Quality Analysis & Reliability Supervisor (Semiconductor)

QP Code: ELE/Q0120

Version: 3.0

NSQF Level: 5

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Qualification Pack

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Qualification Pack

ELE/Q0120: Quality Analysis & Reliability Supervisor (Semiconductor)

Brief Job Description

A quality analysis and Reliability Supervisor (Semiconductor) works is responsible to prepare Quality analysis flow & to rectify the failures. He/she is also responsible for verification and resolve by working together with several cross functional teams and test requirements as per Joint Electron Device Engineering Council (JEDEC) standards.

Personal Attributes

The individual must have an aptitude for details along with analytical and problem-solving skills. The person should be able to work in co-ordination with others. The individual should be able to communicate appropriately, both verbally and in writing.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ELE/N0128: Check the Internal Quality](#)

2. [ELE/N0129: Check the Customer Quality](#)

3. [ELE/N0130: Analysis Data](#)

4. [ELE/N0131: Knowledge of Quality & Reliability Equipment](#)

5. [DGT/VSQ/N0102: Employability Skills (60 Hours)](#)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Quality Assurance
Country	India
NSQF Level	5
Credits	19
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7543.0803

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-03989-2025-V3-ESSCI
NQR Version	3.0

Remarks:

NA

ELE/N0128: Check the Internal Quality

Description

The NOS unit is about to Ensure end-to-end process and product quality through analysis, data monitoring, use of statistical tools, adherence to standards, and implementation of continuous improvement methodologies.

Scope

The scope covers the following :

- Process Quality and Equipment Quality
- Product Quality

Elements and Performance Criteria

Process Quality and Equipment Quality

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

PC1. analyse the process flow and each process step

PC2. identify the process variation spec. for each step

PC3. execute set up process tolerances

PC4. prepare to collect regular data

PC5. analyse the data figure out issues using statistical software's

PC6. prepare to release the design of experiments (DOE) to fix the issue

PC7. determine the competitors process

PC8. prepare to get quality certifications

PC9. prepare quality flow and procedures for New and existing processes

Product Quality

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

PC10. identify product structure and material used

PC11. identify all internal and external dimensions of materials used as well as final product

PC12. identify the product spec at each step

PC13. verify the data collection sample size per lot

PC14. prepare to collect regular data using statistical software and monitor yield at each step

PC15. analyse the spec of false alarm and min. failure qty. required to hold the lot

PC16. analyse the data figure out issues using statistical softwares

PC17. prepare to release the design of experiments (DOE) to fix the issue

PC18. prepare to get quality certifications

PC19. determine the competitor's product

PC20. expertise in all quality standards, manuals and specifications

PC21. knowledge of Joint Electron Device Engineering Council (JEDEC) standards

PC22. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc

PC23. prepare quality flow and procedures for new and existing processes

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. knowledge of process flow and each process step

KU2. importance of ensuring the report adheres to verify the dimension specifications to meet the customer requirements

KU3. the importance of ensuring the functioning of the main controller and the main panel as per requirements given to the manufacturer

KU4. the importance of verifying equipment and process parameters

KU5. the importance of preparing a comprehensive report to avoid any future issues

KU6. the importance of verifying low cost and high reliable raw material and consumables

KU7. how to generate Process Change Notification (PCN)

KU8. how to prepare a qualification report

KU9. the process of transition from low volume mass production to high-volume mass production

KU10. the importance of verifying mold compound

KU11. the process of checking reverse analysis to get specifications

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
Process Quality and Equipment Quality	**24**	**26**	**-**	**7**
PC1. analyse the process flow and each process step	-	-	-	-
PC2. identify the process variation spec. for each step	-	-	-	-
PC3. execute set up process tolerances	-	-	-	-
PC4. prepare to collect regular data	-	-	-	-
PC5. analyse the data figure out issues using statistical software's	-	-	-	-
PC6. prepare to release the design of experiments (DOE) to fix the issue	-	-	-	-
PC7. determine the competitors process	-	-	-	-
PC8. prepare to get quality certifications	-	-	-	-
PC9. prepare quality flow and procedures for New and existing processes	-	-	-	-
Product Quality	**16**	**24**	**-**	**3**
PC10. identify product structure and material used	-	-	-	-
PC11. identify all internal and external dimensions of materials used as well as final product	-	-	-	-
PC12. identify the product spec at each step	-	-	-	-
PC13. verify the data collection sample size per lot	-	-	-	-
PC14. prepare to collect regular data using statistical software and monitor yield at each step	-	-	-	-
PC15. analyse the spec of false alarm and min. failure qty. required to hold the lot	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. analyse the data figure out issues using statistical softwares	-	-	-	-
PC17. prepare to release the design of experiments (DOE) to fix the issue	-	-	-	-
PC18. prepare to get quality certifications	-	-	-	-
PC19. determine the competitor's product	-	-	-	-
PC20. expertise in all quality standards, manuals and specifications	-	-	-	-
PC21. knowledge of Joint Electron Device Engineering Council (JEDEC) standards	-	-	-	-
PC22. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc	-	-	-	-
PC23. prepare quality flow and procedures for new and existing processes	-	-	-	-
NOS Total	**40**	**50**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0128
NOS Name	Check the Internal Quality
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/N0129: Check the Customer Quality

Description

The NOS unit is about to ensure comprehensive process, equipment, and product quality by aligning with customer specifications, analyzing failures, applying statistical tools, adhering to JEDEC and industry standards, and implementing continuous improvement and certification practices.

Scope

The scope covers the following :

- Process Quality
- Equipment Quality
- Product Quality

Elements and Performance Criteria

Process Quality

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

PC1. identify the customer work to get their spec.

PC2. identify the customer failures work and see if it is related to process or not

PC3. prepare to fix process flow for related process step for any customer failure if failure is real

PC4. identify the process variation spec. for related process

PC5. execute set up process tolerances

PC6. prepare to collect data and show Improvement

PC7. analyse the data figure out issues using statistical software's

PC8. prepare to release the design of experiments (DOE) if any major issue still exists

PC9. determine the competitor's product

PC10. knowledge of Joint Electron Device Engineering Council (JEDEC) standards

PC11. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc

PC12. prepare to get quality certifications

PC13. prepare quality flow and procedures for New and existing processes

Equipment Quality

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

PC14. identify the customer work to get their spec.

PC15. identify the customer failures work and see if it is related to process or not

PC16. prepare to fix process flow for related process step for any customer failure if failure is real

PC17. identify the process variation spec. for related process

PC18. execute set up process tolerances

PC19. prepare to collect data and show Improvement

PC20. analyse the data figure out issues using statistical softwares

PC21. prepare to release the design of experiments (DOE) if any major issue still exists

PC22. determine the competitor's product

PC23. knowledge of Joint Electron Device Engineering Council (JEDEC) standards

PC24. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc

PC25. prepare to get quality certifications

PC26. prepare quality flow and procedures for New and existing processes

Product Quality

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

PC27. identify the customer work to get their spec.

PC28. identify the customer failures work and see if it is related to process or not

PC29. identify the product structure and material used

PC30. identify all internal and external dimensions of materials used as well as final product

PC31. identify the product spec at each step

PC32. verify the data collection sample size per lot

PC33. prepare to collect regular data using statistical software and Monitor Yield at each step

PC34. analyse the spec of false alarm and Min. failure Qty. required to hold the lot

PC35. analyse the data figure out issues using statistical software's

PC36. prepare to release the design of experiments (DOE) to fix the issue

PC37. determine the competitor's product

PC38. prepare to get quality certifications

PC39. expertise in All quality standards, manuals and specifications

PC40. knowledge of Joint Electron Device Engineering Council (JEDEC) standards

PC41. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc

PC42. prepare quality flow and procedures for New and existing processes

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. how to manage inspection and measurement techniques in the SOP for operators

KU2. the importance and process of reviewing the collecting data and performing statistical analysis to determine if it is within the specifications

KU3. the importance of checking all consumables, i.e. molding compound specifications and regularly inspecting for each consumable

KU4. the process of checking failure at molding and the importance of ensuring it passes through failure analysis

KU5. the importance of managing short term and long-term actions of failures to reduce the failure rate

KU6. the importance of verifying yield data collection for each product

KU7. how to manage data analysis using statistical methods

KU8.   the necessary steps to be taken if the yield is lower than the target

KU9.   the importance of monitoring records for all failures along with actions to avoid future failure

KU10.   appropriate strategies and Research and Development (R&D) for further improvements

KU11.   the importance of monitoring the operations of machines to improve Unit per Hour (UPH)

KU12.   how to develop Design of Experiments (DOE) Expertise

KU13.   how to run satistical tools such as JMP

KU14.   the importance of regularly interacting with customers, suppliers, and internal teams

KU15.   the importance and process of verifying auto Computer-Aided Design (CAD) generated designs

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
Process Quality	**13**	**21**	**-**	**4**
PC1. identify the customer work to get their spec.	-	-	-	-
PC2. identify the customer failures work and see if it is related to process or not	-	-	-	-
PC3. prepare to fix process flow for related process step for any customer failure if failure is real	-	-	-	-
PC4. identify the process variation spec. for related process	-	-	-	-
PC5. execute set up process tolerances	-	-	-	-
PC6. prepare to collect data and show Improvement	-	-	-	-
PC7. analyse the data figure out issues using statistical software's	-	-	-	-
PC8. prepare to release the design of experiments (DOE) if any major issue still exists	-	-	-	-
PC9. determine the competitor's product	-	-	-	-
PC10. knowledge of Joint Electron Device Engineering Council (JEDEC) standards	-	-	-	-
PC11. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc	-	-	-	-
PC12. prepare to get quality certifications	-	-	-	-
PC13. prepare quality flow and procedures for New and existing processes	-	-	-	-
Equipment Quality	**13**	**13**	**-**	**4**
PC14. identify the customer work to get their spec.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. identify the customer failures work and see if it is related to process or not	-	-	-	-
PC16. prepare to fix process flow for related process step for any customer failure if failure is real	-	-	-	-
PC17. identify the process variation spec. for related process	-	-	-	-
PC18. execute set up process tolerances	-	-	-	-
PC19. prepare to collect data and show Improvement	-	-	-	-
PC20. analyse the data figure out issues using statistical softwares	-	-	-	-
PC21. prepare to release the design of experiments (DOE) if any major issue still exists	-	-	-	-
PC22. determine the competitor's product	-	-	-	-
PC23. knowledge of Joint Electron Device Engineering Council (JEDEC) standards	-	-	-	-
PC24. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc	-	-	-	-
PC25. prepare to get quality certifications	-	-	-	-
PC26. prepare quality flow and procedures for New and existing processes	-	-	-	-
Product Quality	**14**	**16**	**-**	**2**
PC27. identify the customer work to get their spec.	-	-	-	-
PC28. identify the customer failures work and see if it is related to process or not	-	-	-	-
PC29. identify the product structure and material used	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC30. identify all internal and external dimensions of materials used as well as final product	-	-	-	-
PC31. identify the product spec at each step	-	-	-	-
PC32. verify the data collection sample size per lot	-	-	-	-
PC33. prepare to collect regular data using statistical software and Monitor Yield at each step	-	-	-	-
PC34. analyse the spec of false alarm and Min. failure Qty. required to hold the lot	-	-	-	-
PC35. analyse the data figure out issues using statistical software's	-	-	-	-
PC36. prepare to release the design of experiments (DOE) to fix the issue	-	-	-	-
PC37. determine the competitor's product	-	-	-	-
PC38. prepare to get quality certifications	-	-	-	-
PC39. expertise in All quality standards, manuals and specifications	-	-	-	-
PC40. knowledge of Joint Electron Device Engineering Council (JEDEC) standards	-	-	-	-
PC41. identify the tools such as 8D Reports, Statistical Tools, John's Macintosh Project (JMP), Direct Memory Access Control (DMAC), Advanced Product Quality Planning (APQP), 7S etc	-	-	-	-
PC42. prepare quality flow and procedures for New and existing processes	-	-	-	-
NOS Total	**40**	**50**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0129
NOS Name	Check the Customer Quality
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/N0130: Analysis Data

Description

The NOS unit is about to operate and analyze advanced inspection tools (OM, SEM, CSAM, FIB), ensure product quality and yield through root cause analysis, statistical methods, and continuous improvement in coordination with cross-functional teams.

Scope

The scope covers the following :

- Operate OM, SEM, CSAM, FIB & Others
- Product Quality
- Yield Tracking
- Yield and Productivity Maintain

Elements and Performance Criteria

Operate OM, SEM, CSAM, FIB & Others

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

PC1. identify the basic principles

PC2. identify the materials

PC3. prepare to install samples

PC4. analysis sample and measurement

PC5. analyse Energy Dispersive X-Ray Analysis (EDX)

PC6. prepare procedure and document

PC7. test train operators & technicians

PC8. prepare how to calibrate

PC9. prepare how to operate

PC10. analyse the reflected waves

PC11. analyse the data

PC12. test the load and unload samples

Product Quality

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

PC13. identify all package outlines drawings with specifications with the help of process engineer

PC14. identify the sample size for each lot to measure all dimensions with the help of process engineer

PC15. prepare measurement technique in SOP for Operators

PC16. analysis the specification to release the lot to next step after collecting data

PC17. identify all consumables pack specifications clearly with the help of process engineer

PC18. check regular inspections for each consumable

PC19. verify the failure at any process and should be passed through failure analysis

PC20. verify root cause of each failure

PC21. prepare short term and long-term actions of failures to reduce failure rate with the help of process engineer

PC22. prepare 8D report

Yield Tracking

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

PC23. analyse the production Yield data collection for each product

PC24. analyse the Yield

PC25. analysis data using statistical methods

PC26. prepare ppt and present to management on WW bases

PC27. perform necessary steps if yield is lower than target

PC28. prepare records all failures along with actions to avoid future failure

Yield and Productivity Maintain

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

PC29. prepare strategies for further improvements

PC30. prepare to work with R&D to do Improvements

PC31. knowledge of broad material behaviour, properties and other interactions

PC32. knowledge of working principal of machines to improve Unit Per Hour (UPH)

PC33. prepare Design of Experiments (DOE)

PC34. identify running statistical tools such as John's Macintosh Project (JMP)

PC35. prepare to do regular interaction with customer, supplier and internal teams

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the use of Auto CAD and other equivalent design tools

KU2. the wafer structure and processing, and wire material properties

KU3. the importance of determining the customer requirements and collecting data from competitors' specs

KU4. how to perform reverse analysis to get the die to attach and wire bonding specifications

KU5. the importance of identifying the critical and normal dimension requirements as per the customer requirements

KU6. the importance and process of defining the dimension specifications to meet the customer requirements

KU7. the Joint Electron Device Engineering Council (JEDEC) standard

KU8. the customer bonding diagram

KU9. the importance of specifying the wire bonding material that fulfils the bonding drawing and electrical, mechanical, and thermal specifications

KU10. how to perform drawing activities bonding drawing

KU11. how to verify the die-attach staking structure

KU12. how to verify rubber tip for die attach and capillary for wire bonding drawing

KU13. how to identify magazine drawing and cassette drawing

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
Operate OM, SEM, CSAM, FIB & Others	**17**	**27**	**-**	**4**
PC1. identify the basic principles	-	-	-	-
PC2. identify the materials	-	-	-	-
PC3. prepare to install samples	-	-	-	-
PC4. analysis sample and measurement	-	-	-	-
PC5. analyse Energy Dispersive X-Ray Analysis (EDX)	-	-	-	-
PC6. prepare procedure and document	-	-	-	-
PC7. test train operators & technicians	-	-	-	-
PC8. prepare how to calibrate	-	-	-	-
PC9. prepare how to operate	-	-	-	-
PC10. analyse the reflected waves	-	-	-	-
PC11. analyse the data	-	-	-	-
PC12. test the load and unload samples	-	-	-	-
Product Quality	**10**	**10**	**-**	**3**
PC13. identify all package outlines drawings with specifications with the help of process engineer	-	-	-	-
PC14. identify the sample size for each lot to measure all dimensions with the help of process engineer	-	-	-	-
PC15. prepare measurement technique in SOP for Operators	-	-	-	-
PC16. analysis the specification to release the lot to next step after collecting data	-	-	-	-
PC17. identify all consumables pack specifications clearly with the help of process engineer	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC18. check regular inspections for each consumable	-	-	-	-
PC19. verify the failure at any process and should be passed through failure analysis	-	-	-	-
PC20. verify root cause of each failure	-	-	-	-
PC21. prepare short term and long-term actions of failures to reduce failure rate with the help of process engineer	-	-	-	-
PC22. prepare 8D report	-	-	-	-
Yield Tracking	**6**	**6**	**-**	**2**
PC23. analyse the production Yield data collection for each product	-	-	-	-
PC24. analyse the Yield	-	-	-	-
PC25. analysis data using statistical methods	-	-	-	-
PC26. prepare ppt and present to management on WW bases	-	-	-	-
PC27. perform necessary steps if yield is lower than target	-	-	-	-
PC28. prepare records all failures along with actions to avoid future failure	-	-	-	-
Yield and Productivity Maintain	**7**	**7**	**-**	**1**
PC29. prepare strategies for further improvements	-	-	-	-
PC30. prepare to work with R&D to do Improvements	-	-	-	-
PC31. knowledge of broad material behaviour, properties and other interactions	-	-	-	-
PC32. knowledge of working principal of machines to improve Unit Per Hour (UPH)	-	-	-	-
PC33. prepare Design of Experiments (DOE)	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. identify running statistical tools such as John's Macintosh Project (JMP)	-	-	-	-
PC35. prepare to do regular interaction with customer, supplier and internal teams	-	-	-	-
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0130
NOS Name	Analysis Data
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/N0131: Knowledge of Quality & Reliability Equipment

Description

The NOS unit is about to operate and manage quality and reliability testing equipment, set up processes, ensure safety, and support process optimization through technical documentation and failure reduction strategies.

Scope

The scope covers the following :

- Quality and Reliability Equipment Knowledge

Elements and Performance Criteria

Quality and Realibity Equipment Knowledge

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

PC1. identify Moisture Sensitivity Level (MSL) related tool to operate and set the process

PC2. identify Highly Accelerated Stress Test (HAST) (Bias/Based Highly Accelerated Stress Test-BHAST/ Understanding Highly Accelerated Stress Test UHAST) related tool to operate and set the process

PC3. identify Tactical Computer Terminal (TCT) related tool to operate and set the process

PC4. identify STHT related tool to operate and set the process

PC5. identify Private Communication Technology (PCT) related tool to operate and set the process

PC6. prepare Highly Accelerated Life Testing (HALT) related tool to operate and set the process

PC7. prepare thermal shock related tool to operate and set the process

PC8. prepare hardness related tool to operate and set the process

PC9. verify Thermal Energy Storage Technology (TEST) related tool to operate and set the process

PC10. identify Dynamic Language Runtime (DLR) board level realibility (temp. & voltage) related tool to operate and set the process

PC11. verify warpage measurement (shadomoire etc) related to tool operation and process set up

PC12. determine system level quality related tool to operate and set the process

PC13. prepare burning related tool to operate and set the process

PC14. prepare SOP and other documents should be created

PC15. test conditions expert

PC16. prepare safety rules and documents

PC17. prepare presentation in such a way that help process engineers to optimize process to reduce failures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. how to verify File Allocation Table (FAT) creation

KU2. the importance of ensuring the report adheres to verify the dimension specifications to meet the customer requirements

KU3. the importance of ensuring the functioning of the main controller and the main panel as per requirements given to the manufacturer

KU4. the importance of ensuring all equipment consumable specifications, dimensions and other parameters are clearly defined by the process and equipment engineer

KU5. the importance of verifying equipment and process parameters

KU6. the importance of ensuring the sample size required to buy off machines is defined clearly with specification and CPK Requirements

KU7. the importance of verifying low cost and high reliable raw material and consumables

KU8. the importance of managing the quality and reliability data for each characterization, feasibility and qualification build

KU9. how to generate Process Change Notification (PCN)

KU10. how to prepare a qualification report

KU11. the process of transition from low volume mass production to high-volume mass production

KU12. the importance of checking 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 prioritize 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
Quality and Realibity Equipment Knowledge	**40**	**50**	**-**	**10**
PC1. identify Moisture Sensitivity Level (MSL) related tool to operate and set the process	-	-	-	-
PC2. identify Highly Accelerated Stress Test (HAST) (Bias/Based Highly Accelerated Stress Test- BHAST/ Understanding Highly Accelerated Stress Test UHAST) related tool to operate and set the process	-	-	-	-
PC3. identify Tactical Computer Terminal (TCT) related tool to operate and set the process	-	-	-	-
PC4. identify STHT related tool to operate and set the process	-	-	-	-
PC5. identify Private Communication Technology (PCT) related tool to operate and set the process	-	-	-	-
PC6. prepare Highly Accelerated Life Testing (HALT) related tool to operate and set the process	-	-	-	-
PC7. prepare thermal shock related tool to operate and set the process	-	-	-	-
PC8. prepare hardness related tool to operate and set the process	-	-	-	-
PC9. verify Thermal Energy Storage Technology (TEST) related tool to operate and set the process	-	-	-	-
PC10. identify Dynamic Language Runtime (DLR) board level realibility (temp. & voltage) related tool to operate and set the process	-	-	-	-
PC11. verify warpage measurement (shadomoire etc) related to tool operation and process set up	-	-	-	-
PC12. determine system level quality related tool to operate and set the process	-	-	-	-
PC13. prepare burning related tool to operate and set the process	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. prepare SOP and other documents should be created	-	-	-	-
PC15. test conditions expert	-	-	-	-
PC16. prepare safety rules and documents	-	-	-	-
PC17. prepare presentation in such a way that help process engineers to optimize process to reduce failures	-	-	-	-
NOS Total	**40**	**50**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N0131
NOS Name	Knowledge of Quality & Reliability Equipment
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/N0128.Check the Internal Quality	40	50	-	10	100	20
ELE/N0129.Check the Customer Quality	40	50	-	10	100	20
ELE/N0130.Analysis Data	40	50	-	10	100	20
ELE/N0131.Knowledge of Quality & Reliability Equipment	40	50	-	10	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	20
Total	**180**	**230**	**-**	**40**	**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.