



Model Curriculum

QP Name: CNC Milling

QP Code: CSC/Q0417

Version: 1.0

NSQF Level: 4.5

Model Curriculum Version: 1.0

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Training Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Fire Fighting & Safety Equipment
Occupation	Design
Country	India
NSQF Level	4.5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification and Experience	<p>Completed 1st year of UG OR Pursuing 1st year of UG and continuous education OR Pursuing 3rd year of 3-year diploma after 10th and continuous education OR Pursuing 2nd year of 2- year diploma after 12 and continuous education OR 10th Grade pass with 1 year NTC plus 1 year NAC plus 1 year CITS OR 10th grade pass with 1 year NTC plus CITS with 1 year of relevant experience OR 8th Grade pass with 2 year NTC plus 1 year NAC plus 1 year CITS with 1 year of relevant experience OR Previous relevant Qualification of NSQF Level 3.5 and with minimum education as 8th Grade pass with 3 year relevant experience OR Previous relevant Qualification of NSQF Level 4 and with minimum education as 8th Grade pass with 1.5 year relevant experience</p>
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 Years
Last Reviewed On	
Next Review Date	

NSQC Approval Date	
QP Version	1.0
Model Curriculum Creation Date	
Model Curriculum Valid Up to Date	
Model Curriculum Version	1.0
Minimum Duration of the Course	510 Hours
Maximum Duration of the Course	510 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Interpret engineering drawings and following the specifications
- Generate the processes and programs with the CAD/CAM system and/or G and M-codes
- Set up the tools, work holding devices, and work pieces on the CNC milling centre
- Manipulate cutting conditions, based on the properties of the material and tools
- Operate, inspect, and maintain the accuracy of dimensions within the specified tolerances
- Optimize the process, taking into account the production type: whether large quantities of one-part, small batches, or one-of-a-kind items.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
CSC/N0460: Work organization and management milling NOS Version- 1.0 NSQF Level- 4.5	20:00	40:00	0:00	00:00	60:00
Module 1: Create a smart e-factory	02:00	00:00	0:00	00:00	02:00
Module 2: Work organization and management	18:00	40:00	0:00	00:00	58:00
CSC/N0441: Interpret engineering drawings and follow the specification NOS Version-1.0 NSQF Level- 4.5	25:00	65:00	0:00	00:00	90:00
Module 3: Interpret engineering drawings and follow the specification	25:00	65:00	0:00	00:00	90:00
CSC/N0442 Perform Process planning NOS Version- 1.0 NSQF Level- 4.5	20:00	40:00	0:00	00:00	60:00

Module 4: Perform Process planning	20:00	40:00	0:00	00:00	60:00
CSC/N0443 Programming NOS Version- 1.0 NSQF Level- 4.5	15:00	45:00	0:00	00:00	60:00
Module 5: Program CNC machine for milling operation	15:00	45:00	0:00	00:00	60:00
CSC/N0444 Performing metrology and inspection on the workpiece NOS Version- 1.0 NSQF Level- 4.5	30:00	30:00	0:00	00:00	60:00
Module 6:Performing metrology and inspection on workpiece	30:00	30:00	0:00	00:00	60:00
CSC/N0445 Operating NOS Version- 1.0 NSQF Level- 4.5	20:00	70:00	0:00	00:00	90:00
Module 7: Perform the operations of CNC milling machine.	20:00	70:00	0:00	00:00	90:00
CSC/N0446 Machining NOS Version- 1.0 NSQF Level- 4.5	20:00	40:00	0:00	00:00	60:00
Module 8: Follow the Machining parameters for CNC milling	20:00	40:00	0:00	00:00	60:00
Total Duration	150:00	330:00	90:00	00:00	570:00

Module Details

Module 1: Introduction to the role of CNC Milling

Bridge Module aligned to CSC/N0460 V1.0

Terminal Outcomes:

- Accurately interpret engineering drawings related to CNC milling.
- Follow specifications outlined in engineering drawings to produce precise CNC milling outputs.

Duration: 02:00	Duration: 0:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the size and scope of the capital good industry and its sub-sectors. • Discuss the role and responsibilities of CNC Milling. • Identify various employment opportunities for CNC Milling. 	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Work organization and management

Bridge Module aligned to CSC/N0460 V1.0

Terminal Outcomes:

- Exhibit effective work organization skills in the context of CNC milling operations.
- Apply principles of time management and resource allocation for efficient production.

Duration: 18:00	Duration: 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the purpose and functionality of commonly used computer-related professional software in CNC milling. • Describe the role of simulation software in optimizing CNC milling processes. • Describe the relevant quality standards and regulations applicable to CNC milling. • Discuss the importance of adhering to industry standards for precision and quality in CNC milling. • Explain health and safety regulations applicable to CNC milling environments. • Explain the correct usage of personal protective equipment (PPE) in CNC milling operations. • Discuss how to develop a safety protocol for CNC milling processes to ensure a secure working environment. • Describe the integration of IT in CNC milling processes and its impact on efficiency. • Discuss the role of Enterprise Resource Planning (ERP) software in managing CNC milling projects. • Interpret complex mathematical models for CNC milling simulations and programming. • Evaluate innovative approaches to solve complex design challenges in CNC milling. • Discuss the importance of 	<ul style="list-style-type: none"> • Demonstrate proficiency in using CAD/CAM software to design and program CNC milling operations. • Utilize simulation software to validate and optimize toolpaths before actual milling. • Demonstrate steps to Implement quality control measures during CNC milling processes, ensuring adherence to standards. • Conduct inspections and measurements to verify the quality of machined components. • Implement and enforce safety protocols in a CNC milling workshop. • Conduct safety audits and recommend improvements to enhance workplace safety. • Integrate IT tools for data analysis, monitoring, and reporting in CNC milling projects. • Use ERP software to manage resources, scheduling, and logistics for CNC milling operations. • Program CNC machines using mathematical algorithms for precise tool movements. • Optimize toolpaths using mathematical models to minimize production time and material usage. • Troubleshoot and resolve technical challenges in CNC milling processes. • Propose and implement innovative solutions to enhance the efficiency of CNC milling operations.

<p>troubleshooting and addressing technological issues in CNC milling processes.</p> <ul style="list-style-type: none"> • Discuss creative solutions for enhancing efficiency and precision in CNC milling operations. 	<ul style="list-style-type: none"> • Utilize software tools for data analysis and reporting in the context of CNC milling. • Apply trigonometry and geometry principles to calculate toolpaths and coordinates in CNC milling. • Analyze mathematical algorithms for optimizing tool movements and minimizing material wastage. •
Classroom Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator’s Guide, Participant’s Handbook.	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Module 3: Interpret engineering drawings and follow the specification

Bridge Module aligned to CSC/N0441 V1.0

Terminal Outcomes:

- Interpret engineering drawings accurately and identify key features.
- Follow specifications outlined in engineering drawings to produce precise CNC turning outputs.

Duration: 25:00	Duration: 65:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the use of engineering drawings, including symbols, notations, and various views, to accurately understand the design intent. • Explain the application of specifications outlined in engineering drawings, ensuring compliance with design requirements and industry standards. • Describe the process of locating and distinguishing between main dimensions (critical dimensions for fit and function) and secondary dimensions (non-critical dimensions) on engineering drawings. • Discuss various ISO standards related to surface finishes, including the ability to identify and apply appropriate standards for a given engineering component or product. • Discuss ISO standards governing geometrical form, enabling them to recognize and interpret geometric features accurately according to industry specifications. • Describe the application of ISO standards for positional tolerances, ensuring students can interpret and apply the required tolerances as per the design specifications. 	<ul style="list-style-type: none"> • Demonstrate steps to interpret real-world engineering drawings accurately, considering the practical implications of design intent. • Show how to locate and identify main and secondary dimensions on actual engineering components, emphasizing the importance of accuracy in measurement and dimensioning. • Demonstrate the ability to select and apply the appropriate ISO standards for surface finishes, considering factors such as material, function, and manufacturing processes. • Show how to work with three-dimensional models to identify and interpret geometric features, ensuring a practical understanding of how geometrical form specifications translate into physical objects. • Show how to apply positional tolerance standards to produce components accurately, highlighting the importance of precision in manufacturing processes. • Demonstrate with the help of a roleplay practical problem-solving scenarios where they need to interpret complex drawings and specifications, emphasizing the application of their knowledge in real-world engineering challenges.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Module 4: Perform process planning

Bridge Module aligned to CSC/N0442 V1.0

Terminal Outcomes:

- Able to plan for the successful execution of programming and operation/machining.
- Identification of the sequence of operations which will be implanted.

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Define and classify various machining features in the context of CNC milling. • Describe the key characteristics of different machining features such as pockets, holes, and contours. • Describe and compare different work holding solutions for CNC milling. • Discuss the factors influencing the choice of work holding, such as part geometry, material properties, and machining operations. • Explain the types of cutting tools used in CNC milling and their applications. • Discuss the factors influencing cutting tool selection, including material compatibility, tool geometry, and tool life. • Define cutting parameters, including speed, feed, and depth of cut. • Discuss how cutting parameters are influenced by operation sequence, material type, and the nature of the machining operation. • Describe the importance of operation sequencing in CNC milling. • Discuss how to develop strategies for optimizing the sequence of machining operations for efficiency and precision. • Explain different materials commonly used in CNC milling. • Explain how material properties impact machining processes and parameter selection. 	<ul style="list-style-type: none"> • Demonstrate the ability to identify and set various machining features using CAD/CAM software. • Apply knowledge to interpret engineering drawings and translate them into machining processes. • Select and implement appropriate work holding solutions for different parts on a CNC milling machine. • Troubleshoot and adjust work holding setups as needed for optimal stability and precision. • Choose suitable cutting tools for specific CNC milling tasks. • Install and set up cutting tools in the machine tool holder, considering tool offsets and tool-changing procedures. • Calculate and input cutting parameters based on the given factors like material type, operation sequence, and machining operation. • Adjust parameters in real-time to optimize cutting performance, surface finish, and tool life. • Develop and execute operation sequences for CNC milling projects. • Optimize the order of operations to minimize tool changes, reduce setup times, and enhance overall efficiency. • Operate a CNC milling machine to execute planned processes. • Monitor and adjust machining parameters during the operation for

	<p>quality control and adherence to specifications.</p> <ul style="list-style-type: none"> • Adhere to safety protocols when setting up and operating CNC milling machines. • Demonstrate an understanding of potential hazards and implement safety measures to ensure a secure working environment.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Module 5: Program CNC machine for milling operation

Bridge Module aligned to CSC/N0443 V1.0

Terminal Outcomes:

- Understand programming as the creation of a logical process plan, with the ability to analyze and break down machining tasks into sequential steps.
- Effectively use CAM/CAD systems to generate CNC programs, translating design specifications into executable code for machining operations.

Duration: 15:00	Duration: 45:00
Theory – Key Learning Outcomes <ul style="list-style-type: none"> • Explain different production types in CNC milling, such as prototyping, batch production, and mass production. • Discuss part specifications and determine the appropriate methods for achieving required tolerances and finishes. • Discuss and evaluate various skill-specific software tools for CNC milling, such as CAM software, simulation tools, and machine control software. • Describe various hardware components used in CNC milling machines and their functions. • Describe the role of CAD/CAM systems in CNC milling and how they facilitate the generation of machine-readable programs. • Explain the process of transitioning from paper drawings to digital formats. • Discuss and select appropriate methods (wireframe, surface, or solid modeling) for creating geometry based on part complexity and production requirements. 	Practical – Key Learning Outcomes <ul style="list-style-type: none"> • Evaluate the production requirements and select the most suitable machining methods, such as 2D milling, 3D milling, or contour milling. • Demonstrate the ability to choose cutting tools based on material properties and machining parameters. • Operate skill-specific software tools proficiently for CNC milling, including setting up toolpaths, optimizing feeds and speeds, and simulating machining processes. • Utilize and troubleshoot related hardware components, such as CNC controllers and tool change systems. • Generate CNC programs using CAD/CAM systems, translating design specifications into machine-readable code. • Validate and optimize CNC programs through simulation and testing, ensuring accuracy and efficiency in the machining process. • Develop skills in translating paper-based engineering drawings into digital formats using CAD tools. • Create accurate wireframe, surface, or solid models based on paper drawings, considering geometric constraints and machining feasibility.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Module 6: Perform metrology and inspection on workpiece

Bridge Module aligned to CSC/N0444 V1.0

Terminal Outcomes:

- Understanding of various tools and gauging instruments, as well as the ability to apply main measuring techniques.
- utilizing appropriate measuring tools and instruments across a range of applications, including making precise measurements on threaded elements

Duration: 30:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Define metrology and its significance in CNC milling. • Explain the fundamental principles of measurement, accuracy, and precision. • Discuss the importance of standardized units in metrology. • Describe various measuring tools and instruments used in CNC milling. • Explain the purpose and application of calipers, micrometers, depth gauges, and height gauges in CNC milling. • Elaborate on the criteria for selecting appropriate measuring tools based on the characteristics of the workpiece and machining requirements. • Describe the advantages and limitations of different measuring tools for specific CNC milling applications. • Define threaded elements and their role in CNC milling. • Discuss the importance of accurate measurements in threaded elements for ensuring proper fit and function. • Describe the use of thread pitch gauges and thread micrometers in measuring threaded elements. • Explain the procedure for measuring external and internal threads on machined components. • Define tolerance and fit and their relevance in CNC milling. • Discuss the impact of measurement accuracy on achieving desired tolerances and fits in threaded elements. 	<ul style="list-style-type: none"> • Demonstrate proper techniques for handling and using measuring tools safely. • Perform basic maintenance and calibration checks on measuring tools. • Apply measurement techniques to accurately measure dimensions of workpieces in CNC milling. • Interpret measurement readings and record data for documentation purposes. • Execute measurements on threaded elements using appropriate tools and instruments. • Apply techniques for measuring pitch diameter, major diameter, and minor diameter of threaded features. • Analyze measurement results to determine if the workpiece meets specified tolerances. • Identify potential issues related to threaded elements based on measurement data. • Develop strategies for addressing measurement discrepancies and implementing corrective actions. • Demonstrate the ability to make adjustments to achieve the desired fit and tolerance in threaded elements. • Create clear and accurate documentation of measurements performed on CNC-milled components. • Develop a systematic approach to maintaining measurement records for traceability and quality control.
Classroom Aids	

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter

Module 7: Perform the operations of CNC milling machine.

Bridge Module aligned to CSC/N0445 V1.0

Terminal Outcomes:

- Identify the specific functional parameters required for CNC milling machine operations based on project specifications.
- Demonstrate the ability to accurately measure workpieces using appropriate tools.

Duration: 20:00	Duration: 70:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe various measurement tools used in CNC milling. • Explain the principles behind measurement tools such as calipers, micrometers, and depth gauges. • Describe the proper use of measurement tools for precision in CNC milling operations. • Discuss the use of technical drawings and schematics related to CNC milling. • Explain geometric tolerances, dimensions, and surface finishes on technical drawings. • Describe the relationship between technical drawings and CNC milling processes. • Describe the use of different types of cutting tools used in CNC milling. • Explain the characteristics and applications of various cutting tool materials. • Explain the geometry of cutting tools, including angles, rake, clearance, and cutting edge profiles. • Describe how cutting tool geometry affects surface finish, tool life, and overall machining performance. 	<ul style="list-style-type: none"> • Accurately measure and mark workpieces using appropriate measurement tools. • Demonstrate precision in marking out dimensions and reference points on materials for CNC milling. • Demonstrate steps to safely handle and mount cutting tools on CNC milling machines. • Perform tool changes efficiently, considering tool holders, collets, and clamping mechanisms. • Set up CNC milling machines, including securing workpieces and loading cutting tools. • Execute basic milling operations such as facing, profiling, and pocketing. • Adjust machine parameters (feeds, speeds, and depths of cut) based on material and tooling specifications. • Analyze job requirements and design functional parameters for CNC milling operations. • Develop a machining plan that considers toolpaths, tool changes, and cutting parameters for optimal results. • Perform quality control checks on machined parts using measurement tools. • Identify and rectify deviations from specified dimensions and tolerances. • Diagnose and address common issues encountered during CNC milling operations. • Troubleshoot tool wear, chatter, and other machining-related problems. • Adhere to safety protocols and practices while operating CNC milling machines. • Demonstrate knowledge of emergency procedures and hazard mitigation

	strategies.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Module 8: Follow the Machining parameters for CNC milling

Bridge Module aligned to CSC/N0446 V1.0

Terminal Outcomes:

- The individual will be adept at optimizing machining strategies, defining and adjusting cutting parameters based on the operation sequence, material type, type of operation, and CNC machine tool.
- Demonstrate advanced proficiency in CNC milling machine operations, including the identification and designation of various machining processes.

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the fundamental machining processes, including facing, roughing, finishing, external contours, island milling, milling channels, and various types of pocket milling. • Differentiate between the types of machining operations and their applications. • Elaborate the factors influencing machining strategy optimization, such as material properties, tool selection, and desired surface finish. • Discuss skills required to analyze and choose the most efficient machining strategy for specific components. • Discuss about cutting parameters, including speed, feed, and depth of cut, and their impact on machining performance. • Discuss the requirement of the ability to adjust cutting parameters based on the operation sequence, material type, type of operation, and CNC machine tool. • Explain the steps involved in setting up and initializing the CNC milling machine for cutting. • Discuss how to load raw material into the CNC milling machine and initiate the cutting process. • Explain the concept of machining a solid block and its applications. • Discuss the process of transforming a solid block into a desired component using CNC milling. • Explain the techniques of facing, roughing, finishing, external contours, island milling, milling channels, and different types of pocket milling. 	<ul style="list-style-type: none"> • Show how to operate a CNC milling machine to execute various machining processes. • Demonstrate steps to execute machining operations on different materials, adjusting cutting parameters as required. • Demonstrate the ability to create figurative pockets, circular and rectangular pockets, taper ribs, and thread milling using a CNC milling machine. • Demonstrate steps to execute tapping, drilling, 3D machining (roughing and finishing), and other precision machining operations with accuracy. • Use canned cycles effectively to streamline the machining process. • Master island milling, milling channels, and other advanced milling techniques. • Demonstrate the steps appropriately and achieve proficiency in creating external contours with precision. • Show how to analyze real-world machining scenarios and optimize machining strategies based on given parameters. • Implement adjustments to cutting parameters for enhanced efficiency and quality. • Demonstrate steps to transform a solid block into a finished product, showcasing competence in the entire machining process. • Demonstrate efficiency in handling raw materials and minimizing material wastage.

<ul style="list-style-type: none"> • Discuss appropriate machining operations based on component design and specifications. • Discuss the importance of being proficient in specific machining operations such as tapping, drilling, 3D machining (roughing and finishing), etc. 	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
CNC Milling machine, CNC milling tools, Cutting Tools, Tool Holders, Tool catalogues, Measuring instruments, Vice or clamp set for job holding, Tool Presetter	

Annexure

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Degree	Degree in Mechanical/ Electronics/ Mechatronics Engineering	7				knowledge required in the relevant field

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "CNC Milling" mapped to QP: "CSC/Q0417,V1.0". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer(VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601 V3.0". Minimum accepted as per respective SSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Degree	Degree in Mechanical/ Electronics/ Mechatronics Engineering	7		0		Practical skills and knowledge required in the relevant field

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: “CNC Milling” mapped to QP: “CSC/Q0417, v1.0”. Minimum accepted score is 80%	Certified for the Job Role: “Assessor(VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2701,V3.0”, with a minimum score of 80%.

Assessment Strategy

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- The assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment

To ensure a conducive environment for conducting a test, the trainer will:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be 10 a.m. and 5 p.m. respectively
- Ensure there are 2 Assessors if the batch size is more than 30.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)
- Question papers created by the SME verified by the other subject Matter Experts
- Questions are mapped with NOS and PC
- Question papers are prepared considering that levels 1 to 3 are for the unskilled & semi-skilled individuals, and levels 4 and above are for the skilled, supervisor & higher management
- The assessor must be ToA certified and the trainer must be ToT Certified
- The assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme-specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:

To verify the details submitted by the training centre, the assessor will undertake:

- A surprise visit to the assessment location
- A random audit of the batch
- A random audit of any candidate

6. Method for assessment documentation, archiving, and access

To protect the assessment papers and information, the assessor will ensure:

- Hard copies of the documents are stored

- Soft copies of the documents & photographs of the assessment are uploaded/accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored on the Hard drive

References

Glossary

Term	Description
Declarative knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning	The key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SSC	Sector Skill Council
TC	Trainer Certificate
ToA	Training of Assessors
ToT	Training of Trainers
TP	Training Provider