

Instruction Sheet for the Candidate

Qualification	National Vocational Certificate in Metal Forming & Processing Level 5
Competency Standard	Perform GTAW / TIG Welding
Purpose of Assessment	Formative Assessment
Candidate Details	Name _____ Registration/Roll Number _____
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within 04 Hrs. time frame (for practical demonstration & assessment):</p> <ul style="list-style-type: none"> • CU1: Prepare Welding Machine and Accessories for GTAW / TIG • CU2: Make Welds on Carbon Steel Plate Flat (1F) and Flat (1G) • CU3: Make Welds on Carbon Steel Plate Horizontal (2F) and Horizontal (2G) • CU4: Make Welds on Carbon Steel Plate Vertical (3F) and Vertical (3G) • CU5: Make Welds on Carbon Steel Plate Overhead (4F) and Overhead (4G) • CU6: Perform Post Welding Operations
Time: 04 Hrs.	During a practical assessment, under observation by an assessor, you are required to
Minimum Evidence Required	<p>CU1: Prepare Welding Machine and Accessories for GTAW / TIG</p> <p>P1. Identify welding requirements from welding procedure specifications/technical drawings</p> <p>P2. Prepare welding machine in accordance with welding procedure specifications/ manufacturer instructions.</p> <p>P3. Set up welding machine accessories and consumables as per job requirements, welding procedure specifications and/or manufacturer's instructions</p> <p>P4. Connect welding machine to an independent power supply</p> <p>P5. Set polarity indicated in the welding procedure specifications/ job requirement</p> <p>P6. Prepare work piece for welding as per job requirement</p> <p>CU2: Make Welds on Carbon Steel Plate Flat (1F) and Flat (1G)</p> <p>P1. Adjust welding parameters (current, voltage etc.) as per</p>

	<p>welding procedure specifications/job requirements to produce acceptable weld</p> <p>P2. Maintain standard position of electrode and base metal as per SOPs</p> <p>P3. Carry out welding in Flat (1F) and Flat (1G) positions following standard procedures</p> <p>P4. Deposit root pass as per welding procedure specifications/job requirements</p> <p>P5. Deposit filling passes as per welding procedure specifications/job requirements</p> <p>P6. Deposit capping pass as per welding procedure specifications/job requirements</p> <p>P7. Check root, filling and capping passes for any visual discontinuities at regular intervals</p> <p>P8. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects</p> <p>CU3: Make Welds on Carbon Steel Plate Horizontal (2F) and Horizontal (2G)</p> <p>P1. Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld</p> <p>P2. Maintain standard position of electrode and base metal as per SOPs</p> <p>P3. Carry out welding in Horizontal (2F) and Horizontal (2G) positions following standard procedures</p> <p>P4. Deposit root pass as per welding procedure specifications/job requirements</p> <p>P5. Deposit filling passes as per welding procedure specifications/job requirements</p> <p>P6. Deposit capping pass as per welding procedure specifications/job requirements</p> <p>P7. Check root, filling and capping passes for any visual discontinuities at regular intervals</p> <p>P8. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects</p> <p>CU4: Make Welds on Carbon Steel Plate Vertical (3F) and Vertical (3G)</p> <p>P1. Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld</p> <p>P2. Maintain standard position of electrode and base metal as per SOPs</p>
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	<p>P3. Carry out welding in Vertical (3F) and Vertical (3G) positions following standard procedures</p> <p>P4. Deposit root pass as per welding procedure specifications/job requirements</p> <p>P5. Deposit filling passes as per welding procedure specifications/job requirements</p> <p>P6. Deposit capping pass as per welding procedure specifications/job requirements</p> <p>P7. Check root, filling and capping passes for any visual discontinuities at regular intervals</p> <p>P8. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects</p> <p>CU5: Make Welds on Carbon Steel Plate Overhead (4F) and Overhead (4G)</p> <p>P1. Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld</p> <p>P2. Maintain standard position of electrode and base metal as per SOPs</p> <p>P3. Carry out welding in Overhead (4F) and Overhead (4G) positions following standard procedures</p> <p>P4. Deposit root pass as per welding procedure specifications/job requirements</p> <p>P5. Deposit filling passes as per welding procedure specifications/job requirements</p> <p>P6. Deposit capping pass as per welding procedure specifications/job requirements</p> <p>P7. Check root, filling and capping passes for any visual discontinuities at regular intervals</p> <p>P8. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects</p> <p>CU6: Perform Post Welding Operations</p> <p>P1. Carry out finishing work of welds following standard procedures.</p> <p>P2. Inspect weld visually and mark any visual defects, as required</p> <p>P3. Perform Dye Penetration Test (DPT)</p> <p>P4. Carry out repair work in accordance with approved procedures, as required.</p> <p>P5. Clean work area in accordance with workplace safety practices.</p> <p>P6. Maintain tools/equipment/consumable materials in accordance with organization guidelines</p>
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	P7. Store tools/equipment/consumable materials in accordance with organization guidelines.
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Self-Assessment Checklist

Candidate Name	
Registration No.	
Qualification	National Vocational Certificate in Metal Forming & Processing Level 5
Competency Standard	Perform GTAW / TIG Welding
Purpose of Assessment	Formative Assessment
Assessment Task	<ul style="list-style-type: none"> • CU1: Prepare Welding Machine and Accessories for GTAW / TIG • CU2: Make Welds on Carbon Steel Plate Flat (1F) and Flat (1G) • CU3: Make Welds on Carbon Steel Plate Horizontal (2F) and Horizontal (2G) • CU4: Make Welds on Carbon Steel Plate Vertical (3F) and Vertical (3G) • CU5: Make Welds on Carbon Steel Plate Overhead (4F) and Overhead (4G) • CU6: Perform Post Welding Operations

I can.....

Performance Criteria	Yes	No
P1. Identify welding requirements from welding procedure specifications/technical drawings	<input type="checkbox"/>	<input type="checkbox"/>
P2. Prepare welding machine in accordance with welding procedure specifications/ manufacturer instructions.	<input type="checkbox"/>	<input type="checkbox"/>
P3. Set up welding machine accessories and consumables as per job requirements, welding procedure specifications and/or manufacturer's instructions	<input type="checkbox"/>	<input type="checkbox"/>
P4. Connect welding machine to an independent power supply	<input type="checkbox"/>	<input type="checkbox"/>
P5. Set polarity indicated in the welding procedure specifications/ job requirement	<input type="checkbox"/>	<input type="checkbox"/>
P6. Prepare work piece for welding as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
P7. Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
P8. Maintain standard position of electrode and base metal as per SOPs	<input type="checkbox"/>	<input type="checkbox"/>
P9. Carry out welding in Flat (1F) and Flat (1G) positions following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
P10. Deposit root pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>

P11.	Deposit filling passes as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P12.	Deposit capping pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P13.	Check root, filling and capping passes for any visual discontinuities at regular intervals	<input type="checkbox"/>	<input type="checkbox"/>
P14.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
P15.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
P16.	Maintain standard position of electrode and base metal as per SOPs	<input type="checkbox"/>	<input type="checkbox"/>
P17.	Carry out welding in Horizontal (2F) and Horizontal (2G) positions following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
P18.	Deposit root pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P19.	Deposit filling passes as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P20.	Deposit capping pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P21.	Check root, filling and capping passes for any visual discontinuities at regular intervals	<input type="checkbox"/>	<input type="checkbox"/>
P22.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
P23.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
P24.	Maintain standard position of electrode and base metal as per SOPs	<input type="checkbox"/>	<input type="checkbox"/>
P25.	Carry out welding in Vertical (3F) and Vertical (3G) positions following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
P26.	Deposit root pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P27.	Deposit filling passes as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P28.	Deposit capping pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P29.	Check root, filling and capping passes for any visual discontinuities at regular intervals	<input type="checkbox"/>	<input type="checkbox"/>
P30.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
P31.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
P32.	Maintain standard position of electrode and base metal as per SOPs	<input type="checkbox"/>	<input type="checkbox"/>
P33.	Carry out welding in Overhead (4F) and Overhead (4G) positions following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>

P34.	Deposit root pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P35.	Deposit filling passes as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P36.	Deposit capping pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
P37.	Check root, filling and capping passes for any visual discontinuities at regular intervals	<input type="checkbox"/>	<input type="checkbox"/>
P38.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
P39.	Carry out finishing work of welds following standard procedures.	<input type="checkbox"/>	<input type="checkbox"/>
P40.	Inspect weld visually and mark any visual defects, as required	<input type="checkbox"/>	<input type="checkbox"/>
P41.	Perform Dye Penetration Test (DPT)	<input type="checkbox"/>	<input type="checkbox"/>
P42.	Carry out repair work in accordance with approved procedures, as required.	<input type="checkbox"/>	<input type="checkbox"/>
P43.	Clean work area in accordance with workplace safety practices.	<input type="checkbox"/>	<input type="checkbox"/>
P44.	Maintain tools/equipment/consumable materials in accordance with organization guidelines	<input type="checkbox"/>	<input type="checkbox"/>
P45.	Store tools/equipment/consumable materials in accordance with organization guidelines.	<input type="checkbox"/>	<input type="checkbox"/>

Candidate's Signature _____ Assessor's Signature _____

Date: _____

Assessors Judgment Guide

Qualification	National Vocational Certificate in Metal Forming & Processing Level 5
Competency Standard	Perform GTAW / TIG Welding
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Signature: _____
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> 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

Assessment Task		<ul style="list-style-type: none">• CU1: Prepare Welding Machine and Accessories for GTAW / TIG• CU2: Make Welds on Carbon Steel Plate Flat (1F) and Flat (1G)• CU3: Make Welds on Carbon Steel Plate Horizontal (2F) and Horizontal (2G)• CU4: Make Welds on Carbon Steel Plate Vertical (3F) and Vertical (3G)• CU5: Make Welds on Carbon Steel Plate Overhead (4F) and Overhead (4G)• CU6: Perform Post Welding Operations		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Identify welding requirements from welding procedure specifications/technical drawings			
2.	Prepare welding machine in accordance with welding procedure specifications/ manufacturer instructions.			
3.	Set up welding machine accessories and consumables as per job requirements, welding procedure specifications and/or manufacturer's instructions			
4.	Connect welding machine to an independent power supply			
5.	Set polarity indicated in the welding procedure specifications/ job requirement			
6.	Prepare work piece for welding as per job requirement			
7.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld			
8.	Maintain standard position of electrode and base metal as per SOPs			
9.	Carry out welding in Flat (1F) and Flat (1G) positions following standard procedures			
10.	Deposit root pass as per welding procedure specifications/job requirements			
11.	Deposit filling passes as per welding procedure specifications/job requirements			
12.	Deposit capping pass as per welding procedure specifications/job requirements			
13.	Check root, filling and capping passes for any visual discontinuities at regular intervals			

14.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
15.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld			
16.	Maintain standard position of electrode and base metal as per SOPs			
17.	Carry out welding in Horizontal (2F) and Horizontal (2G) positions following standard procedures			
18.	Deposit root pass as per welding procedure specifications/job requirements			
19.	Deposit filling passes as per welding procedure specifications/job requirements			
20.	Deposit capping pass as per welding procedure specifications/job requirements			
21.	Check root, filling and capping passes for any visual discontinuities at regular intervals			
22.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
23.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to produce acceptable weld			
24.	Maintain standard position of electrode and base metal as per SOPs			
25.	Carry out welding in Vertical (3F) and Vertical (3G) positions following standard procedures			
26.	Deposit root pass as per welding procedure specifications/job requirements			
27.	Deposit filling passes as per welding procedure specifications/job requirements			
28.	Deposit capping pass as per welding procedure specifications/job requirements			
29.	Check root, filling and capping passes for any visual discontinuities at regular intervals			
30.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
31.	Adjust welding parameters (current, voltage etc.) as per welding procedure specifications/job requirements to			

	produce acceptable weld			
32.	Maintain standard position of electrode and base metal as per SOPs			
33.	Carry out welding in Overhead (4F) and Overhead (4G) positions following standard procedures			
34.	Deposit root pass as per welding procedure specifications/job requirements			
35.	Deposit filling passes as per welding procedure specifications/job requirements			
36.	Deposit capping pass as per welding procedure specifications/job requirements			
37.	Check root, filling and capping passes for any visual discontinuities at regular intervals			
38.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
39.	Carry out finishing work of welds following standard procedures.			
40.	Inspect weld visually and mark any visual defects, as required			
41.	Perform Dye Penetration Test (DPT)			
42.	Carry out repair work in accordance with approved procedures, as required.			
43.	Clean work area in accordance with workplace safety practices.			
44.	Maintain tools/equipment/consumable materials in accordance with organization guidelines			
45.	Store tools/equipment/consumable materials in accordance with organization guidelines.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Qualification	National Vocational Certificate in Metal Forming & Processing Level 5
Competency Standard	Perform GTAW / TIG Welding
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Candidate Signature: _____
Assessment Outcome	<div style="display: flex; justify-content: space-around; align-items: center;"> COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> </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.	Describe the principle of TIG welding		
2.	Explain advantages of GTAW		
3.	Define Electrical parameters like (voltage, current etc.) and their effects on weld		

4.	Explain Specifications/ classification of electrode/s required for the job		
5.	Describe Butt joint		
6.	State the purpose of using shielding gas in TIG welding		

Feedback to the Candidate
Candidate's Signature_____ Assessor's Signature _____