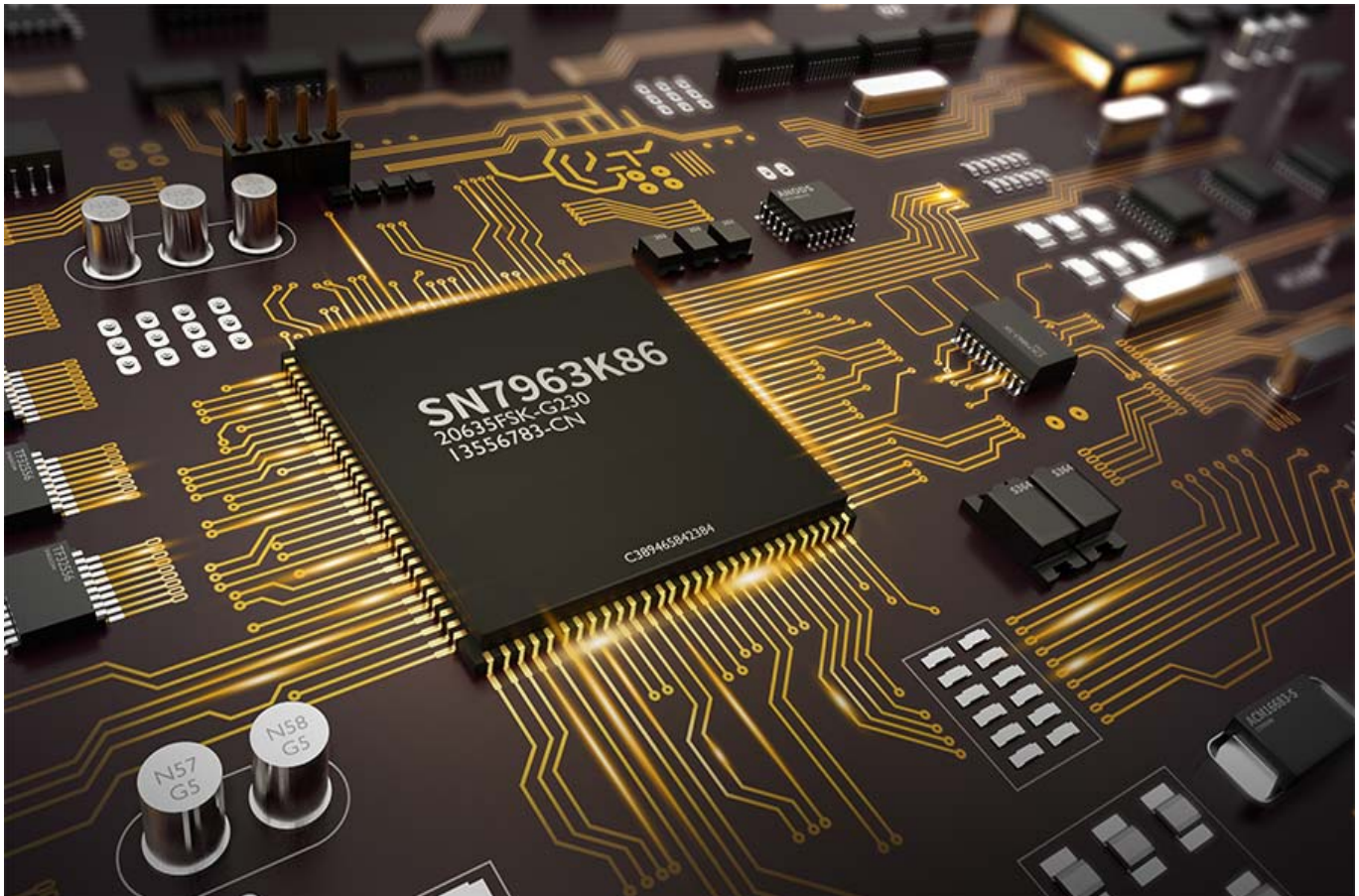


Qualification Pack



Laser Marking and Cutting - Process Engineer

QP Code: ELE/Q0118

Version: 1.0

NSQF Level: 5

Electronics Sector Skills Council of India || 155, 2nd Floor, ESC House Okhla Industrial Area-Phase 3
New Delhi- 110020 || email:ceo@essc-india.org



Qualification Pack

Contents

ELE/Q0118: Laser Marking and Cutting - Process Engineer	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
ELE/N0117: Recipe/Program Readiness - Define Process Parameters	5
ELE/N0118: Data Analysis & Yield, Cost & Productivity Improvement	11
ELE/N0119: Equipment Setup support	16
ELE/N0120: Machine Buy Off/Tools	22
ELE/N9905: Work effectively at the workplace	28
ELE/N1002: Apply health and safety practices at the workplace	36
Assessment Guidelines and Weightage	43
<i>Assessment Guidelines</i>	43
<i>Assessment Weightage</i>	43
Acronyms	45
Glossary	46

Qualification Pack

ELE/Q0118: Laser Marking and Cutting - Process Engineer

Brief Job Description

A laser marking & cutting process engineer is responsible for proper functioning, troubleshooting and maintenance of laser marking & cutting machines, set 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 & Yield, Cost & Productivity Improvement](#)
3. [ELE/N0119: Equipment Setup support](#)
4. [ELE/N0120: Machine Buy Off/Tools](#)
5. [ELE/N9905: Work effectively at the workplace](#)
6. [ELE/N1002: Apply health and safety practices at the workplace](#)

Qualification Pack (QP) Parameters

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

Qualification Pack

Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification & Experience	Diploma (after 10th (Electrical or Electronics Engineering) with 3 Years of Relevant experience OR Diploma after 12th (Electrical or Electronics Engineering) with 1 Year of Relevant experience) OR B.E./B.Tech (Degree in Electrical or Electronics Engineering) OR Certificate-NSQF (Level-4 in semiconductor domain) with 2 Years of experience in the relevant field
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	24/02/2022
Next Review Date	24/02/2025
NSQC Approval Date	24/02/2022
Version	1.0
Reference code on NQR	2022/EHW/ESSC/05396
NQR Version	1.0

Qualification Pack

ELE/N0117: Recipe/Program Readiness - Define Process Parameters

Description

The OS 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

Qualification Pack

- 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.

Qualification Pack

- 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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Define Process Parameters</i>	14	23	-	-
PC1. understand the strip dimensions and internal structure	2	3	-	-
PC2. define package outline drawing and strip drawing (PIN Holes, Fiducial Marks and Orientation)	1	2	-	-
PC3. describe the laser type, Laser Speed, Engraving thickness and Engraving orientation	1	3	-	-
PC4. define marking content, marking depth, width and visibility	1	2	-	-
PC5. run dummy samples	2	2	-	-
PC6. ensure that proper measurement of laser depth, marking content size & visibility check is done	1	3	-	-
PC7. perform repetitive tests till the specified criteria is met	1	1	-	-
PC8. generate the recipe with best optimized parameters and save it	1	2	-	-
PC9. input major parameters into Travelling card and SOP both	1	1	-	-
PC10. prepare full SOP and release to production	1	2	-	-
PC11. highlight if any special requirement is needed	2	2	-	-
<i>Verify Process Parameters</i>	9	15	-	-
PC12. copy old recipe of similar program	2	3	-	-
PC13. make changes as per product and customer requirement	1	2	-	-
PC14. run dummies do all measurements, Calculate CPK, PPK & other quality parameters	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. save the program after all parameters have been verified	1	2	-	-
PC16. run real product & do all measurements	1	3	-	-
PC17. conduct inspection for visibility, void and wire exposure and prepare for mass production	2	2	-	-
<i>Prepare SOP and Travelling Card</i>	7	13	-	-
PC18. assess proper features required for working with AUTO CAD	1	4	-	-
PC19. prepare process flow with clear specifications like Temperature, Speed, Water Flow, Vacuum etc.	2	2	-	-
PC20. prepare SOP in such a way so that it is more understandable to operators with pictures, visuals, data Charts etc.	1	3	-	-
PC21. train operators on SOP Flow	1	2	-	-
PC22. prepare travelling card with defined process or program name/ code	2	2	-	-
<i>Manage Daily Activity</i>	10	9	-	-
PC23. ensure all travelling cards release to production are ok	2	1	-	-
PC24. conduct regular inspection of programs as well as lot data such as yield, failure etc.	3	2	-	-
PC25. ensure that the machine and equipment is ready for any emergency situation	3	4	-	-
PC26. prepare daily activity plan	2	2	-	-
NOS Total	40	60	-	-



Qualification Pack

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	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Qualification Pack

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

Description

This OS unit is about making appropriate cost and productivity improvements

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 analyse 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

Qualification Pack

- 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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Analyse Data and Yield</i>	23	29	-	-
PC1. understand & prepare data for the strip dimensions and internal structure	5	4	-	-
PC2. collect data from drawings and other specification documents	6	5	-	-
PC3. record data related to marking content, marking depth, width and visibility	4	6	-	-
PC4. record measurement details as per formats for laser depth, marking content size & visibility check	3	5	-	-
PC5. ensure that the recipe is optimal as per the business case and user parameters	2	4	-	-
PC6. ensure that the SOP and production plan are optimal in terms of parameters and yield	3	5	-	-
<i>Advise Cost and Productivity Improvements</i>	17	31	-	-
PC7. ensure that proper market analysis has been conducted for new products, process parameters has been properly verified	3	5	-	-
PC8. reuse older program versions to make them better and improved as per current scenario and requirements	2	6	-	-
PC9. ensure cost and time are kept in mind while making changes as per product and customer requirements	2	4	-	-
PC10. calculate CPK, PPK and other quality parameters to analyse and suggest productivity improvements	4	5	-	-
PC11. perform inspection of equipment and machines to ensure they are working for optimal productivity	3	5	-	-
PC12. analyse any additional maintenance cost and prepare a budget for the same	3	6	-	-



Qualification Pack

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

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0118
NOS Name	Data Analysis & Yield, Cost & Productivity Improvement
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Qualification Pack

ELE/N0119: Equipment Setup support

Description

The OS unit is about equipment setup support

Scope

The scope covers the following :

- Support Loader/Unloader & Rail setup
- Material Handling 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 Handling 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 finger 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

Qualification Pack

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:



Qualification Pack

- 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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Support Loader/Unloader & Rail setup</i>	10	20	-	-
PC1. define magazine loading parameter	2	3	-	-
PC2. list the strip pickup criteria and specify the orientation of strip	2	4	-	-
PC3. ensure that the placement location is properly marked	1	3	-	-
PC4. outline the rail moving speed and laser height for marking	2	3	-	-
PC5. define strip unloading parameters and strip unloading direction/Orientation with location inside the magazine	1	4	-	-
PC6. list the handling steps of magazine and strips during marking	2	3	-	-
<i>Material Handling procedure</i>	12	20	-	-
PC7. outline the instructions to handle/hold the magazine	3	4	-	-
PC8. list the specifications to place the magazine inside the loader	2	3	-	-
PC9. advise the operator to avoid ESD and other mishappening issues	1	4	-	-
PC10. ensure that all operators understand alarms and mention if its false or not	2	3	-	-
PC11. guide the operators how to wear figure tips	1	1	-	-
PC12. advise the operators to process lot or material inside the machine	2	2	-	-
PC13. supervise the operators for collecting the data and make the data log sheet for each lot	1	3	-	-
<i>Support Laser Setup</i>	6	12	-	-
PC14. define the laser head criteria	1	3	-	-

Qualification Pack

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	1	2	-	-
PC16. define laser power and moving speed	1	3	-	-
PC17. save all parameters	1	2	-	-
PC18. check all marking parameters whether they are ok or not	2	2	-	-
<i>Support Change Over</i>	12	8	-	-
PC19. make different recipes for different products	2	1	-	-
PC20. save these recipes as per the well-defined naming rule	2	1	-	-
PC21. guide operators to change the recipe as per product	2	1	-	-
PC22. verify all the parameters on samples based	2	2	-	-
PC23. run original product after verifying all parameters	2	2	-	-
PC24. keep the records of all abnormalities (False Alarm, stoppage, mis-marking etc.) that happened throughout the day	2	1	-	-
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	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Qualification Pack

ELE/N0120: Machine Buy Off/Tools

Description

The OS unit is about selection and buying process for the laser machines.

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

Qualification Pack

- 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)

Qualification Pack

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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Factory Acceptance Test at Equipment manufacturer site</i>	19	33	-	-
PC1. create a FAT Report	2	3	-	-
PC2. ensure that the general machine specifications (operation, main controller, main panel should function as per requirements given to manufacturer)	2	4	-	-
PC3. check that laser specification, dimensions and other parameters are clearly defined by the process and equipment engineer	3	5	-	-
PC4. verify all equipment and process parameters during testing at site	2	4	-	-
PC5. outline the sample size required to buy off machines as per specification and CPK requirements	2	3	-	-
PC6. run all the material through equipment along with manufacturers team	3	5	-	-
PC7. prepare a report to avoid any future issues	2	4	-	-
PC8. record all observations and findings	3	5	-	-
<i>Site acceptance test at product manufacturer site</i>	11	16	-	-
PC9. create a SAT Report	2	4	-	-
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	2	3	-	-
PC11. check all equipment and process parameters to ensure that they DMAT during testing at site	2	4	-	-
PC12. outline the sample size required to buy off machines as per the specification and CPK Requirements	3	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. run all the tests through managers and manufacturers team	2	2	-	-
<i>Laser Type selection and Qualification</i>	10	11	-	-
PC14. seek the laser type based on molding compound	1	2	-	-
PC15. design the DOE to verify laser type	1	2	-	-
PC16. collect all the quality and reliability data for each characterization, feasibility and qualification build	1	2	-	-
PC17. generate PCN (Process Change Notification) and inform the customer	2	1	-	-
PC18. prepare qualification report and present it to the management	2	2	-	-
PC19. release to LVM (Low volume Mass Production) and coordinate with production team to make smooth transition to high volume mass production	2	1	-	-
PC20. ensure that characterization phase, feasibility phase, customer samples phase and qualification phase is considered	1	1	-	-
NOS Total	40	60	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0120
NOS Name	Machine Buy Off/Tools
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Production-S&C
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Qualification Pack

ELE/N9905: Work effectively at the workplace

Description

This unit is about the communicating and managing work effectively at the workplace as well as taking measures to enhance own competence and working in a disciplined and ethical manner.

Scope

The scope covers the following :

- Communicate effectively at the workplace
- Work effectively
- Maintain and enhance professional competence
- Work in a disciplined and ethical manner
- Uphold social diversity at the workplace

Elements and Performance Criteria

Communicate effectively at the workplace

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

- PC1.** exchange information and instruction with colleagues, and seek clarifications and feedback as necessary
- PC2.** assist colleagues where required
- PC3.** follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)
- PC4.** document and share all relevant information with stakeholders in agreed formats and as per agreed timelines

Work effectively

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

- PC5.** identify and obtain clarity regarding organisational, team and own goals and targets
- PC6.** prioritise and plan work in order to achieve goals and targets
- PC7.** monitor own and team performance as per agreed plan
- PC8.** complete duties accurately, systematically and within required timeframes
- PC9.** express emotions appropriately at the workplace and manage own response to heightened emotions
- PC10.** maintain orderliness and cleanliness in the work area

Maintain and enhance professional competence

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

- PC11.** identify own strengths and weaknesses in relation to goals and targets
- PC12.** adapt self, service, or product to meet success criteria
- PC13.** seek and select opportunities for continuous professional development
- PC14.** formulate a professional development plan to enhance capabilities

Qualification Pack

- PC15.** build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations
- PC16.** examine developments and trends in field of work and their potential impact on work
- PC17.** take feedback from peers, supervisors and clients to improve own performance and practices

Work in a disciplined and ethical manner

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

- PC18.** perform tasks as per workplace standards, organisational policies and legislative requirements
- PC19.** display appropriate professional appearance at the workplace and adhere to the organisational dress code
- PC20.** demonstrate responsible and disciplined behaviour at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behaviour at all times, adopting environment- friendly practices, etc.
- PC21.** identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution
- PC22.** protect the rights of the client and organisation when delivering services
- PC23.** ensure services are delivered equally to all clients regardless of personal and cultural beliefs
- PC24.** operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities
- PC25.** follow organisational guidelines and legal requirements on disclosure and confidentiality

Uphold social diversity at the workplace

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

- PC26.** recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes
- PC27.** identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace
- PC28.** use inclusive or neutral language and gestures in all interactions
- PC29.** respect the personal and professional space of others
- PC30.** access grievance redressal mechanisms as per legislations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisation's policies on dress code, workplace timings, workplace behaviour, performance management, incentives, delivery standards, information security, etc.
- KU2.** organizational hierarchy and escalation matrix
- KU3.** importance of the individual's role in the workflow
- KU4.** organisational norms on health, safety and sustainability
- KU5.** work area inspection procedures and practices
- KU6.** professional etiquette and grooming

Qualification Pack

- KU7.** communication etiquette across communicative mediums (online, digital, and in-person) including strategies/methods for sharing information, documentation, and providing and receiving feedback
- KU8.** importance of self-evaluations and developing a continuous learning and professional development plan
- KU9.** developments and trends impacting professional practice
- KU10.** importance of taking and using feedback from colleagues and clients to identify and introduce improvements in work performance
- KU11.** professional ethics and workplace norms on reporting and/or penalizing unethical behaviour and practices.
- KU12.** guidelines and legal requirements on disclosure, confidentiality, and conflicts of interest
- KU13.** strategies for collaboration with colleagues and clients.
- KU14.** professional responses and strategies against inappropriate language or behaviour toward self and others
- KU15.** Implicit bias (based on gender, disability, class, caste, colour, race, culture, religion, etc.) and its consequences in the workplace
- KU16.** organizational guidelines, prevalent legislations and accessibility norms and processes to support PwDs at the workplace
- KU17.** strategies for time, effort and resource allocation towards the goals.
- KU18.** basic concepts of work productivity including waste reduction, efficient material usage and optimization of time

Generic Skills (GS)

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

- GS1.** complete documentation and forms such as work orders, invoices maintenance records activity logs, attendance sheets as per organizational format in English and/or local language
- GS2.** write basic accident or incident report accurately in an appropriate format
- GS3.** read warnings, instructions and other text material on product labels, components, etc. and relevant signages, warnings, labels or descriptions on equipment, etc. while carrying out work activities
- GS4.** convey and share technical information clearly using appropriate language
- GS5.** clarify task-related information
- GS6.** liaise with authorities and supervisors as per organizational protocol
- GS7.** listen, speak, and write in an inclusive, respectful manner in line with organizational protocol
- GS8.** seek clarification from immediate supervisor or responsible authority or exercise most appropriate solutions to safety breaches at work
- GS9.** report to the supervisor and when to deal with a colleague depending on the type of concern
- GS10.** deliver product to next work process on time
- GS11.** improve work process and report potential areas of delays and disruptions
- GS12.** communicate problems appropriately to others
- GS13.** identify symptoms of the fault to the cause of the problem and resolve, otherwise seek assistance and support from other sources to solve the problem



Qualification Pack

- GS14.** anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes
- GS15.** complete tasks efficiently and accurately within stipulated time
- GS16.** appreciate and respect social diversity in all professional settings
- GS17.** develop awareness and accountability for perspectives on gender, disabilities, and socio-cultural issues leading to discrimination, bias, or harassment at the workplace
- GS18.** maintain positive and effective relationships with colleagues and customers

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Communicate effectively at the workplace</i>	5	13	-	-
PC1. exchange information and instruction with colleagues, and seek clarifications and feedback as necessary	1	3	-	-
PC2. assist colleagues where required	1	3	-	-
PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)	1	4	-	-
PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines	2	3	-	-
<i>Work effectively</i>	6	13	-	-
PC5. identify and obtain clarity regarding organisational, team and own goals and targets	1	2	-	-
PC6. prioritise and plan work in order to achieve goals and targets	1	2	-	-
PC7. monitor own and team performance as per agreed plan	1	2	-	-
PC8. complete duties accurately, systematically and within required timeframes	1	2	-	-
PC9. express emotions appropriately at the workplace and manage own response to heightened emotions	1	2	-	-
PC10. maintain orderliness and cleanliness in the work area	1	3	-	-
<i>Maintain and enhance professional competence</i>	8	7	-	-
PC11. identify own strengths and weaknesses in relation to goals and targets	1	1	-	-
PC12. adapt self, service, or product to meet success criteria	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. seek and select opportunities for continuous professional development	1	1	-	-
PC14. formulate a professional development plan to enhance capabilities	2	1	-	-
PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	1	1	-	-
PC16. examine developments and trends in field of work and their potential impact on work	1	1	-	-
PC17. take feedback from peers, supervisors and clients to improve own performance and practices	1	1	-	-
<i>Work in a disciplined and ethical manner</i>	11	16	-	-
PC18. perform tasks as per workplace standards, organisational policies and legislative requirements	2	2	-	-
PC19. display appropriate professional appearance at the workplace and adhere to the organisational dress code	1	2	-	-
PC20. demonstrate responsible and disciplined behaviour at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behaviour at all times, adopting environment- friendly practices, etc.	1	2	-	-
PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution	2	2	-	-
PC22. protect the rights of the client and organisation when delivering services	1	2	-	-
PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs	1	2	-	-
PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	2	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. follow organisational guidelines and legal requirements on disclosure and confidentiality	1	2	-	-
<i>Uphold social diversity at the workplace</i>	10	11	-	-
PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	2	2	-	-
PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	2	2	-	-
PC28. use inclusive or neutral language and gestures in all interactions	2	2	-	-
PC29. respect the personal and professional space of others	2	2	-	-
PC30. access grievance redressal mechanisms as per legislations	2	3	-	-
NOS Total	40	60	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N9905
NOS Name	Work effectively at the workplace
Sector	Electronics
Sub-Sector	Generic
Occupation	Generic - Organizational Behaviour
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

Qualification Pack

ELE/N1002: Apply health and safety practices at the workplace

Description

This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace.

Scope

The scope covers the following :

- Deal with workplace hazards
- Apply fire safety practices
- Follow emergencies, rescue and first-aid procedures
- Effective waste management/recycling practices

Elements and Performance Criteria

Deal with workplace hazards

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

- PC1.** identify job-site hazards and possible causes of accident in the workplace
- PC2.** perform work complying to organizational safe working practices and observing hazard signs displayed on containers, equipment and in various work areas such as inside buildings, in open areas and public spaces, etc.
- PC3.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC4.** follow standard safety procedures while handling tool/ ,equipment, hazardous substances and while working in hazardous environments
- PC5.** dispose electronic waste (such as toxins; metals such as lead, cadmium, barium; flame retardant plastics, welding slag etc.) as per industry approved techniques
- PC6.** avoid damage of components due to negligence in electrostatic discharge (ESD) procedures
- PC7.** locate general health and safety equipment in the workplace such as fire extinguishers; first aid equipment; safety instruments, clothing and installations (fire exits, exhaust fans)
- PC8.** maintain appropriate posture while handling heavy objects
- PC9.** apply good housekeeping practices at all times

Apply fire safety practices

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

- PC10.** take preventive measures to prevent fire hazards
- PC11.**
 - use appropriate fire extinguishers for different types of fires
 - Types of fires: Class A: e.g. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: e.g. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no I
- PC12.** exhibit rescue and first-aid techniques in case of fire or electrocution

Qualification Pack

Follow emergencies, rescue and first-aid procedures

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

- PC13.** administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.
- PC14.** administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,
- PC15.** participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work
- PC16.** use correct method to move injured people and others during an emergency

Effective waste management/recycling practices

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

- PC17.** identify recyclable and non-recyclable, and hazardous waste generated
- PC18.** segregate waste into different categories
- PC19.** ensure disposal of non-recyclable waste appropriately
- PC20.** deposit non-recyclable and reusable material at identified location
- PC21.** follow processes specified for disposal of hazardous waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** importance of working in clean and safe work environment following safety practices and procedures
- KU2.** health and safety roles and responsibilities of relevant personnel within and outside the organisation
- KU3.** key internal and external sources of health and safety information
- KU4.** basic knowledge of electronic devices and related health risks
- KU5.** meaning of hazards and risks
- KU6.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU7.** methods of accident prevention
- KU8.** importance of using protective clothing/equipment while working
- KU9.** general principles for identifying and controlling health and safety risks
- KU10.** main hazards and preventive as well as control measures while working with different types of equipment
- KU11.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU12.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU13.** forms and classifications of hazardous substances
- KU14.** safe working practices while working at various hazardous sites
- KU15.** prevention and control measures to reduce risks from exposure to hazardous substances

Qualification Pack

- KU16.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU17.** precautionary activities to prevent the fire accident
- KU18.** various causes of fire such as heating of metal, spontaneous ignition, sparking, electrical eating, loose fires (smoking, welding, etc.) chemical fires etc.
- KU19.** techniques of using the different fire extinguishers
- KU20.** different methods and material to extinguish fires
- KU21.** different materials used for extinguishing fire such as sand, water, foam, CO₂, dry powder
- KU22.** rescue techniques used during a fire hazard
- KU23.** various types of safety signs and their meaning
- KU24.** basic first aid treatment relevant to the common work place injuries e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries
- KU25.** contents of written accident report
- KU26.** potential injuries and ill health associated with incorrect handling of tools and equipment
- KU27.** safe lifting and carrying practices
- KU28.** potential impact to a person who is moved incorrectly
- KU29.** personal safety, health and dignity issues relating to the movement of a person by others
- KU30.** ESD measures and 5S
- KU31.** efficient utilization and management of material and water
- KU32.** ways to recognize common electrical problems and practices of conserving electricity
- KU33.** usage of different colours of dustbins, categorization of waste into dry, wet, recyclable, nonrecyclable and items of single-use plastics
- KU34.** organization's procedure for minimizing waste
- KU35.** waste management and methods of waste disposal
- KU36.** common sources of pollution and ways to minimize it
- KU37.** names, contact information and location of people responsible for health and safety in the workplace
- KU38.** location of documents and equipment for health and safety compliance/practices in the workplace
- KU39.** safety notices, signs and instructions at workplace

Generic Skills (GS)

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

- GS1.** interpret general health and safety guidelines labels, charts, signages
- GS2.** read operation manuals
- GS3.** write health and safety compliance report
- GS4.** write an accident/incident report in local language or English
- GS5.** provide an emergency or safety incident brief to seniors or relevant authorities in a calm, clear and to-the-point manner
- GS6.** communicate general health and safety guidelines to colleagues/co-workers

Qualification Pack

- GS7.** communicate appropriately with co-workers in order to clarify instructions and other issues
- GS8.** act in case of any potential hazards observed in the work place
- GS9.** plan and organize their own work schedule, work area, tools, equipment in compliance with organizational policies for health, safety and security
- GS10.** take adequate measures to ensure the safety of clients and visitors at the workplace
- GS11.** identify immediate or temporary solutions to resolve delays
- GS12.** evaluate the work area for health and safety risks or hazards
- GS13.** use cause and effect relations to anticipate potential issues, problems and their solution in the work area related to safety
- GS14.** recognise emergency and potential emergency situations
- GS15.** protect self and others from a health and safety risk or hazard
- GS16.** communicate and collaborate to incorporate sustainable practices (greening) in workplace processes
- GS17.** record data on waste disposal at workplace

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Deal with workplace hazards</i>	20	31	-	-
PC1. identify job-site hazards and possible causes of accident in the workplace	2	3	-	-
PC2. perform work complying to organizational safe working practices and observing hazard signs displayed on containers, equipment and in various work areas such as inside buildings, in open areas and public spaces, etc.	3	4	-	-
PC3. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	3	4	-	-
PC4. follow standard safety procedures while handling tool/ ,equipment, hazardous substances and while working in hazardous environments	3	4	-	-
PC5. dispose electronic waste (such as toxins; metals such as lead, cadmium, barium; flame retardant plastics, welding slag etc.) as per industry approved techniques	2	4	-	-
PC6. avoid damage of components due to negligence in electrostatic discharge (ESD) procedures	2	3	-	-
PC7. locate general health and safety equipment in the workplace such as fire extinguishers; first aid equipment; safety instruments, clothing and installations (fire exits, exhaust fans)	2	3	-	-
PC8. maintain appropriate posture while handling heavy objects	1	3	-	-
PC9. apply good housekeeping practices at all times	2	3	-	-
<i>Apply fire safety practices</i>	4	9	-	-
PC10. take preventive measures to prevent fire hazards	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. • use appropriate fire extinguishers for different types of fires • Types of fires: Class A: e.g. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: e.g. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no I	1	3	-	-
PC12. exhibit rescue and first-aid techniques in case of fire or electrocution	1	3	-	-
<i>Follow emergencies, rescue and first-aid procedures</i>	6	13	-	-
PC13. administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.	1	3	-	-
PC14. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,	1	2	-	-
PC15. participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work	2	4	-	-
PC16. use correct method to move injured people and others during an emergency	2	4	-	-
<i>Effective waste management/recycling practices</i>	5	12	-	-
PC17. identify recyclable and non-recyclable, and hazardous waste generated	1	3	-	-
PC18. segregate waste into different categories	1	2	-	-
PC19. ensure disposal of non-recyclable waste appropriately	1	2	-	-
PC20. deposit non-recyclable and reusable material at identified location	1	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. follow processes specified for disposal of hazardous waste	1	2	-	-
NOS Total	35	65	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N1002
NOS Name	Apply health and safety practices at the workplace
Sector	Electronics
Sub-Sector	Generic
Occupation	Generic - Health Safety
NSQF Level	4
Credits	TBD
Version	3.0
Last Reviewed Date	24/02/2022
Next Review Date	03/05/2026
NSQC Clearance Date	03/05/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

Minimum 70% marks are required

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

Qualification Pack

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 & Yield, Cost & Productivity Improvement	40	60	-	-	100	20
ELE/N0119.Equipment Setup support	40	60	-	-	100	20
ELE/N0120.Machine Buy Off/Tools	40	60	-	-	100	20
ELE/N9905.Work effectively at the workplace	40	60	-	-	100	10
ELE/N1002.Apply health and safety practices at the workplace	35	65	-	-	100	10
Total	235	365	-	-	600	100



Qualification Pack

Acronyms

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

Qualification Pack

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.

Qualification Pack

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.