

Instruction Sheet for the Candidate

Qualification	Agricultural Machinery Mechanic (Level 5)
Competency Standard	Overhaul Engine
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 05 Hrs. time frame (for practical demonstration & assessment):</p> <ul style="list-style-type: none"> • Remove the accessories from engine • Dismantle cylinder Head Assembly • Dismantle the oil pan • Dismantle connecting rod and piston • Disconnect the piston from connecting rod • Remove the piston rings from piston • Check piston condition • Remove the crankshaft • Remove the cam shaft • Perform cylinder bore measurement • Check water jacket and oil gallery into cylinder block
Time: 05 Hrs.	During a practical assessment, under observation by an assessor, you are required to
Minimum Evidence Required	<p>Remove the accessories from engine</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 lubrication system 6. Disconnect the front axle from engine 7. Disconnect engine from clutch or Transmission housing 8. Separate engine from Tractor <p>Dismantle cylinder Head Assembly</p> <ol style="list-style-type: none"> 1. Place the engine level surface 2. Disconnect the intake manifold 3. Disconnect the exhaust manifold 4. Disconnect the cylinder head cover 5. Disconnect the timing gear assembly 6. Dismantle or open the bolt of cylinder head from cylinder block 7. Remove the cylinder head from cylinder block 8. Place the cylinder head proper place 9. Disconnect the rocker arm assembly from cylinder head 10. Disconnect the valve spring with valve spring compressor

	<ol style="list-style-type: none"> 11. Remove the valve from cylinder head 12. Perform the operation of Warpage <p>Dismantle the oil pan</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>Dismantle connecting rod and piston</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>Disconnect the piston from connecting rod</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>Remove the piston rings from piston</p> <ol style="list-style-type: none"> 1. Collect the ring compressor 2. Remove the rings from piston <p>Check piston condition</p> <ol style="list-style-type: none"> 1. Check the piston physical condition 2. Check the piston ovalness 3. Check the piston ring area <p>Remove the Crank Shaft</p> <ol style="list-style-type: none"> 1. Disconnect the journal bearing 2. Disconnect the thrust bearing 3. Remove the crankshaft from block 4. Inspect the physical condition of crankshaft <p>Remove the Cam Shaft</p> <ol style="list-style-type: none"> 1. Disconnect the cam shaft bearing bolt 2. Remove the bearing cap 3. Remove the camshaft from block 4. Inspect the physical condition of camshaft <p>Perform Cylinder bore measurement</p> <ol style="list-style-type: none"> 1. Clean the cylinder block 2. Measure the bore ovalness 3. Inspect the sleeve condition <p>Check water jacket and oil gallery into cylinder block</p> <ol style="list-style-type: none"> 1. Flash the water jacket 2. Flash the oil gallery 3. Inspect the physical condition of cylinder block water jacket 4. Inspect the physical condition of cylinder block oil gallery
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Self-Assessment Checklist

Candidate Name	
Registration No.	
Qualification	Agricultural Machinery Mechanic (Level 5)
Competency Standard	Overhaul Engine
Purpose of Assessment	Formative Assessment
Assessment Task	<ul style="list-style-type: none"> Remove the accessories from engine Dismantle cylinder Head Assembly Dismantle the oil pan Dismantle connecting rod and piston Disconnect the piston from connecting rod Remove the piston rings from piston Check piston condition Remove the crankshaft Remove the cam shaft Perform cylinder bore measurement Check water jacket and oil gallery into cylinder block

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 lubrication system	<input type="checkbox"/>	<input type="checkbox"/>
6. Disconnect the front axle from engine	<input type="checkbox"/>	<input type="checkbox"/>
7. Disconnect engine from clutch or Transmission housing	<input type="checkbox"/>	<input type="checkbox"/>
8. Separate engine from Tractor	<input type="checkbox"/>	<input type="checkbox"/>
9. Place the engine level surface	<input type="checkbox"/>	<input type="checkbox"/>
10. Disconnect the intake manifold	<input type="checkbox"/>	<input type="checkbox"/>
11. Disconnect the exhaust manifold	<input type="checkbox"/>	<input type="checkbox"/>
12. Disconnect the cylinder head cover	<input type="checkbox"/>	<input type="checkbox"/>

13. Disconnect the timing gear assembly	<input type="checkbox"/>	<input type="checkbox"/>
14. Dismantle or open the bolt of cylinder head from cylinder block	<input type="checkbox"/>	<input type="checkbox"/>
15. Remove the cylinder head from cylinder block	<input type="checkbox"/>	<input type="checkbox"/>
16. Place the cylinder head proper place	<input type="checkbox"/>	<input type="checkbox"/>
17. Disconnect the rocker arm assembly from cylinder head	<input type="checkbox"/>	<input type="checkbox"/>
18. Disconnect the valve spring with valve spring compressor	<input type="checkbox"/>	<input type="checkbox"/>
19. Remove the valve from cylinder head	<input type="checkbox"/>	<input type="checkbox"/>
20. Perform the operation of Warp age	<input type="checkbox"/>	<input type="checkbox"/>
21. Drain the oil from oil pan	<input type="checkbox"/>	<input type="checkbox"/>
22. Dismantle the oil pan bolts	<input type="checkbox"/>	<input type="checkbox"/>
23. Dismantle oil pan	<input type="checkbox"/>	<input type="checkbox"/>
24. Dismantle joint or gas kit	<input type="checkbox"/>	<input type="checkbox"/>
25. Dismantle the big end bearing bolts	<input type="checkbox"/>	<input type="checkbox"/>
26. Remove the big end bearing	<input type="checkbox"/>	<input type="checkbox"/>
27. Remove the connecting rod	<input type="checkbox"/>	<input type="checkbox"/>
28. Dismantle the lock ring from piston pins	<input type="checkbox"/>	<input type="checkbox"/>
29. Remove gudgeon pin	<input type="checkbox"/>	<input type="checkbox"/>
30. Separate the piston from connecting rod	<input type="checkbox"/>	<input type="checkbox"/>
31. Collect the ring compressor	<input type="checkbox"/>	<input type="checkbox"/>
32. Remove the rings from piston	<input type="checkbox"/>	<input type="checkbox"/>
33. Check the piston physical condition	<input type="checkbox"/>	<input type="checkbox"/>
34. Check the piston ovalness	<input type="checkbox"/>	<input type="checkbox"/>
35. Check the piston ring area	<input type="checkbox"/>	<input type="checkbox"/>
36. Disconnect the journal bearing	<input type="checkbox"/>	<input type="checkbox"/>
37. Disconnect the thrust bearing	<input type="checkbox"/>	<input type="checkbox"/>

38. Remove the crankshaft from block	<input type="checkbox"/>	<input type="checkbox"/>
39. Inspect the physical condition of crankshaft	<input type="checkbox"/>	<input type="checkbox"/>
40. Disconnect the cam shaft bearing bolt	<input type="checkbox"/>	<input type="checkbox"/>
41. Remove the bearing cap	<input type="checkbox"/>	<input type="checkbox"/>
42. Remove the camshaft from block	<input type="checkbox"/>	<input type="checkbox"/>
43. Inspect the physical condition of camshaft	<input type="checkbox"/>	<input type="checkbox"/>
44. Clean the cylinder block	<input type="checkbox"/>	<input type="checkbox"/>
45. Measure the bore ovalness	<input type="checkbox"/>	<input type="checkbox"/>
46. Inspect the sleeve condition	<input type="checkbox"/>	<input type="checkbox"/>
47. Flash the water jacket	<input type="checkbox"/>	<input type="checkbox"/>
48. Flash the oil gallery	<input type="checkbox"/>	<input type="checkbox"/>
49. Inspect the physical condition of cylinder block water jacket	<input type="checkbox"/>	<input type="checkbox"/>
50. Inspect the physical condition of cylinder block oil gallery	<input type="checkbox"/>	<input type="checkbox"/>

Candidate's Signature_____ Assessor's Signature_____

Date: _____

Assessors Judgment Guide

Qualification	Agricultural Machinery Mechanic (Level 5)
Competency Standard	Overhaul Engine
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ 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: _____

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">• Remove the accessories from engine• Dismantle cylinder Head Assembly• Dismantle the oil pan• Dismantle connecting rod and piston• Disconnect the piston from connecting rod• Remove the piston rings from piston• Check piston condition• Remove the crankshaft• Remove the cam shaft• Perform cylinder bore measurement• Check water jacket and oil gallery into cylinder block		
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 lubrication system			
6.	Disconnect the front axle from engine			
7.	Disconnect engine from clutch or Transmission housing			
8.	Separate engine from Tractor			
9.	Place the engine level surface			
10.	Disconnect the intake manifold			
11.	Disconnect the exhaust manifold			
12.	Disconnect the cylinder head cover			
13.	Disconnect the timing gear assembly			
14.	Dismantle or open the bolt of cylinder head from cylinder block			
15.	Remove the cylinder head from cylinder block			

16.	Place the cylinder head proper place			
17.	Disconnect the rocker arm assembly from cylinder head			
18.	Disconnect the valve spring with valve spring compressor			
19.	Remove the valve from cylinder head			
20.	Perform the operation of Warp age			
21.	Drain the oil from oil pan			
22.	Dismantle the oil pan bolts			
23.	Dismantle oil pan			
24.	Dismantle joint or gas kit			
25.	Dismantle the big end bearing bolts			
26.	Remove the big end bearing			
27.	Remove the connecting rod			
28.	Dismantle the lock ring from piston pins			
29.	Remove gudgeon pin			
30.	Separate the piston from connecting rod			
31.	Collect the ring compressor			
32.	Remove the rings from piston			
33.	Check the piston physical condition			
34.	Check the piston ovalness			
35.	Check the piston ring area			
36.	Disconnect the journal bearing			
37.	Disconnect the thrust bearing			

38.	Remove the crankshaft from block			
39.	Inspect the physical condition of crankshaft			
40.	Disconnect the cam shaft bearing bolt			
41.	Remove the bearing cap			
42.	Remove the camshaft from block			
43.	Inspect the physical condition of camshaft			
44.	Clean the cylinder block			
45.	Measure the bore ovalness			
46.	Inspect the sleeve condition			
47.	Flash the water jacket			
48.	Flash the oil gallery			
49.	Inspect the physical condition of cylinder block water jacket			
50.	Inspect the physical condition of cylinder block oil gallery			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Qualification	Agricultural Machinery Mechanic (Level 5)
Competency Standard	Overhaul Engine
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Candidate Signature: _____

Assessment Outcome	COMPETENT <input type="checkbox"/>	NOT YET COMPETENT <input type="checkbox"/>
	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 compression ratio?		
2.	Define Spark ignition & Compression Ignition engine?		
3.	What Cylinder volume mean?		
4.	What is firing order of 4 cylinder engine?		

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