Qualification Pack

Laser Marking and Cutting - Process Supervisor

QP Code: ELE/Q0118

Version: 3.0

NSQF Level: 5

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Contents

Qualification Pack

ELE/Q0118: Laser Marking and Cutting - Process Supervisor

Brief Job Description

A laser marking & cutting process Supervisor is responsible for proper functioning, troubleshooting and maintenance of laser marking & cutting machines, setting up process parameters, new recipes to be incorporated, material characterization and yield monitoring/analysis, etc. for equipment, tools and fixtures. He/she also assists the equipment engineer for any help needed with the laser marking and cutting machines operations.

Personal Attributes

The person must have an aptitude for detail along with strong analytical and problem-solving skills. The individual should have excellent verbal and written communication skills. The person must also have good organisational and coordination skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ELE/N0117: Recipe/Program Readiness Define Process Parameters
2. ELE/N0118: Data Analysis and Yield Cost & Productivity Improvement
3. ELE/N0119: Equipment Setup support
4. ELE/N0120: Provision for Machine/Tools Buy Off
5. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
Country	India
NSQF Level	5
Credits	19

Qualification Pack

Aligned to NCO/ISCO/ISIC Code	NCO-2015/3119.1100
Minimum Educational Qualification & Experience	Completed 2nd year of UG (UG Diploma) (Physics/ Electronics/Electrical/Mechanical) with 1.5 years of experience Relevant Experience in Semiconductor & Components OR Completed 3 year diploma after 10th (Electronics/Electrical/Mechanical) with 3 Years of experience Relevant Experience in Semiconductor & Components OR Previous relevant Qualification of NSQF Level (4.5) with 1.5 years of experience Relevant Experience in Semiconductor & Components
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	31/10/2025
NSQC Approval Date	08/05/2025
Version	3.0
Reference code on NQR	QG-05-EH-03987-2025-V3-ESSCI
NQR Version	3.0

Remarks:

NA

Qualification Pack

ELE/N0117: Recipe/Program Readiness Define Process Parameters

Description

The NOS unit is about define and verify process parameters for the prepare for SOP and Travelling card

Scope

The scope covers the following :

- Define Process Parameters
- Verify Process Parameters
- Prepare SOP and Travelling Card
- Manage Daily Activity

Elements and Performance Criteria

Define Process Parameters

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

PC1. understand the strip dimensions and internal structure

PC2. define package outline drawing and strip drawing (PIN Holes, Fiducial Marks and Orientation)

PC3. describe the laser type, Laser Speed, Engraving thickness and Engraving orientation

PC4. define marking content, marking depth, width and visibility

PC5. run dummy samples

PC6. ensure that proper measurement of laser depth, marking content size & visibility check is done

PC7. perform repetitive tests till the specified criteria is met

PC8. generate the recipe with best optimized parameters and save it

PC9. input major parameters into Travelling card and SOP both

PC10. prepare full SOP and release to production

PC11. highlight if any special requirement is needed

Verify Process Parameters

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

PC12. copy old recipe of similar program

PC13. make changes as per product and customer requirement

PC14. run dummies do all measurements, Calculate CPK, PPK & other quality parameters

PC15. save the program after all parameters have been verified

PC16. run real product & do all measurements

PC17. conduct inspection for visibility, void and wire exposure and prepare for mass production

Prepare SOP and Travelling Card

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

PC18. assess proper features required for working with AUTO CAD

PC19. prepare process flow with clear specifications like Temperature, Speed, Water Flow, Vacuum etc.

PC20. prepare SOP in such a way so that it is more understandable to operators with pictures, visuals, data Charts etc.

PC21. train operators on SOP Flow

PC22. prepare travelling card with defined process or program name/ code

Manage Daily Activity

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

PC23. ensure all travelling cards release to production are ok

PC24. conduct regular inspection of programs as well as lot data such as yield, failure etc.

PC25. ensure that the machine and equipment is ready for any emergency situation

PC26. prepare daily activity plan

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance of determining the strip dimensions and internal structure for laser marking and cutting

KU2. the process of defining the package outline drawing and strip drawing, i.e. PIN Holes, Fiducial Marks and Orientation

KU3. the laser type, laser speed, engraving thickness and engraving orientation

KU4. the marking content, marking depth, width and visibility

KU5. the process of running dummy samples

KU6. the importance of ensuring the appropriate measurement of laser depth, marking content size and conducting visibility check

KU7. the importance of performing repetitive tests until the specified criteria is met

KU8. the process of generating the recipe with the best-optimized parameters and saving it

KU9. the importance of inputting the major parameters into the travelling card and SOP

KU10. the process of preparing full SOP and releasing it to production

KU11. the importance of highlighting if any special requirement

KU12. the benefit of copying the old recipe of a similar program

KU13. the importance and process of making appropriate changes as per the product and customer requirement

KU14. the process of running dummies, taking appropriate measurements, calculating CPK, PPK and other quality parameters

KU15. the importance of saving the program after verifying all the parameters

KU16. the process of running real product and taking all measurements

KU17. the importance and process of conducting an inspection for visibility, void and wire exposure and preparing for mass production

KU18. the process of assessing the proper features required for working with AUTO CAD

KU19. the process of preparing process flow with clear specifications, such as temperature, speed, water flow, vacuum etc.

KU20. the importance and process of preparing SOP so that it is more understandable to operators with pictures, visuals, data charts etc.

KU21. the importance of training operators on SOP Flow

KU22. the process of preparing a travelling card with the defined process or program name/ code

KU23. the importance of ensuring all the travelling cards to be released to production meet the applicable quality standards

KU24. the importance of conducting regular inspection of programs and lot data such as yield, failure etc.

KU25. the importance of ensuring the machine and equipment is ready for any emergencies

KU26. the importance and process of preparing a daily activity plan

Generic Skills (GS)

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

GS1. write work-related notes and maintain relevant records

GS2. read the relevant literature to get the latest updates about the field of work

GS3. listen attentively to understand the information/ instructions being shared by the speaker

GS4. communicate politely and professionally

GS5. plan and prioritise tasks to ensure timely completion

GS6. evaluate all possible solutions to a problem to select the best one

GS7. co-ordinate with the co-workers to achieve work objectives

GS8. identify possible disruptions to work and take appropriate preventive measures

GS9. take quick decisions to deal with workplace emergencies/ accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Define Process Parameters	**14**	**23**	**-**	**-**
PC1. understand the strip dimensions and internal structure	-	-	-	-
PC2. define package outline drawing and strip drawing (PIN Holes, Fiducial Marks and Orientation)	-	-	-	-
PC3. describe the laser type, Laser Speed, Engraving thickness and Engraving orientation	-	-	-	-
PC4. define marking content, marking depth, width and visibility	-	-	-	-
PC5. run dummy samples	-	-	-	-
PC6. ensure that proper measurement of laser depth, marking content size & visibility check is done	-	-	-	-
PC7. perform repetitive tests till the specified criteria is met	-	-	-	-
PC8. generate the recipe with best optimized parameters and save it	-	-	-	-
PC9. input major parameters into Travelling card and SOP both	-	-	-	-
PC10. prepare full SOP and release to production	-	-	-	-
PC11. highlight if any special requirement is needed	-	-	-	-
Verify Process Parameters	**9**	**15**	**-**	**-**
PC12. copy old recipe of similar program	-	-	-	-
PC13. make changes as per product and customer requirement	-	-	-	-
PC14. run dummies do all measurements, Calculate CPK, PPK & other quality parameters	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. save the program after all parameters have been verified	-	-	-	-
PC16. run real product & do all measurements	-	-	-	-
PC17. conduct inspection for visibility, void and wire exposure and prepare for mass production	-	-	-	-
Prepare SOP and Travelling Card	**7**	**13**	**-**	**-**
PC18. assess proper features required for working with AUTO CAD	-	-	-	-
PC19. prepare process flow with clear specifications like Temperature, Speed, Water Flow, Vacuum etc.	-	-	-	-
PC20. prepare SOP in such a way so that it is more understandable to operators with pictures, visuals, data Charts etc.	-	-	-	-
PC21. train operators on SOP Flow	-	-	-	-
PC22. prepare travelling card with defined process or program name/ code	-	-	-	-
Manage Daily Activity	**10**	**9**	**-**	**-**
PC23. ensure all travelling cards release to production are ok	-	-	-	-
PC24. conduct regular inspection of programs as well as lot data such as yield, failure etc.	-	-	-	-
PC25. ensure that the machine and equipment is ready for any emergency situation	-	-	-	-
PC26. prepare daily activity plan	-	-	-	-
NOS Total	**40**	**60**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0117
NOS Name	Recipe/Program Readiness Define Process Parameters
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	5
Version	2.0
Last Reviewed Date	08/05/2025
Next Review Date	31/10/2025
NSQC Clearance Date	08/05/2025

ELE/N0118: Data Analysis and Yield Cost & Productivity Improvement

Description

This NOS unit is about analyzing production data and yield, optimizing recipes and SOPs, and recommending cost-effective and productivity-enhancing solutions through quality metrics, equipment inspection, and market analysis

Scope

The scope covers the following :

- Analyse Data and Yield
- Advise Cost and Productivity Improvements

Elements and Performance Criteria

Analyse Data and Yield

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

PC1. understand & prepare data for the strip dimensions and internal structure

PC2. collect data from drawings and other specification documents

PC3. record data related to marking content, marking depth, width and visibility

PC4. record measurement details as per formats for laser depth, marking content size & visibility check

PC5. ensure that the recipe is optimal as per the business case and user parameters

PC6. ensure that the SOP and production plan are optimal in terms of parameters and yield

Advise Cost and Productivity Improvements

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

PC7. ensure that proper market analysis has been conducted for new products, process parameters has been properly verified

PC8. reuse older program versions to make them better and improved as per current scenario and requirements

PC9. ensure cost and time are kept in mind while making changes as per product and customer requirements

PC10. calculate CPK, PPK and other quality parameters to anlayse and suggest productivity improvements

PC11. perform inspection of equipment and machines to ensure they are working for optimal productivity

PC12. analyse any additional maintenance cost and prepare a budget for the same

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the process of preparing data for the strip dimensions and internal structure

KU2. how to collate data from drawings and other specification documents

KU3. the importance of recording the data related to marking content, marking depth, width and visibility

KU4. the importance of recording the measurement details as per formats for laser depth, marking content size and visibility check

KU5. the importance of ensuring that the recipe is optimal as per the business case and user parameters

KU6. the importance of ensuring that the SOP and production plan are optimal in terms of parameters and yield

KU7. the importance of conducting proper market analysis for new products, and verifying the process parameters

KU8. the benefits of reusing old program versions and improving them as per the current scenario and requirements

KU9. the importance of considering time and cost while making changes as per time product and customer requirements

KU10. the importance and process of calculating CPK, PPK and other quality parameters to analyse and suggest appropriate productivity improvements

KU11. the importance and process of performing inspection of equipment and machines to ensure they are working optimally

KU12. the process of analysing additional maintenance costs and preparing a budget for the same

Generic Skills (GS)

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

GS1. maintain the record of work-related observations

GS2. read the relevant literature to get the latest updates about the field of work

GS3. communicate politely and professionally

GS4. listen attentively to understand the information or instructions being given

GS5. co-ordinate with the co-workers to achieve the work objectives

GS6. plan and schedule tasks to achieve work efficiency

GS7. identify possible disruptions to work and take preventive measures

GS8. evaluate all possible solutions to a problem to select the best one

GS9. take quick decisions to deal with workplace emergencies or accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Analyse Data and Yield	**23**	**29**	**-**	**-**
PC1. understand & prepare data for the strip dimensions and internal structure	-	-	-	-
PC2. collect data from drawings and other specification documents	-	-	-	-
PC3. record data related to marking content, marking depth, width and visibility	-	-	-	-
PC4. record measurement details as per formats for laser depth, marking content size & visibility check	-	-	-	-
PC5. ensure that the recipe is optimal as per the business case and user parameters	-	-	-	-
PC6. ensure that the SOP and production plan are optimal in terms of parameters and yield	-	-	-	-
Advise Cost and Productivity Improvements	**17**	**31**	**-**	**-**
PC7. ensure that proper market analysis has been conducted for new products, process parameters has been properly verified	-	-	-	-
PC8. reuse older program versions to make them better and improved as per current scenario and requirements	-	-	-	-
PC9. ensure cost and time are kept in mind while making changes as per product and customer requirements	-	-	-	-
PC10. calculate CPK, PPK and other quality parameters to anlayse and suggest productivity improvements	-	-	-	-
PC11. perform inspection of equipment and machines to ensure they are working for optimal productivity	-	-	-	-
PC12. analyse any additional maintenance cost and prepare a budget for the same	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**40**	**60**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0118
NOS Name	Data Analysis and Yield Cost & Productivity Improvement
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	4
Version	2.0
Last Reviewed Date	08/05/2025
Next Review Date	31/10/2025
NSQC Clearance Date	08/05/2025

ELE/N0119: Equipment Setup support

Description

The NOS unit is about covers the support processes for loader/unloader setup, safe material handling, laser marking configuration, and efficient changeover, ensuring correct parameters, operator guidance, and documentation for smooth and accurate production.

Scope

The scope covers the following :

- Support Loader/Unloader & Rail setup
- Material Handeling procedure
- Support Laser Setup
- Support change over

Elements and Performance Criteria

Support Loader/Unloader & Rail setup

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

PC1. define magazine loading parameter

PC2. list the strip pickup criteria and specify the orientation of strip

PC3. ensure that the placement location is properly marked

PC4. outline the rail moving speed and laser height for marking

PC5. define strip unloading parameters and strip unloading direction/Orientation with location inside the magazine

PC6. list the handling steps of magazine and strips during marking

Material Handeling procedure

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

PC7. outline the instructions to handle/hold the magazine

PC8. list the specifications to place the magazine inside the loader

PC9. advise the operator to avoid ESD and other mishappening issues

PC10. ensure that all operators understand alarms and mention if its false or not

PC11. guide the operators how to wear fingure tips

PC12. advise the operators to process lot or material inside the machine

PC13. supervise the operators for collecting the data and make the data log sheet for each lot

Support Laser Setup

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

PC14. define the laser head criteria

PC15. identify strip location and orientation for correct marking as well as laser height and angle

PC16. define laser power and moving speed

PC17. save all parameters

PC18. check all marking parameters whether they are ok or not

Support Change Over

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

PC19. make different recipes for different products

PC20. save these recipes as per the well-defined naming rule

PC21. guide operators to change the recipe as per product

PC22. verify all the parameters on samples based

PC23. run original product after verifying all parameters

PC24. keep the records of all abnormalities (False Alarm, stoppage, mis-marking etc.) that happened throughout the day

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance and process of defining the magazine loading parameter

KU2. the strip pickup criteria and the orientation of strip

KU3. the importance of ensuring that the placement location is appropriately marked

KU4. how to outline the rail moving speed and laser height for marking

KU5. the importance and process of defining strip unloading parameters and strip unloading direction/orientation with a location inside the magazine

KU6. the steps for handling steps magazine and strips during marking

KU7. the instructions for handling/holding the magazine

KU8. the specifications to place the magazine inside the loader

KU9. the use of appropriate PPE and the precautions to be followed to avoid ESD and any miss-happening

KU10. the importance of ensuring all operators understand different types of alarms, including false alarms

KU11. the importance of ensuring supervising operators

KU12. the relevant data to be collected to prepare the appropriate data log sheets for each lot

KU13. how to define the laser head criteria

KU14. the importance of identifying strip location and orientation for correct marking, and laser height and angle

KU15. the importance of defining laser power and moving speed

KU16. the importance of checking all marking parameters to ensure they meet the applicable standards

KU17. the importance of making different recipes for different products and saving them as per the defined naming rules

KU18. the importance of verifying all the parameters and running the original product

KU19. the importance of maintaining daily records for any abnormalities, e.g. false alarm, stoppage, miss-marking etc.

Generic Skills (GS)

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

GS1. read the relevant literature to get the latest updates about the field of work
GS2. communicate politely and professionally
GS3. write work-related notes
GS4. take quick decisions to deal with any disruptions to work
GS5. co-ordinate with co-workers to achieve the work objectives
GS6. identify possible disruptions to work and take appropriate preventive measures
GS7. evaluate all possible solutions to a problem to select the best one

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Support Loader/Unloader & Rail setup	**10**	**20**	**-**	**-**
PC1. define magazine loading parameter	-	-	-	-
PC2. list the strip pickup criteria and specify the orientation of strip	-	-	-	-
PC3. ensure that the placement location is properly marked	-	-	-	-
PC4. outline the rail moving speed and laser height for marking	-	-	-	-
PC5. define strip unloading parameters and strip unloading direction/Orientation with location inside the magazine	-	-	-	-
PC6. list the handling steps of magazine and strips during marking	-	-	-	-
Material Handeling procedure	**12**	**20**	**-**	**-**
PC7. outline the instructions to handle/hold the magazine	-	-	-	-
PC8. list the specifications to place the magazine inside the loader	-	-	-	-
PC9. advise the operator to avoid ESD and other mishappening issues	-	-	-	-
PC10. ensure that all operators understand alarms and mention if its false or not	-	-	-	-
PC11. guide the operators how to wear fingure tips	-	-	-	-
PC12. advise the operators to process lot or material inside the machine	-	-	-	-
PC13. supervise the operators for collecting the data and make the data log sheet for each lot	-	-	-	-
Support Laser Setup	**6**	**12**	**-**	**-**
PC14. define the laser head criteria	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. identify strip location and orientation for correct marking as well as laser height and angle	-	-	-	-
PC16. define laser power and moving speed	-	-	-	-
PC17. save all parameters	-	-	-	-
PC18. check all marking parameters whether they are ok or not	-	-	-	-
Support Change Over	**12**	**8**	**-**	**-**
PC19. make different recipes for different products	-	-	-	-
PC20. save these recipes as per the well-defined naming rule	-	-	-	-
PC21. guide operators to change the recipe as per product	-	-	-	-
PC22. verify all the parameters on samples based	-	-	-	-
PC23. run original product after verifying all parameters	-	-	-	-
PC24. keep the records of all abnormalities (False Alarm, stoppage, mis-marking etc.) that happened throughout the day	-	-	-	-
NOS Total	**40**	**60**	**-**	**-**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0119
NOS Name	Equipment Setup support
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	4
Version	2.0
Last Reviewed Date	08/05/2025
Next Review Date	31/10/2025
NSQC Clearance Date	08/05/2025

ELE/N0120: Provision for Machine/Tools Buy Off

Description

The NOS unit is about conducting Factory and Site Acceptance Tests (FAT/SAT), selecting and qualifying laser types, documenting performance, and ensuring a smooth transition from characterization to mass production in alignment with quality and customer requirements.

Scope

The scope covers the following :

- Factory Acceptance Test at Equipment manufacturer site
- Site acceptance test at product manufacturer site
- Laser Type selection and Qualification

Elements and Performance Criteria

Factory Acceptance Test at Equipment manufacturer site

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

PC1. create a FAT Report

PC2. ensure that the general machine specifications (operation, main controller, main panel should function as per requirements given to manufacturer)

PC3. check that laser specification, dimensions and other parameters are clearly defined by the process and equipment engineer

PC4. verify all equipment and process parameters during testing at site

PC5. outline the sample size required to buy off machines as per specification and CPK requirements

PC6. run all the material through equipment along with manufacturers team

PC7. prepare a report to avoid any future issues

PC8. record all observations and findings

Site acceptance test at product manufacturer site

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

PC9. create a SAT Report

PC10. ensure that all general machine specification (operation, main controller, main panel should function as per requirements given to manufacturer) are considered in the SAT report

PC11. check all equipment and process parameters to ensure that they DMAT during testing at site

PC12. outline the sample size required to buy off machines as per the specification and CPK Requirements

PC13. run all the tests through managers and manufacturers team

Laser Type selection and Qualification

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

PC14. seek the laser type based on molding compound

PC15. design the DOE to verify laser type

PC16. collect all the quality and reliability data for each characterization, feasibility and qualification build

PC17. generate PCN (Process Change Notification) and inform the customer

PC18. prepare qualification report and present it to the management

PC19. release to LVM (Low volume Mass Production) and coordinate with production team to make smooth transition to high volume mass production

PC20. ensure that characterization phase, feasibility phase, customer samples phase and qualification phase is considered

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance and process of creating a Factory Acceptance Test (FAT) Report

KU2. the importance of ensuring that the main controller and main panel function as per the requirements given to the manufacturer, along with general machine specifications and operations

KU3. the importance of checking the laser specifications, dimensions and other parameters are clearly defined by the process and equipment engineer

KU4. the importance of verifying all equipment and process parameters during testing at the site

KU5. the importance of outlining the sample size required to buy off machines as per the specifications and CPK requirements

KU6. the importance and process of running all the material through equipment along with the manufacturing team

KU7. the importance of preparing a report, recording all observations and findings to avoid any future issues

KU8. the process of creating a Site Acceptance Test (SAT) Report

KU9. the importance of ensuring the main controller and main panel function as per the requirements given to the manufacturer

KU10. the importance of checking all equipment and process parameters to ensure that they DMAT during testing at the site

KU11. the importance of outlining the sample size required to buy off machines as per the specification and CPK Requirements

KU12. the importance of running the tests through managers and manufacturers team

KU13. the importance of seeking the laser type based on the molding compound

KU14. the process of designing the DOE to verify laser type

KU15. the importance of collecting the quality and reliability data for each characterization, feasibility and qualification build

KU16. the process of generating Process Change Notification (PCN)

KU17. the process of preparing the qualification report

KU18. the transition from low volume mass production to high volume mass production

KU19. the importance of considering the characterization phase, feasibility phase, customer samples phase and qualification phase

Generic Skills (GS)

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

GS1. maintain work-related notes and records
GS2. read the relevant literature to get the latest updates about the field of work
GS3. listen attentively to understand the information/ instructions being shared
GS4. communicate politely and professionally
GS5. plan and prioritise tasks to ensure timely completion
GS6. co-ordinate with the co-workers to achieve the work objectives
GS7. evaluate all possible solutions to a problem to select the best one
GS8. take quick decisions to deal with workplace emergencies/ accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Factory Acceptance Test at Equipment manufacturer site	**19**	**33**	**-**	**-**
PC1. create a FAT Report	-	-	-	-
PC2. ensure that the general machine specifications (operation, main controller, main panel should function as per requirements given to manufacturer)	-	-	-	-
PC3. check that laser specification, dimensions and other parameters are clearly defined by the process and equipment engineer	-	-	-	-
PC4. verify all equipment and process parameters during testing at site	-	-	-	-
PC5. outline the sample size required to buy off machines as per specification and CPK requirements	-	-	-	-
PC6. run all the material through equipment along with manufacturers team	-	-	-	-
PC7. prepare a report to avoid any future issues	-	-	-	-
PC8. record all observations and findings	-	-	-	-
Site acceptance test at product manufacturer site	**11**	**16**	**-**	**-**
PC9. create a SAT Report	-	-	-	-
PC10. ensure that all general machine specification (operation, main controller, main panel should function as per requirements given to manufacturer) are considered in the SAT report	-	-	-	-
PC11. check all equipment and process parameters to ensure that they DMAT during testing at site	-	-	-	-
PC12. outline the sample size required to buy off machines as per the specification and CPK Requirements	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. run all the tests through managers and manufacturers team	-	-	-	-
Laser Type selection and Qualification	**10**	**11**	**-**	**-**
PC14. seek the laser type based on molding compound	-	-	-	-
PC15. design the DOE to verify laser type	-	-	-	-
PC16. collect all the quality and reliability data for each characterization, feasibility and qualification build	-	-	-	-
PC17. generate PCN (Process Change Notification) and inform the customer	-	-	-	-
PC18. prepare qualification report and present it to the management	-	-	-	-
PC19. release to LVM (Low volume Mass Production) and coordinate with production team to make smooth transition to high volume mass production	-	-	-	-
PC20. ensure that characterization phase, feasibility phase, customer samples phase and qualification phase is considered	-	-	-	-
NOS Total	**40**	**60**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0120
NOS Name	Provision for Machine/Tools Buy Off
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	4
Version	2.0
Last Reviewed Date	08/05/2025
Next Review Date	31/10/2025
NSQC Clearance Date	08/05/2025

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 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
- Career Development & Goal Setting
- 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. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

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

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC5. recognize the significance of 21st Century Skills for employment

PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

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

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

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

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

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 English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	31/10/2025
NSQC Clearance Date	08/05/2025

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 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.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.

6. To pass the Qualification Pack, 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/N0117.Recipe/Program Readiness Define Process Parameters	40	60	-	-	100	20
ELE/N0118.Data Analysis and Yield Cost & Productivity Improvement	40	60	-	-	100	20
ELE/N0119.Equipment Setup support	40	60	-	-	100	20
ELE/N0120.Provision for Machine/Tools Buy Off	40	60	-	-	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	20
Total	**180**	**270**	**-**	**-**	**450**	**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.