

Instruction Sheet for the Candidate

Qualification	Agricultural Machinery Mechanic (Level-5)
Competency Standard	<ul style="list-style-type: none"> • Develop 2D CAD Drawing • Perform Oxy Acetylene Welding • Operate baler • Maintain Baler • Maintain transmission system • Maintain Hydraulic system • Maintain pumps and tube wells • Overhaul engine • Maintain pressurized irrigation system • Maintain grain dryer • Operate / Maintain Grain Thresher • Maintain Sugarcane harvester • Operate / Maintain Combine Harvester
Purpose of Assessment	Summative Assessment
Candidate Details	Name_____ Registration/Roll Number_____
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within 08 Hrs. time frame (for practical demonstration & assessment):</p> <ul style="list-style-type: none"> • Troubleshoot a tractor which stuck during field operation and lead to white exhaust along with the dropage of Three point linkage
Time: 08 Hrs.	During a practical assessment, under observation by an assessor, you are required to
Minimum Evidence Required	<p>Troubleshoot a tractor which stuck during field operation and lead to white exhaust along with the dropage of Three point linkage</p> <p><u>Remove the accessories from engine</u></p> <ol style="list-style-type: none"> 1. Park the tractor on level surface 2. Disconnect the battery terminal 3. Disconnect the fuel supply system 4. Disconnect the cooling system 5. Disconnect the front axle from engine <p><u>Dismantle cylinder Head Assembly</u></p> <ol style="list-style-type: none"> 1. Place the engine level surface 2. Disconnect the Air cleaner 3. Disconnect the exhaust manifold 4. Disconnect the cylinder head cover 5. Remove Rocker arm assembly 6. Remove the water drain plug 7. Dismantle or open the bolt of cylinder head from cylinder block 8. Remove the cylinder head from cylinder block

	<ol style="list-style-type: none"> 9. Place the cylinder head proper place 10. Disconnect the valve spring with valve spring compressor 11. Remove the valve from cylinder head 12. Inspect the damages of parts and replace <p><u>Dismantle the oil pan</u></p> <ol style="list-style-type: none"> 1. Drain the oil from oil pan 2. Dismantle the oil pan bolts 3. Dismantle oil pan 4. Dismantle joint or gas kit <p><u>Dismantle connecting rod and piston</u></p> <ol style="list-style-type: none"> 1. Dismantle the big end bearing bolts 2. Remove the big end bearing 3. Remove the connecting rod <p><u>Disconnect the piston from connecting rod</u></p> <ol style="list-style-type: none"> 1. Dismantle the lock ring from piston pins 2. Remove gudgeon pin 3. Separate the piston from connecting rod <p><u>Remove the piston rings from piston</u></p> <ol style="list-style-type: none"> 1. Collect the ring compressor 2. Remove the rings from piston <p><u>Check piston condition</u></p> <ol style="list-style-type: none"> 1. Check the piston physical condition 2. Check the piston ovalness 1. Check the piston ring area 2. Reassemble after placing piston ring and connecting rod with specific torque <p><u>Replace the cylinder head valve</u></p> <ol style="list-style-type: none"> 1. Perform valves sear cutting and lapping 2. Clean with kerosene oil 3. Refit the valves with valves springs and catchers 4. Place the head on cylinder block with new head gas kit 5. Tight the head bolts in sequence with proper torque 6. Adjust the tappet clearance as per repair manual 7. Refit the tappet cover 8. Assemble all the accessories in the reverse order as removed 9. Re assemble the front axel <p><u>Troubleshoot the Hydraulic system</u></p> <ol style="list-style-type: none"> 1. Inspect the clutch plate for operation 2. Inspect the drive hydraulic pump <p><u>Service the Hydraulic top cover</u></p> <ol style="list-style-type: none"> 1. Remove the linkages 2. Open the bolts of hydraulic top cover 3. Remove both mounting Dowels 4. Remove the Hydraulic pump 5. Remove Hydraulic strainer 6. Remove the suction manifold 7. Remove the drive end plate 8. Remove the drive shaft 9. Clean the Hydraulic pump with kerosene oil 10. Replace the control valve kit 11. Place the rubber O-rings 12. Assemble the Hydraulic Pump 13. Reassemble the hydraulic linkages 14. Check the pump pressure with appropriate tools and gauges <p><u>Adjust the Draft control</u></p>
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	<ol style="list-style-type: none"> 1. Adjust the Quadrant 2. Adjust the control lever position on quadrant 3. Adjust the position control lever on transport position 4. Adjust the Draft control lever on sector mark 5. Adjust vertical lever on right angle 6. Tight the nut and lock <p><u>Adjust Position control lever</u></p> <ol style="list-style-type: none"> 1. Place the control lever on position control 2. Place the draft control lever on up position 3. Tight the Allen screw until vertical lever places on right angle 4. Check nut or lock 5. Refit the hydraulic top cover 6. Adjust the response control 7. Check the adjustment during field operation
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Self-Assessment Checklist

Candidate Name	
Registration No.	
Qualification	Agricultural Machinery Mechanic (Level-5)
Competency Standard	<ul style="list-style-type: none"> Develop 2D CAD Drawing Perform Oxy Acetylene Welding Operate baler Maintain Baler Maintain transmission system Maintain Hydraulic system Maintain pumps and tube wells Overhaul engine Maintain pressurized irrigation system Maintain grain dryer Operate Maintain Grain Thresher Maintain Sugarcane harvester Operate / Maintain Combine Harvester
Purpose of Assessment	Summative Assessment
Assessment Task	<ul style="list-style-type: none"> Troubleshoot a tractor which stuck during field operation and lead to white exhaust along with the drop age of Three point linkage

I can.....

Performance Criteria	Yes	No
1. Park the tractor on level surface	<input type="checkbox"/>	<input type="checkbox"/>
2. Disconnect the battery terminal	<input type="checkbox"/>	<input type="checkbox"/>
3. Disconnect the fuel supply system	<input type="checkbox"/>	<input type="checkbox"/>
4. Disconnect the cooling system	<input type="checkbox"/>	<input type="checkbox"/>
5. Disconnect the front axle from engine	<input type="checkbox"/>	<input type="checkbox"/>
6. Place the engine level surface	<input type="checkbox"/>	<input type="checkbox"/>
7. Disconnect the Air cleaner	<input type="checkbox"/>	<input type="checkbox"/>
8. Disconnect the exhaust manifold	<input type="checkbox"/>	<input type="checkbox"/>
9. Disconnect the cylinder head cover	<input type="checkbox"/>	<input type="checkbox"/>

10. Remove Rocker arm assembly	<input type="checkbox"/>	<input type="checkbox"/>
11. Remove the water drain plug	<input type="checkbox"/>	<input type="checkbox"/>
12. Dismantle or open the bolt of cylinder head from cylinder block	<input type="checkbox"/>	<input type="checkbox"/>
13. Remove the cylinder head from cylinder block	<input type="checkbox"/>	<input type="checkbox"/>
14. Place the cylinder head proper place	<input type="checkbox"/>	<input type="checkbox"/>
15. Disconnect the valve spring with valve spring compressor	<input type="checkbox"/>	<input type="checkbox"/>
16. Remove the valve from cylinder head	<input type="checkbox"/>	<input type="checkbox"/>
17. Inspect the damages of parts and replace	<input type="checkbox"/>	<input type="checkbox"/>
18. Drain the oil from oil pan	<input type="checkbox"/>	<input type="checkbox"/>
19. Dismantle the oil pan bolts	<input type="checkbox"/>	<input type="checkbox"/>
20. Dismantle oil pan	<input type="checkbox"/>	<input type="checkbox"/>
21. Dismantle joint or gas kit	<input type="checkbox"/>	<input type="checkbox"/>
22. Dismantle the big end bearing bolts	<input type="checkbox"/>	<input type="checkbox"/>
23. Remove the big end bearing	<input type="checkbox"/>	<input type="checkbox"/>
24. Remove the connecting rod	<input type="checkbox"/>	<input type="checkbox"/>
25. Dismantle the lock ring from piston pins	<input type="checkbox"/>	<input type="checkbox"/>
26. Remove gudgeon pin	<input type="checkbox"/>	<input type="checkbox"/>
27. Separate the piston from connecting rod	<input type="checkbox"/>	<input type="checkbox"/>
28. Collect the ring compressor	<input type="checkbox"/>	<input type="checkbox"/>
29. Remove the rings from piston	<input type="checkbox"/>	<input type="checkbox"/>
30. Check the piston physical condition	<input type="checkbox"/>	<input type="checkbox"/>
31. Check the piston ovalness	<input type="checkbox"/>	<input type="checkbox"/>

32. Check the piston ring area	<input type="checkbox"/>	<input type="checkbox"/>
33. Reassemble after placing piston ring and connecting rod with specific torque	<input type="checkbox"/>	<input type="checkbox"/>
34. Perform valves sear cutting and lapping	<input type="checkbox"/>	<input type="checkbox"/>
35. Clean with kerosene oil	<input type="checkbox"/>	<input type="checkbox"/>
36. Refit the valves with valves springs and catchers	<input type="checkbox"/>	<input type="checkbox"/>
37. Place the head on cylinder block with new head gas kit	<input type="checkbox"/>	<input type="checkbox"/>
38. Tight the head bolts in sequence with proper torque	<input type="checkbox"/>	<input type="checkbox"/>
39. Adjust the tappet clearance as per repair manual	<input type="checkbox"/>	<input type="checkbox"/>
40. Refit the tappet cover	<input type="checkbox"/>	<input type="checkbox"/>
41. Assemble all the accessories in the reverse order as removed	<input type="checkbox"/>	<input type="checkbox"/>
42. Re assemble the front axel	<input type="checkbox"/>	<input type="checkbox"/>
43. Inspect the clutch plate for operation	<input type="checkbox"/>	<input type="checkbox"/>
44. Inspect the drive hydraulic pump	<input type="checkbox"/>	<input type="checkbox"/>
45. Remove the linkages	<input type="checkbox"/>	<input type="checkbox"/>
46. Open the bolts of hydraulic top cover	<input type="checkbox"/>	<input type="checkbox"/>
47. Remove both mounting Dowels	<input type="checkbox"/>	<input type="checkbox"/>
48. Remove the Hydraulic pump	<input type="checkbox"/>	<input type="checkbox"/>
49. Remove Hydraulic strainer	<input type="checkbox"/>	<input type="checkbox"/>
50. Remove the suction manifold	<input type="checkbox"/>	<input type="checkbox"/>
51. Remove the drive end plate	<input type="checkbox"/>	<input type="checkbox"/>
52. Remove the drive shaft	<input type="checkbox"/>	<input type="checkbox"/>
53. Clean the Hydraulic pump with kerosene oil	<input type="checkbox"/>	<input type="checkbox"/>

54. Replace the control valve kit	<input type="checkbox"/>	<input type="checkbox"/>
55. Place the rubber O-rings	<input type="checkbox"/>	<input type="checkbox"/>
56. Assemble the Hydraulic Pump	<input type="checkbox"/>	<input type="checkbox"/>
57. Reassemble the hydraulic linkages	<input type="checkbox"/>	<input type="checkbox"/>
58. Check the pump pressure with appropriate tools and gauges	<input type="checkbox"/>	<input type="checkbox"/>
59. Adjust the Quadrant	<input type="checkbox"/>	<input type="checkbox"/>
60. Adjust the control lever position on quadrant	<input type="checkbox"/>	<input type="checkbox"/>
61. Adjust the position control lever on transport position	<input type="checkbox"/>	<input type="checkbox"/>
62. Adjust the Draft control lever on sector mark	<input type="checkbox"/>	<input type="checkbox"/>
63. Adjust vertical lever on right angle	<input type="checkbox"/>	<input type="checkbox"/>
64. Tight the nut and lock	<input type="checkbox"/>	<input type="checkbox"/>
65. Place the control lever on position control	<input type="checkbox"/>	<input type="checkbox"/>
66. Place the draft control lever on up position	<input type="checkbox"/>	<input type="checkbox"/>
67. Tight the Allen screw until vertical lever places on right angle	<input type="checkbox"/>	<input type="checkbox"/>
68. Check nut or lock	<input type="checkbox"/>	<input type="checkbox"/>
69. Refit the hydraulic top cover	<input type="checkbox"/>	<input type="checkbox"/>
70. Adjust the response control	<input type="checkbox"/>	<input type="checkbox"/>
71. Check the adjustment during field operation	<input type="checkbox"/>	<input type="checkbox"/>

Candidate's Signature _____ Assessor's Signature _____

Date: _____

Assessors Judgment Guide

Qualification	Agricultural Machinery Mechanic (Level-5)
Competency Standard	<ul style="list-style-type: none"> • Develop 2D CAD Drawing • Perform Oxy Acetylene Welding • Operate baler • Maintain Baler • Maintain transmission system • Maintain Hydraulic system • Maintain pumps and tube wells • Overhaul engine • Maintain pressurized irrigation system • Maintain grain dryer • Operate Maintain Grain Thresher • Maintain Sugarcane harvester • Operate / Maintain Combine Harvester
Purpose of Assessment	Summative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Signature: _____
Assessment Outcome	<p>COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/></p> <p>Name of the Assessor _____</p> <p>Assessor's code: _____</p> <p>Signature: _____</p>

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">• Develop 2D CAD Drawing• Perform Oxy Acetylene Welding• Operate baler• Maintain Baler• Maintain transmission system• Maintain Hydraulic system• Maintain pumps and tube wells• Overhaul engine• Maintain pressurized irrigation system• Maintain grain dryer• Operate Maintain Grain Thresher• Maintain Sugarcane harvester• Operate / Maintain Combine Harvester		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Park the tractor on level surface			
2.	Disconnect the battery terminal			
3.	Disconnect the fuel supply system			
4.	Disconnect the cooling system			
5.	Disconnect the front axle from engine			
6.	Place the engine level surface			
7.	Disconnect the Air cleaner			
8.	Disconnect the exhaust manifold			
9.	Disconnect the cylinder head cover			
10.	Remove Rocker arm assembly			
11.	Remove the water drain plug			
12.	Dismantle or open the bolt of cylinder head from cylinder block			
13.	Remove the cylinder head from cylinder block			

14.	Place the cylinder head proper place			
15.	Disconnect the valve spring with valve spring compressor			
16.	Remove the valve from cylinder head			
17.	Inspect the damages of parts and replace			
18.	Drain the oil from oil pan			
19.	Dismantle the oil pan bolts			
20.	Dismantle oil pan			
21.	Dismantle joint or gas kit			
22.	Dismantle the big end bearing bolts			
23.	Remove the big end bearing			
24.	Remove the connecting rod			
25.	Dismantle the lock ring from piston pins			
26.	Remove gudgeon pin			
27.	Separate the piston from connecting rod			
28.	Collect the ring compressor			
29.	Remove the rings from piston			
30.	Check the piston physical condition			
31.	Check the piston ovalness			
32.	Check the piston ring area			
33.	Reassemble after placing piston ring and connecting rod with specific torque			
34.	Perform valves sear cutting and lapping			

35.	Clean with kerosene oil			
36.	Refit the valves with valves springs and catchers			
37.	Place the head on cylinder block with new head gas kit			
38.	Tight the head bolts in sequence with proper torque			
39.	Adjust the tappet clearance as per repair manual			
40.	Refit the tappet cover			
41.	Assemble all the accessories in the reverse order as removed			
42.	Re assemble the front axel			
43.	Inspect the clutch plate for operation			
44.	Inspect the drive hydraulic pump			
45.	Remove the linkages			
46.	Open the bolts of hydraulic top cover			
47.	Remove both mounting Dowels			
48.	Remove the Hydraulic pump			
49.	Remove Hydraulic strainer			
50.	Remove the suction manifold			
51.	Remove the drive end plate			
52.	Remove the drive shaft			
53.	Clean the Hydraulic pump with kerosene oil			
54.	Replace the control valve kit			

55.	Place the rubber O-rings			
56.	Assemble the Hydraulic Pump			
57.	Reassemble the hydraulic linkages			
58.	Check the pump pressure with appropriate tools and gauges			
59.	Adjust the Quadrant			
60.	Adjust the control lever position on quadrant			
61.	Adjust the position control lever on transport position			
62.	Adjust the Draft control lever on sector mark			
63.	Adjust vertical lever on right angle			
64.	Tight the nut and lock			
65.	Place the control lever on position control			
66.	Place the draft control lever on up position			
67.	Tight the Allen screw until vertical lever places on right angle			
68.	Check nut or lock			
69.	Refit the hydraulic top cover			
70.	Adjust the response control			
71.	Check the adjustment during field operation			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Qualification	Agricultural Machinery Mechanic (Level-5)
Competency Standard	<ul style="list-style-type: none"> Develop 2D CAD Drawing Perform Oxy Acetylene Welding Operate baler Maintain Baler Maintain transmission system Maintain Hydraulic system Maintain pumps and tube wells Overhaul engine Maintain pressurized irrigation system Maintain grain dryer Operate Maintain Grain Thresher Maintain Sugarcane harvester Operate / Maintain Combine Harvester
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)		Satisfactor y	Not Satisfactor y
1.	What is the cylinder head opening sequence?		

2.	What torque is needed to tighten the connecting rod big end bolts?		
3.	What should be the piston cavity direction during fitting?		
4.	What is the value of tappet clearance?		
5.	What are the characteristics of hydraulic control levers?		

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

