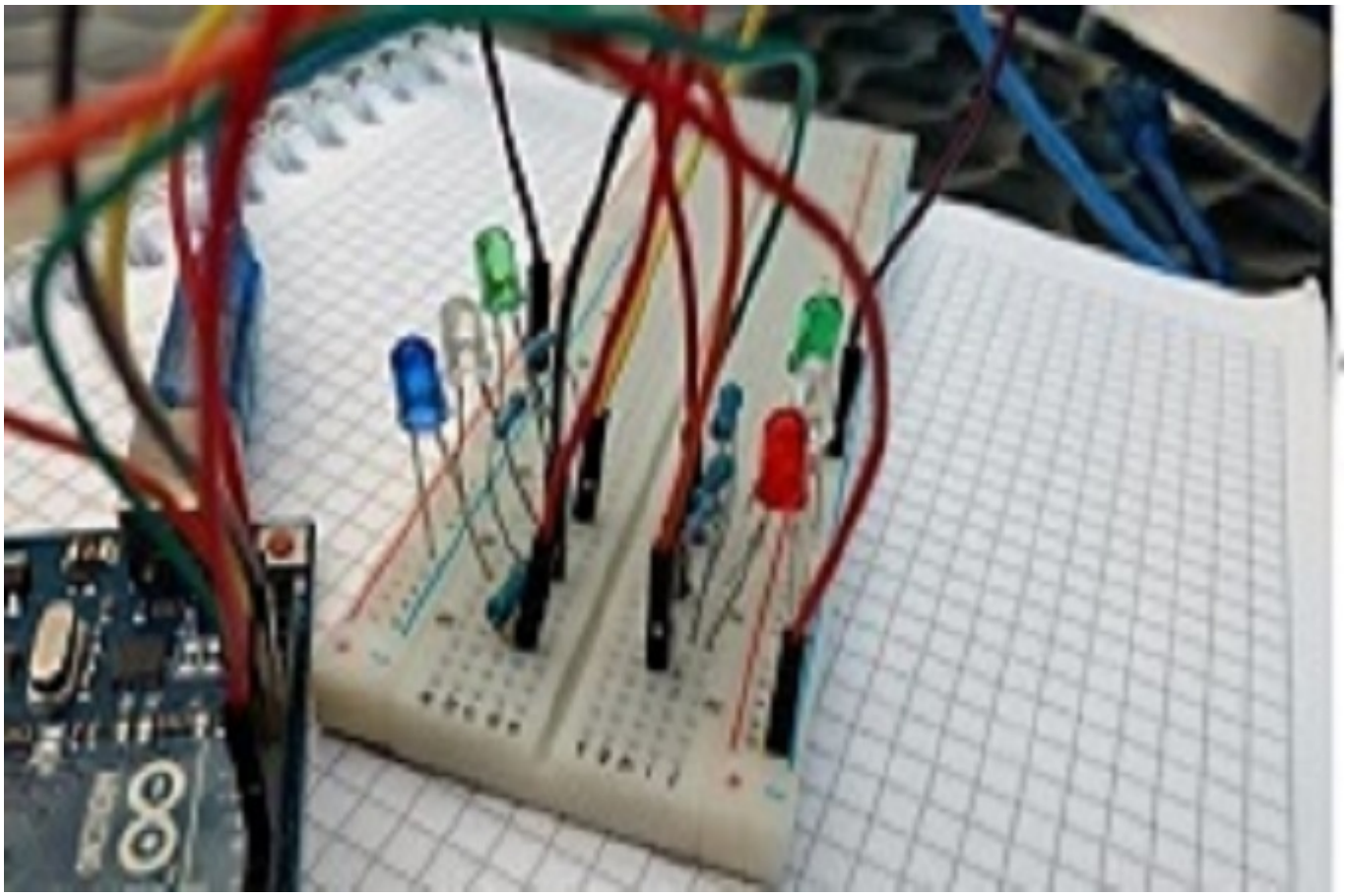
Qualification Pack



LED Assembly and Testing Technician

QP Code: ELE/Q5803

Version: 4.0

NSQF Level: 4

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Contents

Qualification Pack

ELE/Q5803: LED Assembly and Testing Technician

Brief Job Description

The individual at work is responsible for fitting together different electronic, electrical and mechanical parts and connect them to make the final LED luminary as per product design as well as testing LED luminaries using different testing equipment.

Personal Attributes

The job requires the individual to have attention to details, good eyesight and ability to work for long hours in standing position.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ELE/N5803: Assemble various parts of LED luminary according to standard practices
2. ELE/N5804: Test the LED luminary using various equipment
3. DGT/VSQ/N0101: Employability Skills (30 Hours)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	Solar & LED
Occupation	Assembly-S&L
Country	India
NSQF Level	4
Credits	15
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3113.1001

Qualification Pack

Minimum Educational Qualification & Experience	12th grade Pass (12th grade or equivalent) with NA of experience OR 10th grade pass (10th grade or equivalent) with 3 Years of experience Relevant Experience in Solar/LED OR Previous relevant Qualification of NSQF Level (Level-3 in relevant domain) with 3 Years of experience Relevant Experience in Solar/LED
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 Years
Last Reviewed On	NA
Next Review Date	07/10/2028
NSQC Approval Date	07/10/2025
Version	4.0
Reference code on NQR	QG-04-EH-044782025-V2-ESSCI
NQR Version	2

Remarks:

NA

ELE/N5803: Assemble various parts of LED luminary according to standard practices

Description

This NOS unit is about assemble various components of the LED luminary such as LED modules, drivers, heat sinks, optics, and housings following standard procedures to ensure proper functionality, safety, and product quality.

Scope

The scope covers the following :

- Introduction and Perform assembly of the base
- Perform heat sink assembly
- Join base assembly with heat sink assembly
- Prepare the LED luminary assembly for manufacturing
- Pack the final product

Elements and Performance Criteria

Introduction and Perform assembly of the base

To be competent, the user/individual on the job must be able to:

PC1. Describe the role and responsibilities of an LED Assembly and Testing Technician; explain the scope of the LED lighting industry, key components involved (such as PCBs, drivers, housings, and optics), and career opportunities in LED manufacturing, quality control, and repair services.

PC2. obtain the mechanical frame from press operator and rivet the mechanical frame as per luminary design

PC3. wrap the driver (PCB) with special tape to protect it

PC4. insert the driver (PCB) manually into the base of the luminary’s mechanical frame

PC5. route the wires to their proper locations as instructed in organizational SOP for different product designs

PC6. screw the driver (PCB) onto the base of the luminary’s mechanical frame

PC7. strip the ends of the wire using wire stripper accurately and safely

PC8. flip the assembly and dispense potting material into base assembly

PC9. cure the potting material as per standard procedure

PC10. insert a plastic cap to connect the base of the luminary’s mechanical frame with the aluminum heat sink

Perform heat sink assembly

To be competent, the user/individual on the job must be able to:

PC11. clean the LED circuit board as per industry approved methods and organizational timelines

PC12. apply a barrier film / tape to the underside

PC13. place the LED housings, PCBs, diffusers, and drivers with precision.

Join base assembly with heat sink assembly

To be competent, the user/individual on the job must be able to:

PC14. align the base assembly and heat sink assembly together

PC15. join the completed base assembly and heat sink manually by soldering the wires of driver (PCB) to the LED PCB

PC16. screw the plastic cap onto the heat sink and tighten the base as per industry standards

PC17. fix base, cap and heat sink together firmly by applying glue as per manufacturer's guidelines

PC18. inspect the assembly visually using magnifying glass to identify errors and rectify the same

PC19. Perform testing using lux meters, integrating spheres, digital multimeters and handover the assembly to tester for circuit testing

Prepare the LED luminary assembly for manufacturing

To be competent, the user/individual on the job must be able to:

PC20. obtain the tested LED luminary assembly from tester

PC21. clean the heat sink, glass shell and base carefully as per industry approved methods

PC22. dispense the adhesive on the base and place the glass shell over it

PC23. cure the assembly following standard procedure

PC24. send the assembled LED luminary for retesting

Pack the final product

To be competent, the user/individual on the job must be able to:

PC25. label the packed LED Luminary

PC26. assemble all the parts as per the product design to create LED luminary

PC27. ensure the assembly of the product to avoid rework

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand LED luminary components such as PCB drivers, heat sinks, diffusers, and housings, and their role in product functionality

KU2. Know the standard operating procedures (SOPs) for wire routing, potting, soldering, and curing in LED assembly

KU3. Understand the use of mechanical fasteners, adhesives, and protective tapes as per industry design and safety requirements

KU4. Know testing procedures using tools like lux meters, multimeters, integrating spheres, and visual inspection instruments

KU5. Understand product quality standards, labeling norms, and proper packaging techniques to prevent rework or damage

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to perform precise manual assembly, including wire stripping, PCB mounting, and component alignment

GS2. Follow safety practices and handle tools and materials (e.g., rivets, soldering iron, adhesives) with accuracy

GS3. Maintain documentation and communicate effectively with supervisors and testers for workflow coordination

GS4. Conduct basic troubleshooting and error identification through visual and functional inspection

GS5. Manage time efficiently to complete assembly steps as per organizational productivity and quality targets

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction and Perform assembly of the base	**11**	**26**	**-**	**-**
PC1. Describe the role and responsibilities of an LED Assembly and Testing Technician; explain the scope of the LED lighting industry, key components involved (such as PCBs, drivers, housings, and optics), and career opportunities in LED manufacturing, quality control, and repair services.	-	-	-	-
PC2. obtain the mechanical frame from press operator and rivet the mechanical frame as per luminary design	-	-	-	-
PC3. wrap the driver (PCB) with special tape to protect it	-	-	-	-
PC4. insert the driver (PCB) manually into the base of the luminary's mechanical frame	-	-	-	-
PC5. route the wires to their proper locations as instructed in organizational SOP for different product designs	-	-	-	-
PC6. screw the driver (PCB) onto the base of the luminary's mechanical frame	-	-	-	-
PC7. strip the ends of the wire using wire stripper accurately and safely	-	-	-	-
PC8. flip the assembly and dispense potting material into base assembly	-	-	-	-
PC9. cure the potting material as per standard procedure	-	-	-	-
PC10. insert a plastic cap to connect the base of the luminary's mechanical frame with the aluminum heat sink	-	-	-	-
Perform heat sink assembly	**4**	**7**	**-**	**-**
PC11. clean the LED circuit board as per industry approved methods and organizational timelines	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. apply a barrier film / tape to the underside	-	-	-	-
PC13. place the LED housings, PCBs, diffusers, and drivers with precision.	-	-	-	-
Join base assembly with heat sink assembly	**7**	**17**	**-**	**-**
PC14. align the base assembly and heat sink assembly together	-	-	-	-
PC15. join the completed base assembly and heat sink manually by soldering the wires of driver (PCB) to the LED PCB	-	-	-	-
PC16. screw the plastic cap onto the heat sink and tighten the base as per industry standards	-	-	-	-
PC17. fix base, cap and heat sink together firmly by applying glue as per manufacturer’s guidelines	-	-	-	-
PC18. inspect the assembly visually using magnifying glass to identify errors and rectify the same	-	-	-	-
PC19. Perform testing using lux meters, integrating spheres, digital multimeters and handover the assembly to tester for circuit testing	-	-	-	-
Prepare the LED luminary assembly for manufacturing	**5**	**11**	**-**	**-**
PC20. obtain the tested LED luminary assembly from tester	-	-	-	-
PC21. clean the heat sink, glass shell and base carefully as per industry approved methods	-	-	-	-
PC22. dispense the adhesive on the base and place the glass shell over it	-	-	-	-
PC23. cure the assembly following standard procedure	-	-	-	-
PC24. send the assembled LED luminary for retesting	-	-	-	-
Pack the final product	**3**	**9**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. label the packed LED Luminary	-	-	-	-
PC26. assemble all the parts as per the product design to create LED luminary	-	-	-	-
PC27. ensure the assembly of the product to avoid rework	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N5803
NOS Name	Assemble various parts of LED luminary according to standard practices
Sector	Electronics
Sub-Sector	Solar & LED
Occupation	Assembly-S&L
NSQF Level	4
Credits	6
Version	2.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ELE/N5804: Test the LED luminary using various equipment

Description

This unit is about testing the LED luminary using relevant techniques and evaluating the performance on relevant performance parameters as per organizational and industry norms.

Scope

The scope covers the following :

- Test the LED luminary to evaluate performance parameters
- Adhere to industry work practices

Elements and Performance Criteria

Test the LED luminary to evaluate performance parameters

To be competent, the user/individual on the job must be able to:

PC1. connect the LED luminary with testing equipment using wires

PC2. Use ESD-safe workstations and precision-guided assembly tools to accurately assemble advanced LED units, including multicolor LEDs, Bluetooth-enabled modules, PCBs, optical diffusers, smart drivers, and housing components.

PC3. operate the testing equipment organizations per the standard operating manual of the

PC4. interpret readings for various parameters by referring to the board display

PC5. evaluate the performance of display LED luminary as per the readings from the board

PC6. input the readings accurately and save them in the computer / performance data record sheet as per instructions from designated personnel

PC7. check if the LED luminary meets all the applicable testing standards

PC8. document the significant outcomes and problems

Adhere to industry work practices

To be competent, the user/individual on the job must be able to:

PC9. comply with relevant legislation, standards, policies and procedures

PC10. adhere to health and safety practices at the workplace

PC11. wear appropriate personal protective equipment (PPE) while testing the LED luminary

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand LED luminary performance parameters such as lumen output, power consumption, color temperature, and thermal stability

KU2. Know how to operate advanced testing equipment and interpret digital readings using standard operating procedures (SOPs)

KU3. Understand data logging procedures, documentation standards, and quality compliance requirements.

KU4. Be aware of relevant industry standards, safety legislation, and workplace compliance protocols

KU5. Understand proper use of PPE and ESD protection measures during electrical testing operations

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to set up and connect LED luminaries to testing instruments accurately and safely

GS2. Skill in interpreting test results and evaluating performance against defined benchmarks

GS3. Competence in digital data entry, maintaining accurate test logs, and reporting defects

GS4. Follow safety protocols and use appropriate equipment to prevent hazards during testing

GS5. Communicate testing issues or abnormalities clearly and promptly for corrective actions

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Test the LED luminary to evaluate performance parameters	**23**	**53**	**-**	**-**
PC1. connect the LED luminary with testing equipment using wires	-	-	-	-
PC2. Use ESD-safe workstations and precision-guided assembly tools to accurately assemble advanced LED units, including multicolor LEDs, Bluetooth-enabled modules, PCBs, optical diffusers, smart drivers, and housing components.	-	-	-	-
PC3. operate the testing equipment organizations per the standard operating manual of the	-	-	-	-
PC4. interpret readings for various parameters by referring to the board display	-	-	-	-
PC5. evaluate the performance of display LED luminary as per the readings from the board	-	-	-	-
PC6. input the readings accurately and save them in the computer / performance data record sheet as per instructions from designated personnel	-	-	-	-
PC7. check if the LED luminary meets all the applicable testing standards	-	-	-	-
PC8. document the significant outcomes and problems	-	-	-	-
Adhere to industry work practices	**7**	**17**	**-**	**-**
PC9. comply with relevant legislation, standards, policies and procedures	-	-	-	-
PC10. adhere to health and safety practices at the workplace	-	-	-	-
PC11. wear appropriate personal protective equipment (PPE) while testing the LED luminary	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N5804
NOS Name	Test the LED luminary using various equipment
Sector	Electronics
Sub-Sector	Solar & LED
Occupation	Assembly-S&L
NSQF Level	4
Credits	8
Version	2.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

Communication Skills

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

To be competent, the user/individual on the job must be able to:

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses
KU11. importance of maintaining safety and security in financial transactions
KU12. different legal rights and laws
KU13. how to operate digital devices and applications safely and securely
KU14. ways to identify business opportunities
KU15. types of customers and their needs
KU16. how to apply for a job and prepare for an interview
KU17. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. communicate effectively using appropriate language
GS2. behave politely and appropriately with all
GS3. perform basic calculations
GS4. solve problems effectively
GS5. be careful and attentive at work
GS6. use time effectively
GS7. maintain hygiene and sanitisation to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**1**	**3**	**-**	**-**
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	**1**	**1**	**-**	**-**
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**1**	**-**	**-**
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	**3**	**4**	**-**	**-**
PC9. use various financial products and services safely and securely	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	**4**	**6**	**-**	**-**
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	**3**	**5**	**-**	**-**
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	**2**	**2**	**-**	**-**
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**1**	**3**	**-**	**-**
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on the 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.

4. Individual assessment agencies will create unique question papers for the theory part for each candidate at

each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each

examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate

marks to successfully clear the assessment.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N5803.Assemble various parts of LED luminary according to standard practices	30	70	-	-	100	40
ELE/N5804.Test the LED luminary using various equipment	30	70	-	-	100	40
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	20
Total	**80**	**170**	**-**	**-**	**250**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business 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.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications 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.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation 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/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.