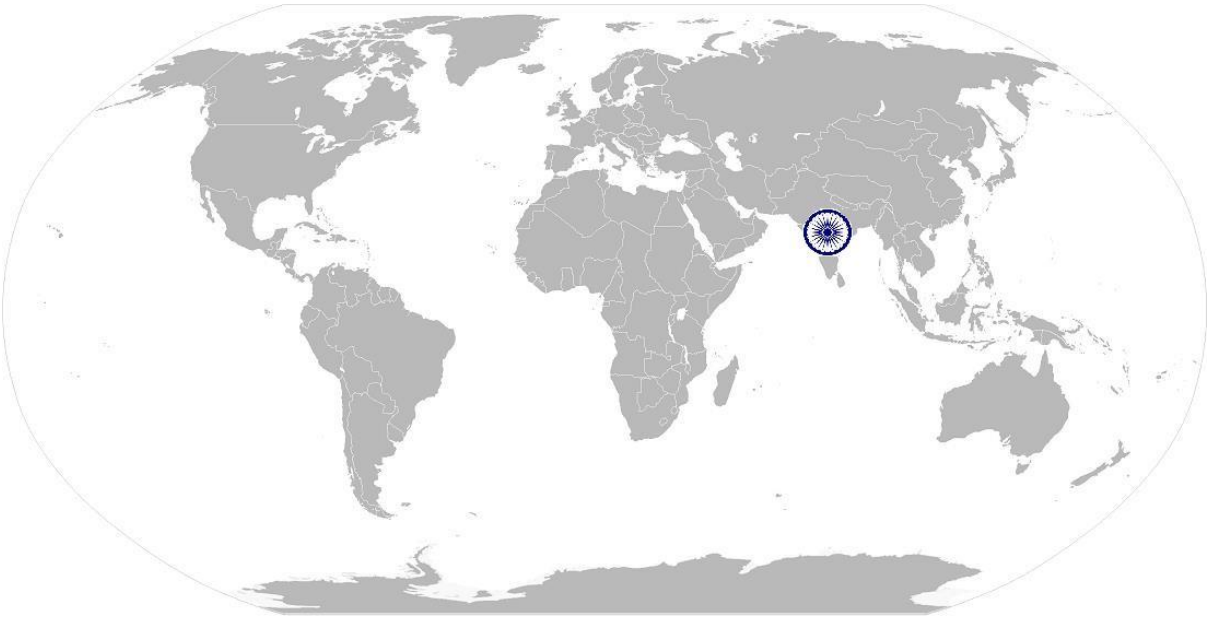
Job Role	**Installation Engineer – L2 & L3**
Role Description	An Installation Engineer (ONE) is responsible for deploying Telecom Equipment in a Telecommunication Network.
NSQF level	5
Minimum Educational Qualifications*	Diploma
Maximum Educational Qualifications*	BE/B.Tech(CSE/ECE/EEE)
Training (Suggested but not mandatory)	L1 (SDH, DWDM), L2 (Switching, Routing) Technologies.
Minimum Job Entry Age	21 Years
Experience	0 – 4 Years of hands on experience in installation of SDH, DWDM, L2, L3 equipment.
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. TEL/N6303 (Installation of L2 , L3 equipment's) 2. TEL /N6304 (Undertake Acceptance Testing of L2 & L3 equipment) 3. TEL /N6305 (Commissioning of L2 & L3 equipment)
Performance Criteria	As described in the relevant OS units.

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.
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.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS , these include communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
SDH	Synchronous Digital Hierarchy
PDH	Plesiochronous Digital Hierarchy
DWDM	Dense Wavelength Division Multiplexing
L2	Layer 2, i.e. Data link layer standard of OSI architecture
L3	Layer 3, i.e. Network layer standard of OSI architecture
OHS	Organizational Health & Safety
RF cable	Radio Frequency Cable
SHE	Safety, Health & Environment
MUX	Multiplexer
RODAM	Reconfigurable Optical Add-Drop Multiplexer
MDU	Multiplexer Dimultiplexer Unit
VSWR	Voltage Standing Wave Ratio, it is a measure of the reflected power on a transmission line.

National Occupational Standard



Overview

This unit is about carrying out installation of SDH,DWDM / L2,L3 equipment for the sites proposed by the Planning team.

National Occupational Standard

Unit Code	TEL /N6300
Unit Title (Task)	Installation of SDH, DWDM/ L2, L3 Equipment
Description	This unit provides standard guidelines for installation of SDH, DWDM/ L2, L3 equipment by the installation engineer.
Scope	This unit/task covers the following: • Verifying shipment • Undertaking installation of the equipment as per installation guidelines. • Connecting Power and traffic cable to the equipment. • Communicating installation status to Project Engineer. • Approving site for Acceptance Testing and commissioning.

Performance Criteria (PC)	
Element	**Performance Criteria**
Verify shipment	To be competent, the user/individual on the job must be able to: PC1. ensure all line items required for installation is available in the shipment and matches with Bill of Material (BOM) PC2. ensure availability of installation kit required for the installation as mentioned in installation guide. PC3. access installation plan from the Planning team. PC4. recommends any modifications in installation plan that might be needed. PC5. verify availability of adequate installation Racks in the site. PC6. determines if any additional equipment, accessories are needed to complete the job.
Undertake Installation as per guidelines	To be competent, the user/individual on the job must be able to: PC1. understand installation plan. PC2. ensure proper order and sequence of equipment is maintained in the installation Rack as per the installation plan. PC3. ensure adequate gap is maintained in between two equipment in the rack as per installation plan. PC4. ensure adequate space is available for cable routing. PC5. ensure Power and traffic cables are connected to the installed equipment. PC6. ensure all installation guidelines are followed for the installation.

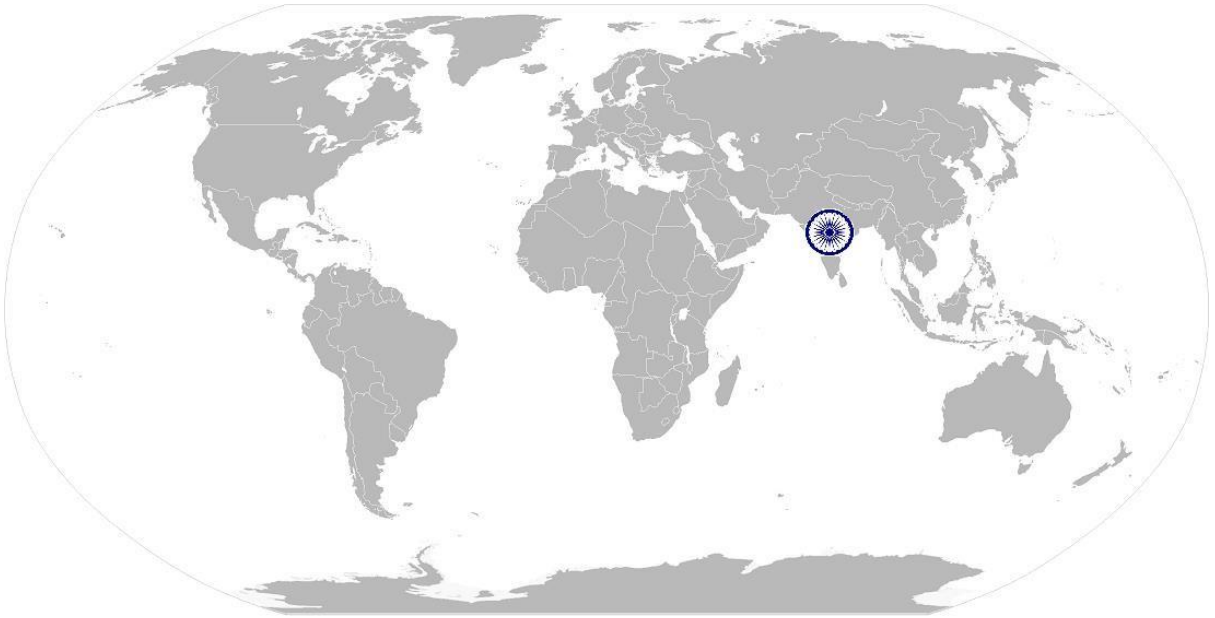
Connect Power and Traffic cable	To be competent, the user/individual on the job must be able to: PC1. identify right MCBs to be used at the rack for the installation as per power consumption of the equipment mentioned in installation guide. PC2. identify -48V DC, 0V and Ground Point in MCB and equipment in case of DC power supply. PC3. identify optical patch cords and electrical cables used for telecom equipment. PC4. connect and route power cable properly. PC5. understand advantages and disadvantages of different types of cables. PC6. connect and route traffic cable properly. PC7. distinguish different types of connectors for appropriate cables. PC8. take precautions to avoid damages for cables and connectors during connecting and disconnecting. PC9. understand the requirement and process of cleaning of optical fiber connectors with isopropyl alcohol/appropriate cleaning agent during installation. PC10. mark traffic cables with appropriate printed stickers.
Record and Report	To be competent, the user/individual on the job must be able to: PC1. prepare installation report in specified format. PC2. ensure all relevant information is provided in installation report. PC3. ensure the installation report is signed by appropriate authority as mentioned in installation plan. PC4. communicate installation progress to the Project Manager. PC5. ensure that documents that are required to be updated are identified and updated. PC6. ensure that documents are available to all appropriate authorities to inspect.
Health and Safety	To be competent, the user/individual on the job must be able to: PC1. ensure compliance with the site risk control, OHS, environmental and quality requirements as per company's norms. PC2. ensure that work is carried out in accordance to the level of competence and legal requirements. PC3. ensure that sites are periodically assessed for health and safety risk as per company's guidelines. PC4. ensure that ESD devices like anti-static bands are appropriately used as required. PC5. ensure compliance to health and safety guidelines both contractually and on site by the third party vendors and infra technicians. PC6. ensure availability of first aid box at site. PC7. ensure escalation of safety incidents to relevant authorities as per

	guidelines.
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. risk and impact of not following defined procedures/work instructions. KA2. escalation matrix for reporting identified incidents, troubles and/or emergencies e.g. system failures, fire and power failures. KA3. types of documentation in organization and importance of the same. KA4. SHE and OHS guidelines and regulations as per company's norms. KA5. protection equipment (anti-static bands, anti-static packaging, appropriate insulations) that are required to be used. KA6. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries. KA7. electrical and chemical related hazards and precautionary measures. KA8. usage of safety guidelines.
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. basic equipment category. KB2. transmission media – Optical, Electrical. KB3. need and requirement of earthing the equipment. KB4. mechanism to maintain the earthing pit to absolute zero need and process of earthing of equipment. KB5. usage of cable connectors, cable ties and cable tray. KB6. site installation checklist and critical punch points. KB7. obtain equipment dimension from installation guide.
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills,** The user/ individual on the job needs to know and understand how to: SA1. write email/letter to appropriate authority to access infrastructure (i.e. root etc) that might be needed for the installation. SA2. write installation report indicating relevant details of site, equipment and accessories.
	Reading Skills The user/individual on the job needs to know and understand how to: SA3. read and interpret bill of material to check if all necessary parts are available for installation. SA4. interpret technical plans and drawings for the installation.
	Oral Communication (Listening and Speaking skills)

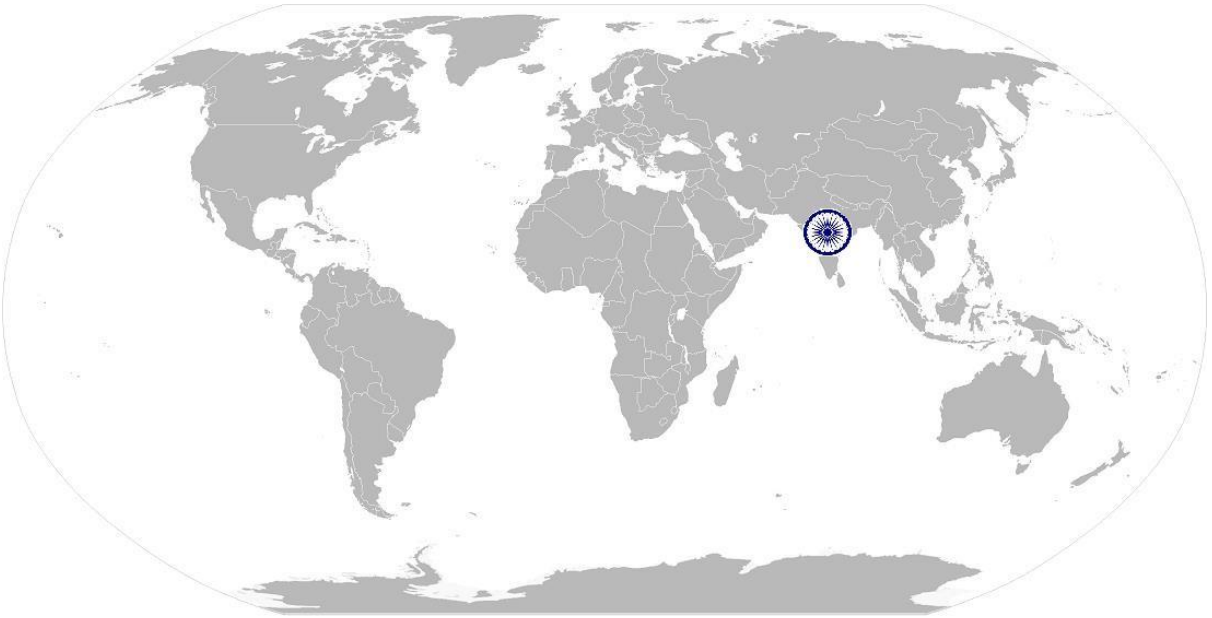
	The user/individual on the job needs to know and understand how to: SA5. liaise and coordinate with third party vendors. SA6. communicate with supervisor. SA7. provide advice and guidance to peers and juniors. SA8. communicate in local language.
B. Professional Skills	**Plan and Organize** The user/individual on the job needs to know and understand how to: SB1. prioritize and execute tasks in a high-pressure environment. SB2. multitask by handling multiple tasks and completing them successfully with due timeline. SB3. use and maintain resources efficiently and effectively. SB4. be flexible and accept changes in job requirements, schedules or work environments.
	Customer Centricity The user/individual on the job needs to know and understand how to: SB5. communicate with the customer professionally yet providing them relevant information on progress of installation. SB6. ask for any help or assistance if needed.
	Problem Solving The user/individual on the job needs to know and understand how to: SB7. troubleshoot common equipment and network related problems. SB8. utilize appropriate tools and commands to rectify faults. SB9. utilize appropriate communication channels to escalate unresolved problems to relevant personnel.

NOS Version Control

NOS Code	**TEL/N6300**		
Credits NSQF	TBD	**Version number**	**1.0**
Industry	**Telecom**	**Drafted on**	**02/05/2013**
Industry Sub-sector	**Network Managed Services**	**Last reviewed on**	**21/06/2018**
Occupation	**Project Engineer**	**Next review date**	**31/03/2019**



National Occupational Standard



Overview

This unit is about carrying out site Acceptance Testing (AT) of L2 and L3 equipment for the sites where equipment installation work is successfully completed.

National Occupational Standard

Unit Code	TEL /N6303
Unit Title (Task)	Undertake Site Acceptance Testing (AT) of L2 and L3 equipment.
Description	This unit provides standard guidelines for site Acceptance Testing (AT) of L2 and L3 equipment.
Scope	This unit/task covers the following: • Developing site acceptance testing plans and test procedures. • Configuring the equipment as per the test plan. • Labeling ports and cables. • Test effectiveness and close activity. • Report and Record.

Performance Criteria (PC)	
Element	**Performance Criteria**
Develop site acceptance testing plan and test Procedure	To be competent, the user/individual on the job must be able to: PC1. develop step by step Acceptance testing plan for the equipment. PC2. document the plan guideline in specified format. PC3. get the prepared document verified from appropriate authority. PC4. incorporate necessary feedback points to the test plan and guidelines. PC5. maintain and update the Acceptance Testing document.
Configure equipment as per guideline	To be competent, the user/individual on the job must be able to: PC1. verify power connectivity and switch on the power to the equipment. PC2. configure the equipment step by step following Acceptance Testing guidelines document. PC3. verify the configuration checklist as per AT document.

Label ports and cables	To be competent, the user/individual on the job must be able to: PC1. arrange printed stickers to label equipment ports. PC2. label port number appropriately as per Acceptance testing (AT) reference guideline. PC3. ensure that label clarifies the connectivity between two ends of a cable.
Test Effectiveness and close activity	To be competent, the user/individual on the job must be able to: PC1. test the equipment as per the guidelines with the help of L2 and L3 test sets. PC2. update the test report as per the test result. PC3. ensure completion of administrative jobs like site clearance, return of test equipment.
Report and Record	To be competent, the user/individual on the job must be able to: PC1. document site acceptance testing as per AT specified format. PC2. ensure that documents that are required to be updated are identified and updated. PC3. ensure that documents are available to all appropriate authorities to inspect.
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. risk and impact of not following defined procedures/work instructions. KA2. escalation matrix for reporting identified incidents, troubles and/or emergencies e.g. system failures, fire and power failures. KA3. types of documentation in organization and importance of the same. KA4. records to be maintained and implication of non-maintenance of the same. KA5. SHE and OHS guidelines and regulations as per company's norms. KA6. protection equipment (anti-static bands, anti-static packaging, appropriate insulations) that are required to be used. KA7. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries. KA8. electrical and chemical related hazards and precautionary measures. KA9. usage of safety equipments.

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. OSI architecture. KB2. LAN, MAN, WAN architecture. KB3. LAYER3 (L3) technology and requirement. KB4. LAN, MAN, WAN architecture. KB5. Ethernet Networking ie. Half Duplex, Full Duplex, Physical and Data link layer Ethernet. KB6. Core, Distribution and Access Layer architecture. KB7. Ethernet media and connector requirement. KB8. Layer 2 switching Technologies. KB9. Internet Protocol- TCI/IP, ip addressing, subnetting. KB10. IP Routing protocols, ie. RIP, OSPF, IGRP. KB11. VLAN concepts. KB12. WAN protocols. KB13. basic equipment design and application. KB14. login cables (RJ45, RS232 and Hi –Speed USB) for different site equipment. KB15. functionality of Ethernet test equipment.
Skills (S) (Optional)	
A. Core Skills/ Generic Skills	**Writing Skills,** The user/ individual on the job needs to know and understand how to: SA1. draft Acceptance testing plan. SA2. write acceptance testing report as per the specified report format.
	Reading Skills The user/individual on the job needs to know and understand how to: SA3. read and interpret test plan to execute. SA4. read and interpret alarms.
	Oral Communication (Listening and Speaking skills)

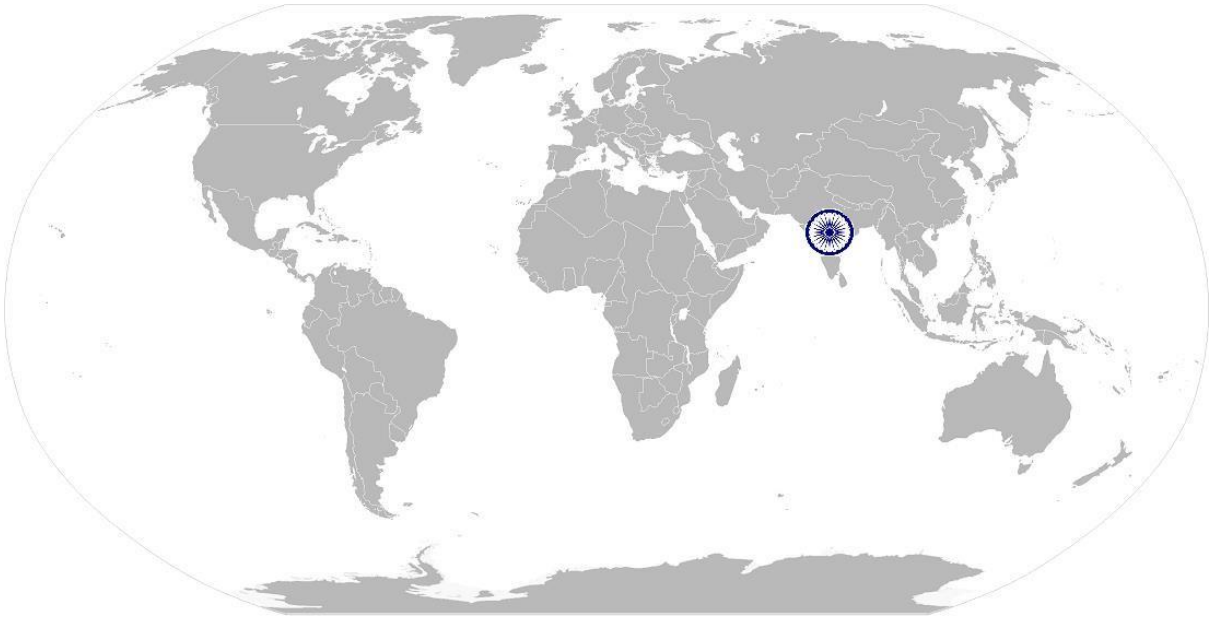
	The user/individual on the job needs to know and understand how to: SA5. explain complex design and concepts in non-technical language. SA6. communicate with supervisor properly. SA7. provide advice and guidance to peers and juniors.
B. Professional Skills	**Equipment operating skills**
	The user/individual on the job needs to know and understand how to: SB1. operate active L2 and L3 equipment installed at sites. SB2. operate equipment specific software like Network Element System (NES). SB3. connect appropriate login cables (RJ45, RS232, High Speed USB) to log on to the core nodes. SB4. use appropriate cables (Optical, Electrical) and connectors for effective cabling.
	Technical interpretation skills
	The user/individual on the job needs to know and understand how to: SB5. interpret L2,L3 equipment test sets test results to localize faults and undertake appropriate steps. SB6. analyze service impact of the faults to prioritize actions on alarms.
	Decision Making
	The user/individual on the job needs to know and understand how to: SB7. decide if acceptance testing needs to be halted under critical circumstances and report to relevant authority. SB8. decide if the proposed plan needs changes to make it relevant for the equipment under AT and communicate with the appropriate team.
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB9. prioritize and execute tasks in high-pressure environment. SB10. multitask by handling multiple tasks and completing them successfully with due timeline. SB11. use and maintain resources efficiently and effectively. SB12. be flexible and accept changes in job requirements, schedules or work environments.

TEL/N6304 **Undertake site acceptance testing of L2 & L3 equipment**

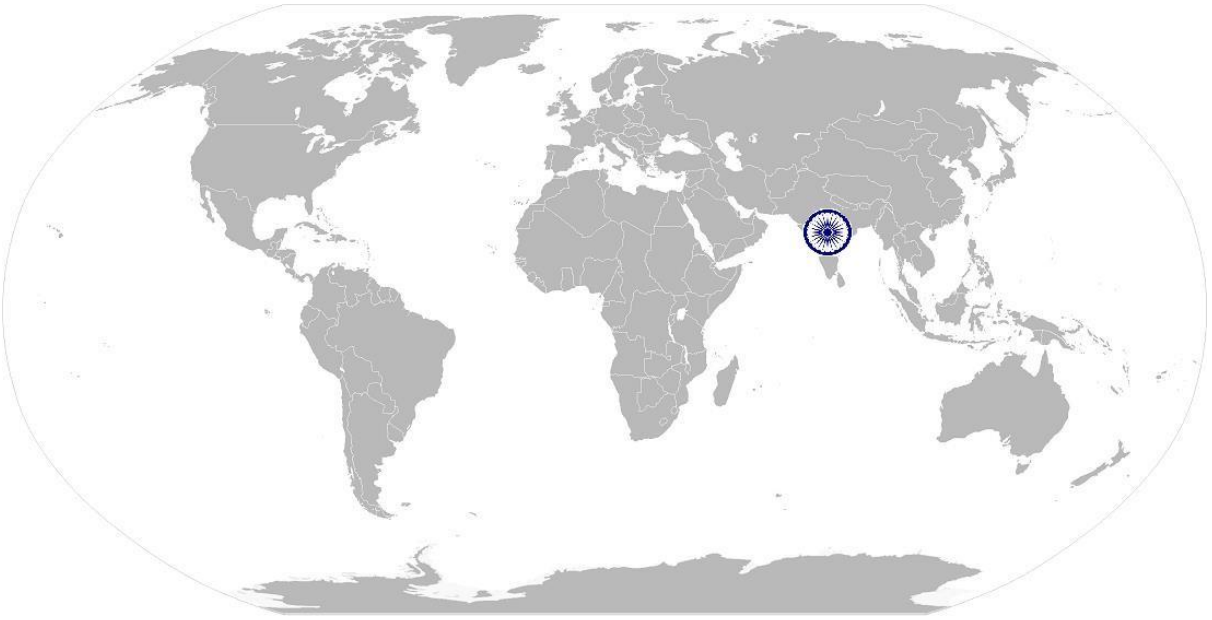
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB13. communicate with the customer professionally yet providing them relevant information. SB14. ask for any help or assistance if needed.
	Problem solving skills
	The user/individual on the job needs to know and understand how to: SB15. identify possible reason of the problem that may arise during AT. SB16. utilize appropriate communication channels to escalate unresolved problems to relevant personnel.
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB17. think through to address complex problems that might arise during Acceptance Testing (AT). SB18. source technical information by researching enterprise website or manufacturer's technical documentation.

NOS Version Control

NOS Code	**TEL/N6303**		
Credits NSQF	TBD	**Version number**	**1.0**
Industry	**Telecom**	**Drafted on**	**02/05/2013**
Industry Sub-sector	**Network Managed Services**	**Last reviewed on**	**21/06/2018**
Occupation	Project Engineer	**Next review date**	**31/03/2019**



National Occupational Standard



Overview

This unit is about carrying out commissioning of L2 and L3 equipment for the sites where equipment installation and site acceptance testing has been successfully completed.

TEL /N6305 **Commissioning of L2 and L3 equipment**

National Occupational Standard

Unit Code	TEL /N6304
Unit Title (Task)	Commissioning of L2 and L3 equipment.
Description	This unit provides standard guidelines for commissioning of L2and L3equipment.
Scope	This unit/task covers the following: • Understanding LAN/WAN architecture of the site and provisioning procedure of the equipment. • Developing commissioning plans and test procedures. • Configuring the equipment as per the commissioning plan. • Test effectiveness and close activity. • Report and Record.

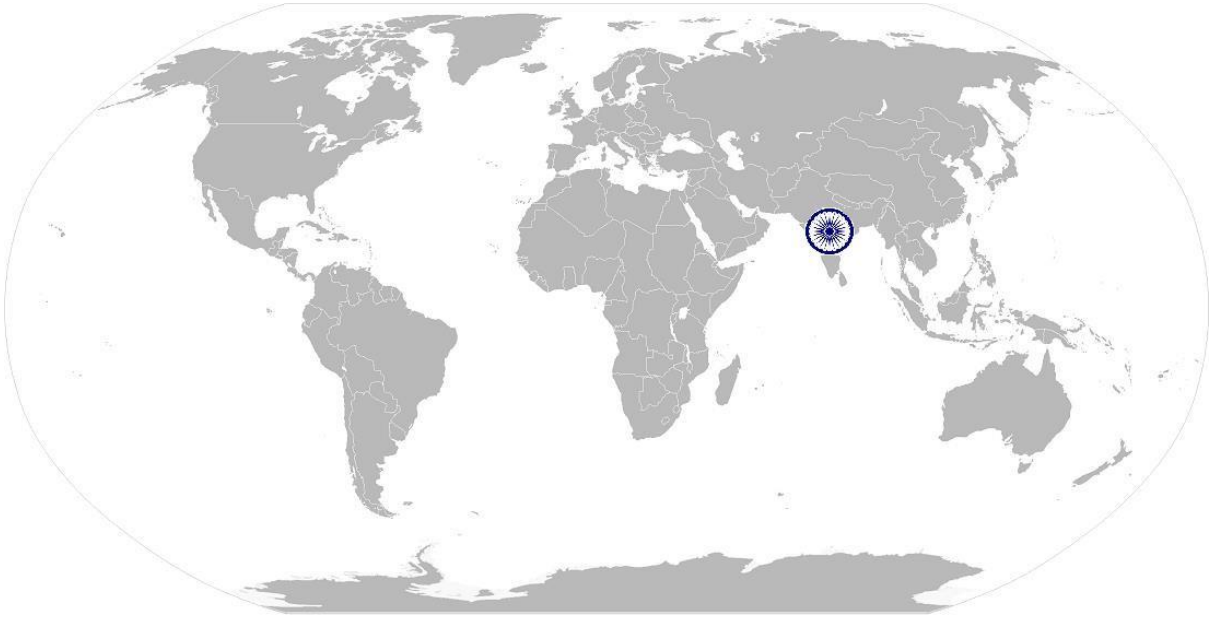
Performance Criteria (PC)	
Element	**Performance Criteria**
Understand Network topology and Equipment Provisioning	To be competent, the user/individual on the job must be able to: PC1. understand LAN/WAN architecture of the site. PC2. understand features and working functionalities related to the L2/L3 equipment under commissioning. PC3. understand provisioning with reference to the user guide.
Develop commissioning plan and test Procedure	To be competent, the user/individual on the job must be able to: PC1. develop step by step commissioning plan for the equipment. PC2. document the commissioning guideline in specified format. PC3. develop Test procedure for the commissioned equipment. PC4. document the test procedure guidelines. PC5. maintain and update site specific document.
Configure equipment as per guideline	To be competent, the user/individual on the job must be able to: PC1. verify power cable and switch it on. PC2. configure the equipment as per commissioning guide. PC3. verify the configuration checklist as per commissioning guide.

Test Effectiveness and close activity	To be competent, the user/individual on the job must be able to: PC1. test the equipment as per the guidelines with the help of Ethernet test sets. PC2. update the test report as per the test result. PC3. ensure completion of administrative jobs like site clearance, return of test equipment.
Report and Record	To be competent, the user/individual on the job must be able to: PC1. ensure commissioning report is prepared as per the specified format capturing all details as per the guidelines. PC2. ensure that documents that are required to be updated are identified and updated. PC3. ensure that documents are available to all appropriate authorities to inspect.
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. risk and impact of not following defined procedures/work instructions. KA2. escalation matrix for reporting identified incidents, troubles and/or emergencies e.g. system failures, fire and power failures. KA3. types of documentation in organization and importance of the same. KA4. records to be maintained and implication of non-maintenance of the same. KA5. SHE and OHS guidelines and regulations as per company's norms. KA6. protection equipment (anti-static bands, anti-static packaging, appropriate insulations) that are required to be used. KA7. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries. KA8. electrical and chemical related hazards and precautionary measures. KA9. usage of safety equipments.
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. OSI architecture. KB2. LAN, MAN, WAN architecture. KB3. LAYER3 (L3) technology and requirement. KB4. LAN, MAN, WAN architecture. KB5. Ethernet Networking ie. Half Duplex, Full Duplex, Physical and Data link layer Ethernet. KB6. Core, Distribution and Access Layer architecture. KB7. Ethernet media and connector requirement.

	KB8. Layer 2 switching Technologies. KB9. Internet Protocol- TCI/IP, ip addressing, subnetting. KB10. IP Routing protocols, ie. RIP, OSPF, IGRP. KB11. VLAN concepts. KB12. WAN protocols. KB13. basic equipment design and application. KB14. login cables (RJ45, RS232 and Hi –Speed USB) for different site equipment. KB15. functionality of Ethernet test equipment.
Skills (S) (Optional)	
A. Core Skills/ Generic Skills	**Writing Skills,**
	The user/ individual on the job needs to know and understand how to: SA1. write communication email as and when required. SA2. write commissioning report as per the specified report format.
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. read and interpret instruction manuals. SA4. read and interpret alarms.
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA5. explain complex design and concepts in non-technical language. SA6. communicate with supervisor properly. SA7. provide advice and guidance to peers and juniors.
B. Professional Skills	**Equipment operating skills**
	The user/individual on the job needs to know and understand how to: SB1. notify appropriate interfaces and cables for equipment login. SB2. properly connect appropriate login cables (RJ45, RS232, High Speed USB) to log on to the nodes. SB3. operate active LAYER2 (L2) and LAYER3 (L3) equipment installed at sites. SB4. operate equipment specific software like Network Element System (NES).

	SB5. use appropriate cables (Optical, Electrical) and connectors for effective cabling.
	Technical interpretation skills
	The user/individual on the job needs to know and understand how to: SB6. interpret L2 test sets test results to localize faults and undertake appropriate steps to rectify the same following troubleshooting guide. SB7. analyze service impact of the faults to prioritize actions on alarms.
	Decision Making
	The user/individual on the job needs to know and understand how to: SB8. decide if commissioning needs to be halted under critical circumstances and report to relevant authority. SB9. decide if experts help is needed at any stage maintenance activity to prevent escalation.
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB10. prioritize and execute tasks in high-pressure environment. SB11. multitask by handling multiple tasks and completing them successfully with due timeline. SB12 use and maintain resources efficiently and effectively. SB13. be flexible and accept changes in job requirements, schedules or work environments.
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB14. communicate with the customer professionally yet providing them relevant information. SB15. ask for any help or assistance if needed.
	Problem solving skills
	The user/individual on the job needs to know and understand how to: SB16. troubleshoot LAYER2 (L2) and LAYER3 (L3) equipment alarms. SB17. utilize appropriate tools and commands to rectify faults. SB18. utilize appropriate communication channels to escalate unresolved problems to relevant personnel.

	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB19. interpret reports, readings and numerical data SB20. think through to address complex problems that might arise during commissioning. SB21. source technical information by researching enterprise website or manufacturer's technical documentation.



NOS Version Control

NOS Code	TEL/N6304		
Credits NSQF	TBD	**Version number**	1.0
Industry	Telecom	**Drafted on**	02/05/2013
Industry Sub-sector	Network Managed Services	**Last reviewed on**	21/06/2018
Occupation	Project Engineer	**Next review date**	31/03/2019

TEL/Q6301 **Qualification Pack for Installation Engineer L2 & L3**

Criteria for Assessment of Trainee

Job Role : Installation Engineer L2 & L3
Qualification Pack : TEL/Q6301
Sector Skill Council : Telecom

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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4a. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4b. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
5. To pass the Qualification Pack , every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessable Outcomes	**Assessment Criteria**		Total Mark (200+100)	Out Of	Theory	Skills Practical
1. TEL/N6303 (Installation of SDH, DWDM/L2, L3 equipment)	Verify shipment	PC1. ensure all line items required for installation is available in the shipment and matches with Bill of Material (BOM)	100	5	3	2
		PC2. ensure availability of installation kit required for the installation as mentioned in installation guide.		2	1	1
		PC3. access installation plan from the Planning team.		2	2	0
		PC4. recommends any modifications in installation plan that might be needed.		3	3	0
		PC5. verify availability of adequate installation Racks in the site.		1	1	0
		PC6. determines if any additional equipment, accessories are needed to complete the job.		2	2	0
	Undertake Installation as per guidelines	PC1. understand installation plan.		6	5	1
		PC2. ensure proper order and sequence of equipment is maintained in the installation Rack as per the installation plan. installation Rack as per the installation plan.		2	2	0
		PC3. ensure adequate gap is maintained in between two equipment in the rack as per installation plan.		3	1	1
		PC4. ensure adequate space is available for cable routing.		0	0	0
		PC5. ensure Power and traffic cables are connected to the installed equipment.		3	1	2
		PC6. ensure all installation guidelines are followed for the installation.		2	1	1
	Connect Power and Traffic cable	PC1. identify right MCBs to be used at the rack for the installation as per power consumption of the equipment mentioned in installation guide.		2	1	1
		PC2. identify -48V DC, 0V and Ground Point in MCB and equipment in case of DC power supply.		4	2	2
		PC3. identify optical patch cords and electrical cables used for telecom equipment.		2	1	1
		PC4. connect and route power cable properly.		1	1	1
		PC5. understand advantages and disadvantages of different types of cables.		2	2	0
		PC6. connect and route traffic cable properly.		2	1	1
		PC7. distinguish different types of connectors for appropriate cables.		2	1	1
		PC8. take precautions to avoid damages for cables and connectors during connecting and disconnecting.		2	1	1
		PC9. understand the requirement and process of cleaning of optical fiber connectors with isopropyl alcohol/appropriate cleaning agent during Installation		3	1	2
		PC10. mark traffic cables with appropriate printed stickers.		1	0	1

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	Record & Report	PC1. prepare installation report in specified format.		3	3	0
		PC2. ensure all relevant information is provided in installation report.		0	0	0
		PC3. ensure the installation report is signed by appropriate authority as mentioned in installation plan.		0	0	0
		PC4. communicate installation progress to the Project Manager.		0	0	0
		PC5. ensure that documents that are required to be updated are identified and updated.		0	0	0
		PC6. ensure that documents are available to all appropriate authorities to inspect.		0	0	0
	Health & Safety	PC1. ensure compliance with the site risk control, OHS, environmental and quality requirements as per company's norms.		15	10	5
		PC2. ensure that work is carried out in accordance to the level of competence and legal requirements.		10	10	0
		PC3. ensure that sites are periodically assessed for health and safety risk as per company's guidelines.		10	5	5
		PC4. ensure that ESD devices like anti-static bands are appropriately used as required.		0	0	0
		PC5. ensure compliance to health and safety guidelines both contractually and on site by the third party vendors and infra technicians.		5	5	0
		PC6. ensure availability of first aid box at site.		0	0	0
		PC7. ensure escalation of safety incidents to relevant authorities as per Guidelines		5	5	0
TOTAL				100	71	29
2. TEL /N6304 (Undertake Acceptance Testing of L2 & L3 equipment)	Develop site acceptance testing plan and test Procedure	PC1. develop step by step Acceptance testing plan for the equipment.	100	13	3	10
		PC2. document the plan guideline in specified format.		1	1	0
		PC3. get the prepared document verified from appropriate authority.		0	0	0
		PC4. incorporate necessary feedback points to the test plan and guidelines.		0	0	0
		PC5. maintain and update the Acceptance Testing document.		1	1	0
	Configure equipment as per guideline	PC1. verify power connectivity and switch on the power to the equipment.		3	1	2
		PC2. configure the equipment step by step following Acceptance Testing guidelines document.		11	1	10
		PC3. verify the configuration checklist as per AT document.		6	1	5
	Label ports and cables	PC1. arrange printed stickers to label equipment ports.		1	0	1
		PC2. label port number appropriately as per Acceptance testing (AT) reference guideline.		1	0	1
		PC3. ensure that label clarifies the connectivity between two ends of a cable.		1	0	1
	Test Effectiveness and close activity	PC1. test the equipment as per the guidelines with the help of L2 and L3 test sets.		30	10	20
		PC2. update the test report as per the test result.		15	5	10
		PC3. ensure completion of administrative jobs like site clearance, return of test equipment.		5	5	0
	Report and Record	PC1. document site acceptance testing as per AT specified format.		10	5	5
		PC2. ensure that documents that are required to be updated are identified and updated.		2	2	0
		PC3. ensure that documents are available to all appropriate authorities to inspect.		0	0	0
TOTAL				100	35	65
3. TEL /N6305 (Commissioning	Understand Network topology and	PC1. understand LAN/WAN architecture of the site.	100	15	10	5
		PC2. understand features and working functionalities related to the L2/L3 equipment under commissioning.		15	5	10

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of L2 & L3 equipment)	Equipment Provisioning	PC3. understand provisioning with reference to the user guide.		10	5	5
	Develop commissioning plan and test Procedure	PC1. develop step by step commissioning plan for the equipment.		10	5	5
		PC2. document the commissioning guideline in specified format.		1	1	0
		PC3. develop Test procedure for the commissioned equipment.		8	5	3
		PC4. document the test procedure guidelines.		1	1	0
		PC5. maintain and update site specific document.		1	1	0
	Configure equipment as per guideline	PC1. verify power cable and switch it on.		3	2	1
		PC2. configure the equipment as per commissioning guide.		5	2	3
		PC3. verify the configuration checklist as per commissioning guide.		4	1	3
	Test Effectiveness and close activity	PC1. test the equipment as per the guidelines with the help of Ethernet test sets.		10	5	5
		PC2. update the test report as per the test result.		7	3	4
		PC3. ensure completion of administrative jobs like site clearance, return of test equipment.		5	5	0
	Report and Record	PC1. ensure commissioning report is prepared as per the specified format capturing all details as per the guidelines.		3	1	2
		PC2. ensure that documents that are required to be updated are identified and updated.		2	1	1
		PC3. ensure that documents are available to all appropriate authorities to inspect.		0	0	0
TOTAL				100	53	47