

## Instruction Sheet for the Candidate

<b>Qualification</b>	<b>National Vocational Certificate in Metal Forming &amp; Processing Level 4</b>
<b>Competency Standard</b>	Perform Lathe Machine and Shaper Operations
<b>Purpose of Assessment</b>	<b>Formative Assessment</b>
<b>Candidate Details</b>	Name _____ Registration/Roll Number _____
<b>Guidance for Candidate</b>	<p><b>To meet this standard, you are required to complete the following within 04 Hrs. time frame (for practical demonstration &amp; assessment):</b></p> <ul style="list-style-type: none"> <li>• CU1. Perform centering operations on lathe machine</li> <li>• CU2. Perform facing Operations</li> <li>• CU3. Perform turning Operations</li> <li>• CU4. Perform drilling and boring operations</li> <li>• CU5. Perform step turning operations</li> <li>• CU6. Perform knurling Operations</li> <li>• CU7. Perform Internal and External threading Operation</li> <li>• CU8. Perform Squaring of workpiece on shaper machine.</li> <li>• CU9. Perform Slotting on Shaper machine</li> </ul>
<b>Time: 04 Hrs.</b>	During a practical assessment, under observation by an assessor, you are required to
<b>Minimum Evidence Required</b>	<p><b>CU1. Perform centering operations on lathe machine</b></p> <p><b>P1.</b> Mount and set the required work-holding devices  <b>P2.</b> Mount and set the required work piece  <b>P3.</b> Mount and set the required cutting tools.  <b>P4.</b> Select safe procedures and tools to accomplish the work.  <b>P5.</b> Adjust the operating parameters (e.g. speed and feed) of machine tool for centering the job.  <b>P6.</b> Follow all safety rules required for the machine.</p> <p><b>CU2. Perform facing Operations</b></p> <p><b>P1.</b> Mount and set the required work-holding devices  <b>P2.</b> Mount and set the required work piece.  <b>P3.</b> Select facing tools according to job requirement.  <b>P4.</b> Select safe procedures and tools to accomplish the work.  <b>P5.</b> Adjust the operating parameters (e.g. speed and feed) of machine tool to achieve the work specification.</p>

	<p><b>P6.</b> Follow all safety rules required for the machine.</p> <p><b>CU3. Perform turning Operations</b></p> <p><b>P1.</b> Follow work specifications, drawings or sketches to accomplish the turning operation.</p> <p><b>P2.</b> Set up and adjust the machine as per work specifications and procedures.</p> <p><b>P3.</b> Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation.</p> <p><b>P4.</b> Shut down the machine and equipment on conclusion of the machining activities.</p> <p><b>CU4. Perform drilling and boring operations</b></p> <p><b>P1.</b> Maintain safe working condition at workplace.</p> <p><b>P2.</b> Follow work specifications, drawings or sketches to accomplish the turning operation.</p> <p><b>P3.</b> Mount and set the required work-holding devices</p> <p><b>P4.</b> Mount and set the required work piece</p> <p><b>P5.</b> Adjust the drill bit in the tail stock.</p> <p><b>P6.</b> Adjust the RPM of machine according to the cutting speed.</p> <p><b>P7.</b> Make the hole according to given drawing.</p> <p><b>P8.</b> Perform the boring operation according to the drawing.</p> <p><b>P9.</b> Check quality of the component produced at different intervals.</p> <p><b>CU5. Perform step turning operations</b></p> <p><b>P1.</b> Follow work specifications, drawings or sketches to accomplish the turning operation.</p> <p><b>P2.</b> Set up and adjust the machine as per work specifications and procedures.</p> <p><b>P3.</b> Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation</p> <p><b>P4.</b> Check quality of the component produced at different intervals.</p> <p><b>P5.</b> Follow safety precautions to ensure safe work and to avoid any injury.</p> <p><b>CU6. Perform knurling Operations</b></p> <p><b>P1.</b> Maintain safe working condition at workplace.</p> <p><b>P2.</b> Select the knurling tool according to requirement.</p> <p><b>P3.</b> Set the tool and work piece in the machine according to procedure.</p> <p><b>P4.</b> Use right methods and techniques to produce proper knurling</p>
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	<p>on work piece.</p> <p><b>P5.</b> Select and adjust appropriate speeds and feeds of lathe machine.</p> <p><b>P6.</b> Use coolants during knurling to achieve smooth impression on work piece.</p> <p><b>CU7. Perform Internal and External threading Operation</b></p> <p><b>P1.</b> Mount and set the required work-holding devices</p> <p><b>P2.</b> Mount and set the required work piece</p> <p><b>P3.</b> Use Proper cutting tool to cut the threads with required dimensions.</p> <p><b>P4.</b> Select and adjust appropriate speeds and feeds of turning machine.</p> <p><b>P5.</b> Produce a component which matches the work specifications using appropriate methods and techniques.</p> <p><b>P6.</b> Check quality of the component produced at different intervals.</p> <p><b>P7.</b> Follow safety precautions to ensure safe work and to avoid any injury</p> <p><b>CU8. Perform Squaring of workpiece on shaper machine.</b></p> <p><b>P1.</b> Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.</p> <p><b>P2.</b> Interpret the drawings as per job requirement</p> <p><b>P3.</b> Install the machine vice according to job requirement.</p> <p><b>P4.</b> Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)</p> <p><b>P5.</b> Mount cutting tool and work piece in the machine.</p> <p><b>P6.</b> Perform Squaring operation</p> <p><b>P7.</b> Check quality of the component at suitable intervals.</p> <p><b>P8.</b> Shut down the machine at safe position after finishing the work.</p> <p><b>CU9. Perform Slotting on Shaper machine</b></p> <p><b>P1.</b> Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.</p> <p><b>P2.</b> Interpret the drawings as per job requirement</p> <p><b>P3.</b> Install the machine vice according to job requirement.</p> <p><b>P4.</b> Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)</p> <p><b>P5.</b> Mount cutting tool and work piece on the machine.</p> <p><b>P6.</b> Cut a slot on the work piece as per given drawing.</p> <p><b>P7.</b> Check quality of the component at suitable intervals.</p> <p><b>P8.</b> Shut down the machine at safe position after finishing the work.</p>
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## Self-Assessment Checklist

<b>Candidate Name</b>	
<b>Registration No.</b>	
<b>Qualification</b>	<b>National Vocational Certificate in Metal Forming &amp; Processing Level 4</b>
<b>Competency Standard</b>	Perform Lathe Machine and Shaper Operations
<b>Purpose of Assessment</b>	<b>Formative Assessment</b>
<b>Assessment Task</b>	<ul style="list-style-type: none"> <li>• CU1. Perform centering operations on lathe machine</li> <li>• CU2. Perform facing Operations</li> <li>• CU3. Perform turning Operations</li> <li>• CU4. Perform drilling and boring operations</li> <li>• CU5. Perform step turning operations</li> <li>• CU6. Perform knurling Operations</li> <li>• CU7. Perform Internal and External threading Operation</li> <li>• CU8. Perform Squaring of workpiece on shaper machine.</li> <li>• CU9. Perform Slotting on Shaper machine</li> </ul>

I can.....

<b>Performance Criteria</b>	<b>Yes</b>	<b>No</b>
<b>P1.</b> Mount and set the required work-holding devices	<input type="checkbox"/>	<input type="checkbox"/>
<b>P2.</b> Mount and set the required work piece	<input type="checkbox"/>	<input type="checkbox"/>
<b>P3.</b> Mount and set the required cutting tools.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P4.</b> Select safe procedures and tools to accomplish the work.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P5.</b> Adjust the operating parameters (e.g. speed and feed) of machine tool for centering the job.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P6.</b> Follow all safety rules required for the machine.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P7.</b> Mount and set the required work-holding devices	<input type="checkbox"/>	<input type="checkbox"/>
<b>P8.</b> Mount and set the required work piece.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P9.</b> Select facing tools according to job requirement.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P10.</b> Select safe procedures and tools to accomplish the work.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P11.</b> Adjust the operating parameters (e.g. speed and feed) of machine tool to achieve the work specification.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P12.</b> Follow all safety rules required for the machine.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P13.</b> Follow work specifications, drawings or sketches to accomplish the turning operation.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P14.</b> Set up and adjust the machine as per work specifications and procedures.	<input type="checkbox"/>	<input type="checkbox"/>

<b>P15.</b>	Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P16.</b>	Shut down the machine and equipment on conclusion of the machining activities.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P17.</b>	Maintain safe working condition at workplace.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P18.</b>	Follow work specifications, drawings or sketches to accomplish the turning operation.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P19.</b>	Mount and set the required work-holding devices	<input type="checkbox"/>	<input type="checkbox"/>
<b>P20.</b>	Mount and set the required work piece	<input type="checkbox"/>	<input type="checkbox"/>
<b>P21.</b>	Adjust the drill bit in the tail stock.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P22.</b>	Adjust the RPM of machine according to the cutting speed.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P23.</b>	Make the hole according to given drawing.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P24.</b>	Perform the boring operation according to the drawing.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P25.</b>	Check quality of the component produced at different intervals.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P26.</b>	Follow work specifications, drawings or sketches to accomplish the turning operation.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P27.</b>	Set up and adjust the machine as per work specifications and procedures.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P28.</b>	Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation	<input type="checkbox"/>	<input type="checkbox"/>
<b>P29.</b>	Check quality of the component produced at different intervals.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P30.</b>	Follow safety precautions to ensure safe work and to avoid any injury.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P31.</b>	Maintain safe working condition at workplace.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P32.</b>	Select the knurling tool according to requirement.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P33.</b>	Set the tool and work piece in the machine according to procedure.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P34.</b>	Use right methods and techniques to produce proper knurling on work piece.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P35.</b>	Select and adjust appropriate speeds and feeds of lathe machine.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P36.</b>	Use coolants during knurling to achieve smooth impression on work piece.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P37.</b>	Mount and set the required work-holding devices	<input type="checkbox"/>	<input type="checkbox"/>
<b>P38.</b>	Mount and set the required work piece	<input type="checkbox"/>	<input type="checkbox"/>
<b>P39.</b>	Use Proper cutting tool to cut the threads with required dimensions.	<input type="checkbox"/>	<input type="checkbox"/>
<b>P40.</b>	Select and adjust appropriate speeds and feeds of turning machine.	<input type="checkbox"/>	<input type="checkbox"/>

<b>P41.</b>	Produce a component which matches the work specifications using appropriate methods and techniques.	<input type="text"/>	<input type="text"/>
<b>P42.</b>	Check quality of the component produced at different intervals.	<input type="text"/>	<input type="text"/>
<b>P43.</b>	Follow safety precautions to ensure safe work and to avoid any injury	<input type="text"/>	<input type="text"/>
<b>P44.</b>	Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.	<input type="text"/>	<input type="text"/>
<b>P45.</b>	Interpret the drawings as per job requirement	<input type="text"/>	<input type="text"/>
<b>P46.</b>	Install the machine vice according to job requirement.	<input type="text"/>	<input type="text"/>
<b>P47.</b>	Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)	<input type="text"/>	<input type="text"/>
<b>P48.</b>	Mount cutting tool and work piece in the machine.	<input type="text"/>	<input type="text"/>
<b>P49.</b>	Perform Squaring operation	<input type="text"/>	<input type="text"/>
<b>P50.</b>	Check quality of the component at suitable intervals.	<input type="text"/>	<input type="text"/>
<b>P51.</b>	Shut down the machine at safe position after finishing the work.	<input type="text"/>	<input type="text"/>
<b>P52.</b>	Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.	<input type="text"/>	<input type="text"/>
<b>P53.</b>	Interpret the drawings as per job requirement	<input type="text"/>	<input type="text"/>
<b>P54.</b>	Install the machine vice according to job requirement.	<input type="text"/>	<input type="text"/>
<b>P55.</b>	Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)	<input type="text"/>	<input type="text"/>
<b>P56.</b>	Mount cutting tool and work piece on the machine.	<input type="text"/>	<input type="text"/>
<b>P57.</b>	Cut a slot on the work piece as per given drawing.	<input type="text"/>	<input type="text"/>
<b>P58.</b>	Check quality of the component at suitable intervals.	<input type="text"/>	<input type="text"/>
<b>P59.</b>	Shut down the machine at safe position after finishing the work.	<input type="text"/>	<input type="text"/>

Candidate's Signature\_\_\_\_\_ Assessor's Signature\_\_\_\_\_

Date: \_\_\_\_\_

## Assessors Judgment Guide

<b>Qualification</b>	<b>National Vocational Certificate in Metal Forming &amp; Processing Level 4</b>
<b>Competency Standard</b>	Perform Lathe Machine and Shaper Operations
<b>Purpose of Assessment</b>	<b>Formative Assessment</b>
<b>Candidate Details</b>	Name: _____ Registration/Roll Number: _____ Signature: _____
<b>Assessment Outcome</b>	<div style="display: flex; justify-content: space-between; align-items: center;"> <span><b>COMPETENT</b> <input type="checkbox"/></span> <span><b>NOT YET COMPETENT</b> <input type="checkbox"/></span> </div> Name of the Assessor _____ Assessor's code: _____ Signature: _____

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment		✓					
Other Requirement							

## Observation Checklist

<b>Assessment Task</b>		<ul style="list-style-type: none"><li>• CU1. Perform centering operations on lathe machine</li><li>• CU2. Perform facing Operations</li><li>• CU3. Perform turning Operations</li><li>• CU4. Perform drilling and boring operations</li><li>• CU5. Perform step turning operations</li><li>• CU6. Perform knurling Operations</li><li>• CU7. Perform Internal and External threading Operation</li><li>• CU8. Perform Squaring of workpiece on shaper machine.</li><li>• CU9. Perform Slotting on Shaper machine</li></ul>		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Mount and set the required work-holding devices			
2.	Mount and set the required work piece			
3.	Mount and set the required cutting tools.			
4.	Select safe procedures and tools to accomplish the work.			
5.	Adjust the operating parameters (e.g. speed and feed) of machine tool for centering the job.			
6.	Follow all safety rules required for the machine.			
7.	Mount and set the required work-holding devices			
8.	Mount and set the required work piece.			
9.	Select facing tools according to job requirement.			
10.	Select safe procedures and tools to accomplish the work.			
11.	Adjust the operating parameters (e.g. speed and feed) of machine tool to achieve the work specification.			
12.	Follow all safety rules required for the machine.			
13.	Follow work specifications, drawings or sketches to accomplish the turning operation.			
14.	Set up and adjust the machine as per work specifications and procedures.			
15.	Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation.			



16.	Shut down the machine and equipment on conclusion of the machining activities.			
17.	Maintain safe working condition at workplace.			
18.	Follow work specifications, drawings or sketches to accomplish the turning operation.			
19.	Mount and set the required work-holding devices			
20.	Mount and set the required work piece			
21.	Adjust the drill bit in the tail stock.			
22.	Adjust the RPM of machine according to the cutting speed.			
23.	Make the hole according to given drawing.			
24.	Perform the boring operation according to the drawing.			
25.	Check quality of the component produced at different intervals.			
26.	Follow work specifications, drawings or sketches to accomplish the turning operation.			
27.	Set up and adjust the machine as per work specifications and procedures.			
28.	Inspect the components produced have the required quality and within the specified dimensional accuracy by turning operation			
29.	Check quality of the component produced at different intervals.			
30.	Follow safety precautions to ensure safe work and to avoid any injury.			
31.	Maintain safe working condition at workplace.			
32.	Select the knurling tool according to requirement.			
33.	Set the tool and work piece in the machine according to procedure.			
34.	Use right methods and techniques to produce proper knurling on work piece.			
35.	Select and adjust appropriate speeds and feeds of lathe machine.			
36.	Use coolants during knurling to achieve smooth impression on work piece.			

37.	Mount and set the required work-holding devices			
38.	Mount and set the required work piece			
39.	Use Proper cutting tool to cut the threads with required dimensions.			
40.	Select and adjust appropriate speeds and feeds of turning machine.			
41.	Produce a component which matches the work specifications using appropriate methods and techniques.			
42.	Check quality of the component produced at different intervals.			
43.	Follow safety precautions to ensure safe work and to avoid any injury			
44.	Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.			
45.	Interpret the drawings as per job requirement			
46.	Install the machine vice according to job requirement.			
47.	Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)			
48.	Mount cutting tool and work piece in the machine.			
49.	Perform Squaring operation			
50.	Check quality of the component at suitable intervals.			
51.	Shut down the machine at safe position after finishing the work.			
52.	Identify safety hazards related with shaping operations and take appropriate steps to avoid any injury or accident.			
53.	Interpret the drawings as per job requirement			
54.	Install the machine vice according to job requirement.			
55.	Set cutting tool and set machine as per requirements.( feed, speed, depth of cut and length of stroke)			
56.	Mount cutting tool and work piece on the machine.			

57.	Cut a slot on the work piece as per given drawing.			
58.	Check quality of the component at suitable intervals.			
59.	Shut down the machine at safe position after finishing the work.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

## Knowledge Assessment

<b>Qualification</b>	<b>National Vocational Certificate in Metal Forming &amp; Processing Level 4</b>
<b>Competency Standard</b>	Perform Lathe Machine and Shaper Operations
<b>Purpose of Assessment</b>	<b>Formative Assessment</b>
<b>Candidate Details</b>	Name: _____ Registration/Roll Number: _____ Candidate Signature: _____
<b>Assessment Outcome</b>	<div style="display: flex; justify-content: space-around; align-items: center;"> <span><b>COMPETENT</b> <input type="checkbox"/></span> <span><b>NOT YET COMPETENT</b> <input type="checkbox"/></span> </div> Name of the Assessor: _____ Assessor's code: _____ Signature of the Assessor: _____

Candidate's response is not required to be identical, but similar concepts and/or keywords must be used. Oral questioning may be used to clarify candidate understanding of topic and its application.

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)		Satisfactory	Not Satisfactory
1.	What is the Procedure of shutting down of machine and equipment after closure of activities.		
2.	What are the Types of drilling or boring tools and their function		

3.	What is the principle of lathe machine?		
4.	What are the Types of threading tool.		
5.	What are the Safety precautions and procedures need to be observed during work		
6.	What is the principle of shaper machine?		

<b>Feedback to the Candidate</b>
<b>Candidate's Signature</b> _____ <b>Assessor's Signature</b> _____