



## QUALIFICATION FILE

### CNC Turning

Short Term Training (STT)  Long Term Training (LT)  Apprenticeship

Upskilling  Dual/Flexi Qualification  For ToT  For ToA

General  Multi-skill (MS)  Cross Sectoral (CS)  Future Skills  OEM

NCrF/NSQF Level: 4.5

Submitted By:

Capital Goods and Strategic Skill Council

39,1st Floor, Samyak Tower, Pusa Rd, Block 9A, WEA, Karol Bagh, New Delhi, 110005

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## Section 1: Basic Details

1. <b>Qualification Name</b>	CNC Turning										
2. <b>Sector/s</b>	Capital goods and Strategic Manufacturing										
3. <b>Type of Qualification:</b> <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM	<b>NQR Code &amp; version of existing/previous qualification:</b> (change to previous, once approved)	<b>Qualification Name of existing/previous version:</b>									
4. a. OEM Name b. Qualification Name (Wherever applicable)	NA										
5. <b>National Qualification Register (NQR) Code &amp; Version</b> <i>(Will be issued after NSQC approval)</i>	QG-4.5-CG-01809-2024-V1-CGSC	6. <b>NCrF/NSQF Level: 4.5</b>									
7. <b>Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exists also &amp; provide details in annexure)</b>	Certificate										
8. <b>Brief Description of the Qualification</b>	<p>The individual in this job is responsible for a broad variety of machining processes, such as grinding, welding, electrical discharging, milling and also turning.</p> <p>The CNC Turning machinist uses a computer to tell the lathe how to move the tools and cut the part to the desired shape. They must also set up the lathe with all the necessary clamping devices, support devices, and cutting tools. These tools can cut almost every material (stainless steel, plastic, soft steel, aluminium, bronze, and so on). But the machinist has to choose well to avoid temperature variations, tool wear or vibration. Those factors influence the product and it can result in poor quality.</p> <p>When the machine starts cutting material, the machinist makes sure that the dimensions exactly fit the customer specifications. For this, very accurate inspection tools are used. Once the machine is set up, the CNC-Turning machinist also monitors and optimizes the processes, to achieve even faster and better results for all the following parts.</p>										
9. <b>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</b>	<p><b>a. Entry Qualification &amp; Relevant Experience:</b></p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Completed 1st year of UG</td> <td></td> </tr> <tr> <td>2.</td> <td>Pursuing 1st year of UG and continuous education</td> <td></td> </tr> </tbody> </table>		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1.	Completed 1st year of UG		2.	Pursuing 1st year of UG and continuous education	
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)									
1.	Completed 1st year of UG										
2.	Pursuing 1st year of UG and continuous education										

			3. Pursuing 3rd year of 3-year diploma after 10th and continuous education																					
			4. Pursuing 2nd year of 2- year diploma after 12 and continuous education																					
			5 10th Grade pass with 1 year NTC plus 1 year NAC plus 1 year CITS																					
			6 10th grade pass with 1 year NTC plus CITS	1 year Experience required																				
			7 8th Grade pass with 2 year NTC plus 1 year NAC plus 1 year CITS	1 year Experience required																				
			8 Previous relevant Qualification of NSQF Level 3.5 and with minimum education as 8th Grade pass	3 year relevant experience																				
			9 Previous relevant Qualification of NSQF Level 4 and with minimum education as 8th Grade pass	1.5 year relevant experience																				
			<b>b. Age:</b> 21																					
10	<b>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</b>	17				11. <b>Common Cost Norm Category (I/II/III) (wherever applicable): I</b>																		
12	<b>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</b>	NA																						
13	<b>Training Duration by Modes of Training Delivery (Specify <i>Total Duration</i> as per selected training delivery modes and as per requirement of the qualification)</b>	<input checked="" type="checkbox"/> Offline <input type="checkbox"/> Online <input type="checkbox"/> Blended <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Training Delivery Modes</th> <th>Theory (Hours)</th> <th>Practical (Hours)</th> <th>OJT Mandatory (Hours)</th> <th>OJT Recommended (Hours)</th> <th>Total (Hours)</th> </tr> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>150</td> <td>270</td> <td>90</td> <td></td> <td>510</td> </tr> <tr> <td>Online</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(Refer Blended Learning Annexure for details)</p>	Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	150	270	90		510	Online									
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																			
Classroom (offline)	150	270	90		510																			
Online																								

14	<b>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</b>	NCO-2015/7223.40
15	<b>Progression path after attaining the qualification (Please show Professional and Academic progression)</b>	CNC Programmer, Manufacturing Engineer
16	<b>Other Indian languages in which the Qualification &amp; Model Curriculum are being submitted</b>	No
17	<b>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:
18	<b>Is the Job Role Amenable to Persons with Disability</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If "Yes", specify applicable type of Disability:
19	<b>How Participation of Women will be Encouraged</b>	The qualification pack empowers women to participate and thereby creating employment and research openings in different sectors
20	<b>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
21	<b>Is Qualification Suitable to be Offered in Schools/Colleges</b>	Schools <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No School: Atal Tinkering labs College: Atal Incubation, MSME incubation and state incubators
22	<b>Name and Contact Details of Submitting / Awarding Body SPOC (In case of CS or MS, provide details of both Lead AB &amp; Supporting ABs)</b>	Name: Ms. Shalini Singh Email: <a href="mailto:ceo@cgssc.org">ceo@cgssc.org</a> Website: <a href="http://www.cgsc.in">www.cgsc.in</a> <span style="float: right;">Contact No.: 9654310244</span>
23	<b>Final Approval Date by NSQC: <span style="color: green;">06/02/2024</span></b>	<b>24. Validity Duration: 2 years</b> <span style="float: right;"><b>25. Next Review Date: 06/02/2026</b></span>

## Section 2: Module Summary

## NOS/s of Qualifications

(In exceptional cases these could be described as components)

## Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

**Th.**-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory **Training Rec.**-Recommended **Proj.**-Project

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/ Non-Core	NCrF/ NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT - Man	OJT- Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.	Work organization and management (turning)	CSC/N0455 V1.0	Non-Core	4.5	2	20	40	-	-	60	20	30			50	11
2.	Interpret engineering drawings (turning)	CSC/N0456 V1.0	Core	4.5	2	10	20			30	10	40			50	11
3.	Process planning (turning)	CSC/N0457 V1.0	Core	4.5	3	30	60	-	-	90	10	40			50	11
4.	Programming (turning)	CSC/N0458 V1.0	Core	4.5	3	40	50	-	-	90	40	40			80	20
5.	Performing metrology and inspection on the workpiece	CSC/N0461 V1.0	Core	4.5	3	20	40	-	-	60	20	30			50	11
6.	Setting and operating CNC lathes	CSC/N0452 V1.0	Core	4.5	2	20	40	-	-	60	30	70			100	25
7.	Finalize and deliver work pieces	CSC/N0453 V1.0	Core	4.5	1	10	20			30	20	30			50	11
<b>Duration (in Hours) / Total Marks</b>					16	150	270	90		510	120	280			430	100

## Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:

**Minimum Pass Percentage – Aggregate at qualification level:** 70 % (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

**Minimum Pass Percentage – NOS/Module-wise:** 70 % (Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)

## Section 3: Training Related

1.	<b>Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)</b>	B. Tech in Electrical/ Mechatronics/ Industrial/ Information Technology with 7 years of relevant experience.
2.	<b>Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)</b>	B. Tech in Electrical/ Mechatronics/ Industrial/ Information Technology with 10 years of relevant experience.
3.	<b>Tools and Equipment Required for Training</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If "Yes", details to be provided in Annexure)
4.	<b>In Case of Revised Qualification, Details of Any Upskilling Required for Trainer</b>	

## Section 4: Assessment Related

1.	<b>Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>	B. Tech in Electrical/ Mechatronics/ Industrial/ Information Technology with 7 years of relevant experience.
2.	<b>Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>	B. Tech in Electrical/ Mechatronics/ Industrial/ Information Technology with 7 years of relevant experience.
3.	<b>Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>	B. Tech in Electrical/ Mechatronics/ Industrial/ Information Technology with 10 years of relevant experience.

4.	<b>Assessment Mode</b> (Specify the assessment mode)	Offline
5.	<b>Tools and Equipment Required for Assessment</b>	<input checked="" type="checkbox"/> Same as for training <input type="checkbox"/> Yes <input type="checkbox"/> No (details to be provided in Annexure-if it is different for Assessment)

## Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	<b>Latest Skill Gap Study (not older than 2 years) (Yes/No):</b> No
2.	<b>Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):</b> Yes
3.	<b>Government /Industry initiatives/ requirement (Yes/No):</b> Yes
4.	<b>Number of Industry validation provided:</b>
5.	<b>Estimated nos. of persons to be trained and employed:</b>
6.	<b>Evidence of Concurrence/Consultation with Line Ministry/State Departments:</b> <i>In Progress</i> If "No", why:

## Section 6: Annexure &amp; Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	<b>Annexure:</b> NCrF/NSQF level justification based on NCrF level/NSQF descriptors (Mandatory)	<i>Annexure: Evidence of Level</i>
2.	<b>Annexure:</b> List of tools and equipment relevant for qualification (Mandatory, except in case of online course)	<i>Annexure: Tools and Equipment (Lab Set-Up)</i>
3.	<b>Annexure:</b> Detailed Assessment Criteria (Mandatory)	<i>Annexure: Detailed Assessment Criteria</i>
4.	<b>Annexure:</b> Assessment Strategy (Mandatory)	<i>Annexure: Assessment Strategy</i>
5.	<b>Annexure:</b> Blended Learning (Mandatory, in case selected Mode of delivery is "Blended Learning")	
6.	<b>Annexure:</b> Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)	
7.	<b>Annexure:</b> Acronym and Glossary (Optional)	<i>Annexure: Acronym and Glossary</i>
8.	<b>Supporting Document:</b> Model Curriculum (Mandatory – Public view)	<i>MC_CG IIoT Data Analytics Engineer</i>
9.	<b>Supporting Document:</b> Career Progression (Mandatory - Public view)	<i>Summary sheet</i>
10.	<b>Supporting Document:</b> Occupational Map (Mandatory)	<i>Occupational Mapping</i>

11.	<b>Supporting Document:</b> Assessment SOP (Mandatory)	Attached in MC_CG IIoT Data Analytics Engineer
12.	<b>Any other document you wish to submit:</b>	

## Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
<b>Professional Theoretical Knowledge/Process</b>	<ul style="list-style-type: none"> <li>• Work organization and management</li> <li>• Interpret engineering drawings</li> <li>• Process planning</li> <li>• Programming</li> <li>• Metrology</li> <li>• Setting and operating CNC lathes</li> <li>• Finalize and deliver work pieces</li> </ul>	<p>As can be inferred from the learning outcomes and performance criteria of the Qualification listed in the adjacent cell the CNC Turning Machinist requires well developed skill, with clear choice of procedures in familiar context.</p> <p>Hence NSQF level for this descriptor is 4.5.</p>	4.5
<b>Professional and Technical Skills/ Expertise/ Professional Knowledge</b>	<ul style="list-style-type: none"> <li>• The material needs to be machined and tool materials which requires knowledge of facts, principles processes and general concepts in working field.</li> <li>• CNC operator (Turning) should have complete knowledge of CNC Machining.</li> <li>• CNC operator (Turning) should have knowledge of operations of CNC</li> </ul>	<p>As can be inferred from the knowledge and understanding related points mentioned in the adjacent cell, which have been taken from the CNC Turning Machinist qualification pack, job role holder must have a knowledge of facts, principles, processes and general concepts, in a field of work or study</p> <p>Hence NSQF level for this descriptor is 4.5.</p>	4.5

	machines including turning machines.		
<b>Employment Readiness &amp; Entrepreneurship Skills &amp; Mind-set/Professional Skill</b>	<ul style="list-style-type: none"> <li>• The ability to apply practical knowledge and professional skill in interpreting the drawing for machining operations.</li> <li>• The ability to identify various operations required to make the job and further be able to sequence the same.</li> <li>• Use different types of measuring instruments to maintain the desired quality.</li> <li>• Selection of proper cutting speed, feed and depth of cut which depends on the type of material, process and cutting tool to generate the programme for manufacturing the job.</li> <li>• Edit the program whenever required and execute the same for manufacturing.</li> <li>• Send the program to the machine through DNC for optimum utilization of resources.</li> <li>• Optimize the data transfer from computer to machine for smooth manufacturing process. Identify the material which will be</li> </ul>	<p>As can be inferred from the knowledge and understanding related points mentioned in the adjacent cell, which have been taken from the CNC Turning qualification pack, job role holder must have a knowledge of facts, principles, processes, and general concepts, in a field of work or study</p> <p>Hence NSQF level for this descriptor is 4.5.</p>	4.5

	<ul style="list-style-type: none"> <li>used for manufacturing product.</li> <li>Identify and select the proper machines, cutting tools and measuring instruments to carry out the job.</li> <li>Read the drawing and conceive the idea to generate program and recognize the fault on the machine during operation.</li> </ul>		
<b>Broad Learning Outcomes/Core Skill</b>	<ul style="list-style-type: none"> <li>Calculate the machining parameters like cutting speed, feed and depth of cut.</li> <li>Communicate to the supervisors/ coworkers if anything goes wrong during the process.</li> <li>Aware about the social as well as environmental situations during working.</li> <li>CNC operator (Turning) is required to have numerical abilities, communication skills to receive and provide or transmit information to the appropriate person.</li> <li>Use appropriate measuring techniques, units and number systems to express degree of accuracy units and number systems representing degree of accuracy</li> </ul>	<p>As can be inferred from the knowledge and understanding related points mentioned in the adjacent cell, which have been taken from the CNC Turning Machinist qualification pack, job role holder must have a knowledge of facts, principles, processes, and general concepts, in a field of work or study.</p> <p>Hence NSQF level for this descriptor is 4.5.</p>	4.5

	<p>Interpretation and express tolerance in terms of limits on dimensions</p> <ul style="list-style-type: none"> <li>• Communicate to the appropriate person in regards to health, safety, first aid etc.</li> </ul>		
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>• Identify the drawing properly, create model and generate program for the particular profile on the work piece independently and solve the related problems of the coworkers.</li> <li>• Check-up procedures to ensure that project objectives are finished within specified time frames are developed.</li> <li>• Checkup procedures to ensure that agreed ethical and legal requirements are met are drawn.</li> <li>• CNC operator (Turning &amp; Milling) is responsible for own work. She/he is expected to have openness to learning, ability to plan and organize own work and identify and solve problems in the course of working.</li> <li>• Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness</li> </ul>	<p>As can be inferred from the knowledge and understanding related points mentioned in the adjacent cell, the CNC Turning Machinist must take responsibility for own work and learning and some responsibility for others' works and learning.</p> <p>Hence NSQF level for this descriptor is 4.5</p>	4.5

## Annexure: Tools and Equipment (Lab Set-Up)

## List of Tools and Equipment

**Batch Size:** 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1.	CNC Turning Machine:  CNC lathe or turning center.		1 each
2.	Cutting Tools: Turning inserts Boring bars Threading tools		1 each
3.	Tool Holders:  Turning tool holders Boring bar holders Threading tool holders		1 each
4.	Workholding Devices:  Chuck or collet systems Faceplates Mandrels		1 each
5.	Measuring Instruments:  Calipers Micrometers Dial indicators		1 each
6.	Cutting Fluids and Lubricants:  Coolants for temperature control and chip evacuation Lubricants for tool and machine maintenance		1 each
7.	Tool Presetter		1 each

9.	Tool cabinets or tool cribs to keep tools organized and easily accessible.		1 each
10.	Chip conveyor or chip auger for efficient chip removal.		1 each
11.	Personal protective equipment (PPE)		1 each
12.	Machine guards		1 each
13.	CAM software for creating turning toolpaths.		1 each

#### Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Laptop
2. Projector
3. Cloud access
4. Learning management system

#### Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)

#### Annexure: Training & Employment Details

#### Training and Employment Projections:

Year	Total Candidates	Women	People with Disability

	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities

*Data to be provided year-wise for next 3 years*

**Training, Assessment, Certification, and Placement Data for previous versions of qualifications:**

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed

*Applicable for revised qualifications only, data to be provided year-wise for past 3 years.*

**List Schemes in which the previous version of Qualification was implemented:**

- 1.
- 2.

**Content availability for previous versions of qualifications:**

Participant Handbook  Facilitator Guide  Digital Content  Qualification Handbook  Any Other:

**Languages in which Content is available:**

## Annexure: Blended Learning

**Blended Learning Estimated Ratio & Recommended Tools:**

Refer NCVET “**Guidelines for Blended Learning for Vocational Education, Training & Skilling**” available on:

<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline: Online Ratio
1	<input type="checkbox"/> Theory/ Lectures - Imparting theoretical and conceptual knowledge	Laptop, Projector, Projecting Screen and LMS.	1:1
2	<input type="checkbox"/> Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Laptop, Projector, Projecting Screen and LMS.	1:1
3	<input type="checkbox"/> Showing Practical Demonstrations to the learners	As per tool list attached	NA
4	<input type="checkbox"/> Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	As per tool list attached	NA
5	<input type="checkbox"/> Tutorials/ Assignments/ Drill/ Practice	As per tool list attached	NA
6	<input type="checkbox"/> Proctored Monitoring/ Assessment/ Evaluation/ Examinations	As per tool list attached	NA
7	<input type="checkbox"/> On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	As per tool list attached	NA

## Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>Work organization and management(turning) CSC/N0455 V1.0</b>	<b>PC1.</b> Organize the workspace for optimal safety and performance			-	-
	<b>PC2.</b> Check the condition and functionality of the workspace, equipment, tools and materials			-	-
	<b>PC3.</b> Interpret and apply quality standards and regulations			-	-
	<b>PC4.</b> Promote and apply health and safety regulations and best practice				

<b>Interpret engineering drawings(turning) CSC/N0456 V1.0</b>	<b>PC5.</b> Set up and operate CNC lathes safely and environmentally well managed (e.g. in use of energy)			-	-
	<b>PC6.</b> Use computer related professional software			-	-
	<b>PC7.</b> Apply mathematical and geometrical principles for programming processes			-	-
	<b>PC8.</b> Select and apply appropriate cutting technology for the material, equipment and cutting tools provided			-	-
	<b>PC9.</b> Interpret and apply manufacturers' instructions			-	-
	<b>PC10.</b> Find appropriate data in handbooks, tables, and charts			-	-
	<b>Total Marks</b>	<b>20</b>	<b>30</b>		
	<b>PC1.</b> Interpret engineering drawings and apply to specifications			-	-
	<b>PC2.</b> Locate and identify dimensions of features			-	-
	<b>PC3.</b> Locate and identify surface finish requirements			-	-
<b>Process planning(turning) CSC/N0457 V1.0</b>	<b>PC4.</b> Locate and identify geometric specifications			-	-
	<b>PC5.</b> Make 3D metal representations of the parts			-	-
	<b>PC6.</b> Identify the materials that parts are made of			-	-
	<b>PC7.</b> Identify critical sequences (with a high possibility of damage or unsafe practice) and develop appropriate approaches			-	-
	<b>Total Marks</b>	<b>10</b>	<b>40</b>		
<b>Process planning(turning) CSC/N0457 V1.0</b>				-	-
	<b>PC1.</b> Find solutions using the capacities of the workshop environment, and according to the required work (size of batch, complexity)			-	-
	<b>PC2.</b> Identify the appropriate machining and measuring processes for each feature of each work-piece			-	-

<b>Programming(turning) CSC/N0458 V1.0</b>	PC3. Identify and prepare the best work holding methods			-	-
	PC4. Identify, prepare, and calibrate appropriate measuring tools			-	-
	PC5. Identify and prepare appropriate cutting tools			-	-
	PC6. Identify critical sections (with a high possibility of damage or unsafe practice) and identify alternatives or safe practice to avoid accidents or damage			-	-
	PC7. Find innovative ways of using the environment to solve technical issues			-	-
	PC8. Find alternatives which will be reliable until the end of each process			-	-
	PC9. Weigh each solution and choose the best (considering context, speed, safety, price, and sustainability)			-	-
	PC10. Make a final choice and lock the strategy accordingly			-	-
	PC11. Plan the operations and sequences (machining strategy) based on specified data			-	-
	PC12. Create awareness actions for critical operations where no alternative is available.			-	-
	<b>Total Marks</b>	<b>10</b>	<b>40</b>		
	PC1. Select the best methods according to the production type and part specifications			-	-
	PC2. Use skill specific software and related hardware			-	-
	PC3. Generate programs using CAD/CAM systems			-	-
	PC4. Create or edit programs directly on the machine-control			-	-
	PC5. Edit running programs in CAD/CAM and reload to the machine-control			-	-
	PC6. Document any related optimizations and up-load the optimized CNC-Program to the company-server			-	-
	<b>Total Marks</b>	<b>40</b>	<b>40</b>		

<b>Performing metrology and inspection on workpiece</b> <b>CSC/N0461 V1.0</b>	<b>PC1.</b> Select appropriate measuring or gauging instruments				
	<b>PC2.</b> Calibrate measuring tools				
	<b>PC3.</b> Use selected tools to make measurements on all features of the products				
	<b>PC4.</b> The properties, uses, and handling of ferrous and non-ferrous materials			<b>20</b>	<b>30</b>
<b>Setting and operating CNC lathes</b> <b>CSC/N0452 V1.0</b>	<b>PC1.</b> Follow their selected process strategies				
	<b>PC2.</b> Appraise and follow a given process-strategy when using External CNC-programs				
	<b>PC3.</b> Upload generated CNC programs to CNC lathes and perform test runs				
	<b>PC4.</b> Identify and designate the different machining processes on CNC lathes				
	<b>PC5.</b> Mount and align selected tools				
	<b>PC6.</b> Mount and align selected work holding devices				
	<b>PC7.</b> Mount and align selected accessories (Tailstock, Parts-catcher, etc.)				
	<b>PC8.</b> Set measures to avoid vibration in machining sequences				
	<b>PC9.</b> Apply efficient burr-removal techniques on work pieces				
	<b>PC10.</b> Optimize machining strategies				
	<b>PC11.</b> Quickly react to problems and emergencies				
	<b>PC12.</b> Obtain dimensions, geometries, surface roughness etc.				
	<b>PC13.</b> Make all necessary corrections to get the final part to conform to the blueprint				
	<b>PC14.</b> Report health, safety, and environmental issues to the appropriate personnel				
	<b>PC15.</b> Report equipment failures to the appropriate personnel			<b>30</b>	<b>70</b>
<b>Finalize and deliver work pieces</b> <b>CSC/N0453 V1.0</b>	<b>PC1.</b> Clean and deburr products				
	<b>PC2.</b> Make final optical and measurement checks				
	<b>PC3.</b> Deliver parts, drawings and digital memory devices to the appropriate locations and/or personnel as required by the organization				
	<b>PC4.</b> Dismount tools, clamping devices and machine accessories				
	<b>PC5.</b> Clean the machine and workplace				
	<b>PC6.</b> Set each environment to their initial state, ready for the next job				
	<b>PC7.</b> Document and save CNC Programs, work-holding and tooling information etc. for each organization's re-use of a production				
	<b>Grand Total</b>			<b>20</b>	<b>30</b>

### Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

*Mention the detailed assessment strategy in the provided template.*

#### 1. Assessment System Overview:

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

#### 2. Testing Environment:

- Check the Assessment location, date and time
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

#### 3. Assessment Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) are verified by the other SME
- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified & trainer must be ToT Certified

#### 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

#### 5. Method of verification or validation:

- Surprise visit to the assessment location

#### 6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored

#### On the Job:

1. Each module (which covers the job profile of Automotive Service Assistant Technician) will be assessed separately.
2. The candidate must score 60% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
  - Videos of Trainees during OJT
4. Assessment of each Module will ensure that the candidate is able to:
  - Effective engagement with the customers
  - Understand the working of various tools and equipment

## Annexure: Acronym and Glossary

## Acronym

Acronym	Description
<b>AA</b>	Assessment Agency
<b>AB</b>	Awarding Body
<b>ISCO</b>	International Standard Classification of Occupations
<b>NCO</b>	National Classification of Occupations
<b>NCrF</b>	National Credit Framework
<b>NOS</b>	National Occupational Standard(s)
<b>NQR</b>	National Qualification Register
<b>NSQF</b>	National Skills Qualifications Framework
<b>OJT</b>	On the Job Training

## Glossary

Term	Description
<b>National Occupational Standards (NOS)</b>	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
<b>Qualification</b>	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
<b>Qualification File</b>	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
<b>Sector</b>	A grouping of professional activities on the basis of their main economic function, product, service or technology.
<b>Long Term Training</b>	Long-term skilling means any vocational training program undertaken for a year and above. <a href="https://ncvet.gov.in/sites/default/files/NCVET.pdf">https://ncvet.gov.in/sites/default/files/NCVET.pdf</a>