

Instruction Sheet for the Candidate

Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Submerged Arc Welding (SAW)
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"> • Prepare Welding Machine and Accessories for SAW • Make Fillet Weld on Carbon Steel Plate • Make Groove Weld on Carbon Steel Plate • Perform Post Welding Operations
Time: 04 Hrs.	During a practical assessment, under observation by an assessor, you are required to
Minimum Evidence Required	<p>Prepare welding machine and accessories for SAW</p> <ul style="list-style-type: none"> • Identify welding requirements from the job, Welding Procedure Specifications (WPS) and/or technical drawings • Prepare Submerged Arc Welding (SAW) power supply unit in accordance with WPS/manufacturer instructions • Set up welding machine accessories as per job requirements, WPS and/or manufacturer instructions • Set up welding machine's wire feeding unit as per WPS • Set Granular flux hopper as per requirement • Connect welding machine to an independent power supply • Set polarity indicated in the WPS <p>Make Fillet Weld on carbon Steel plate</p> <ul style="list-style-type: none"> • Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld • Maintain gap between electrode and base metal as per standard practices • Carry out pre-heating of the given job, if needed. • Carry out welding in 1F, 2F, 3F positions following standard procedures • Carry out the cleaning of root pass as per requirement

	<ul style="list-style-type: none"> • Carryout the re-usage of granular flux during welding • Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects <p>Make Groove welds on Carbon steel plate</p> <ul style="list-style-type: none"> • Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld • Maintain gap between electrode and base metal as per standard practices • Carry out pre-heating of the given job, if needed. • Carry out welding in 1G position following standard procedures • Deposit root pass as per WPS/job requirements • Deposit filling passes as per welding procedure specifications/job requirements • Deposit capping pass as per welding procedure specifications/job requirements • Carry out the cleaning of passes as per requirement • Check root, filling and capping passes for any visual discontinuities as per acceptance standards • Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects <p>Perform post welding operations</p> <ul style="list-style-type: none"> • Carry out finishing work of welds following standard procedures • Inspect weld visually and mark any visual defects, as required • Perform Post Weld Heat Treatment of weld as per requirement • Carry out repair work in accordance with approved procedures, as required • Clean work area in accordance with workplace safety practices • Maintain tools/equipment/consumable materials in accordance with organization guidelines • Store tools/equipment/consumable materials in accordance with organization guidelines
--	---

Self-Assessment Checklist

Candidate Name	
Registration No.	
Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Submerged Arc Welding (SAW)
Purpose of Assessment	Formative Assessment
Assessment Task	<ul style="list-style-type: none"> • Prepare Welding Machine and Accessories for SAW • Make Fillet Weld on Carbon Steel Plate • Make Groove Weld on Carbon Steel Plate • Perform Post Welding Operations

I can.....

Performance Criteria	Yes	No
1. Identify welding requirements from the job, Welding Procedure Specifications (WPS) and/or technical drawings	<input type="checkbox"/>	<input type="checkbox"/>
2. Prepare Submerged Arc Welding (SAW) power supply unit in accordance with WPS/manufacturer instructions	<input type="checkbox"/>	<input type="checkbox"/>
3. Set up welding machine accessories as per job requirements, WPS and/or manufacturer instructions	<input type="checkbox"/>	<input type="checkbox"/>
4. Set up welding machine's wire feeding unit as per WPS	<input type="checkbox"/>	<input type="checkbox"/>
5. Set Granular flux hopper as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
6. Connect welding machine to an independent power supply	<input type="checkbox"/>	<input type="checkbox"/>
7. Set polarity indicated in the WPS	<input type="checkbox"/>	<input type="checkbox"/>
8. Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
9. Maintain gap between electrode and base metal as per standard practices	<input type="checkbox"/>	<input type="checkbox"/>
10. Carry out pre-heating of the given job, if needed.	<input type="checkbox"/>	<input type="checkbox"/>
11. Carry out welding in 1F, 2F, 3F positions following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
12. Carry out the cleaning of root pass as per requirement	<input type="checkbox"/>	<input type="checkbox"/>

13. Carryout the re-usage of granular flux during welding	<input type="checkbox"/>	<input type="checkbox"/>
14. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
15. Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld	<input type="checkbox"/>	<input type="checkbox"/>
16. Maintain gap between electrode and base metal as per standard practices	<input type="checkbox"/>	<input type="checkbox"/>
17. Carry out pre-heating of the given job, if needed.	<input type="checkbox"/>	<input type="checkbox"/>
18. Carry out welding in 1G position following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
19. Deposit root pass as per WPS/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
20. Deposit filling passes as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
21. Deposit capping pass as per welding procedure specifications/job requirements	<input type="checkbox"/>	<input type="checkbox"/>
22. Carry out the cleaning of passes as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
23. Check root, filling and capping passes for any visual discontinuities as per acceptance standards	<input type="checkbox"/>	<input type="checkbox"/>
24. Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects	<input type="checkbox"/>	<input type="checkbox"/>
25. Carry out finishing work of welds following standard procedures	<input type="checkbox"/>	<input type="checkbox"/>
26. Inspect weld visually and mark any visual defects, as required	<input type="checkbox"/>	<input type="checkbox"/>
27. Perform Post Weld Heat Treatment of weld as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
28. Carry out repair work in accordance with approved procedures, as required	<input type="checkbox"/>	<input type="checkbox"/>
29. Clean work area in accordance with workplace safety practices	<input type="checkbox"/>	<input type="checkbox"/>
30. Maintain tools/equipment/consumable materials in accordance with organization guidelines	<input type="checkbox"/>	<input type="checkbox"/>
31. 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 4
Competency Standard	Perform Submerged Arc Welding (SAW)
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Signature: _____
Assessment Outcome	<div style="display: flex; justify-content: space-between; align-items: center;"> COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> </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

Assessment Task		<ul style="list-style-type: none">• Prepare Welding Machine and Accessories for SAW• Make Fillet Weld on Carbon Steel Plate• Make Groove Weld on Carbon Steel Plate• Perform Post Welding Operations		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Identify welding requirements from the job, Welding Procedure Specifications (WPS) and/or technical drawings			
2.	Prepare Submerged Arc Welding (SAW) power supply unit in accordance with WPS/manufacturer instructions			
3.	Set up welding machine accessories as per job requirements, WPS and/or manufacturer instructions			
4.	Set up welding machine's wire feeding unit as per WPS			
5.	Set Granular flux hopper as per requirement			
6.	Connect welding machine to an independent power supply			
7.	Set polarity indicated in the WPS			
8.	Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld			
9.	Maintain gap between electrode and base metal as per standard practices			
10.	Carry out pre-heating of the given job, if needed.			
11.	Carry out welding in 1F, 2F, 3F positions following standard procedures			
12.	Carry out the cleaning of root pass as per requirement			
13.	Carryout the re-usage of granular flux during welding			
14.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
15.	Adjust welding parameters (current, voltage, wire feed speed, welding speed etc.) as per welding procedure specifications/job requirements to produce acceptable weld			

16.	Maintain gap between electrode and base metal as per standard practices			
17.	Carry out pre-heating of the given job, if needed.			
18.	Carry out welding in 1G position following standard procedures			
19.	Deposit root pass as per WPS/job requirements			
20.	Deposit filling passes as per welding procedure specifications/job requirements			
21.	Deposit capping pass as per welding procedure specifications/job requirements			
22.	Carry out the cleaning of passes as per requirement			
23.	Check root, filling and capping passes for any visual discontinuities as per acceptance standards			
24.	Follow applicable manufacturing codes and standards for acceptance criteria of visual welding defects			
25.	Carry out finishing work of welds following standard procedures			
26.	Inspect weld visually and mark any visual defects, as required			
27.	Perform Post Weld Heat Treatment of weld as per requirement			
28.	Carry out repair work in accordance with approved procedures, as required			
29.	Clean work area in accordance with workplace safety practices			
30.	Maintain tools/equipment/consumable materials in accordance with organization guidelines			
31.	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 4
Competency Standard	Perform Submerged Arc Welding (SAW)
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.	Define Submerged arc welding.		
2.	Describe process parameters of SAW.		
3.	What are different advantages of SAW?		

4.	What are different limitations of SAW?		
5.	What are different applications of SAW?		

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