

Assessment Evidence Guide For

“Crush Plant Technician/Supervisor”

Level-4

(Summative Assessment)

Paper-1



**National Vocational & Technical
Training Commission**

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology “Crushing Plant Technician/Supervisor”	CS Code:	Level: 4	Version: 01
Competency Standard Title: Establish and Maintain the Occupational Health and Safety System Perform Advance Communication Perform Basic Machining Operations Disassemble and Assemble Diesel Engine Perform Periodic Maintenance of Hauling Machines	Assessment Date (DD/MM/YY): Assessment Time: 5 hrs.		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to perform periodic maintenance of dumper according to the instructions given by assessor.</p> <p>Assessment Task 2: Candidate is required to perform arc welding , grinding, facing, turning and drill a hole on MS round bar according to the instructions given by assessor.</p> <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1:Select tools</p> <p>Performance Criteria 2:Check hydraulic oil levels</p> <p>Performance Criteria 3:Replace hoses/pipes</p> <p>Performance Criteria 4:lubricate bearings, bush and pins</p> <p>Performance Criteria 5:Change damaged grease fittings</p> <p>Performance Criteria 6:Repair / replace defective undercarriage components</p> <p>Performance Criteria 7:Repair /replace defective components of braking system</p> <p>Performance Criteria 8:Perform basic maintenance of choked drain and valves</p> <p>Performance Criteria 9: Check and replace damage seal, air lines and valves</p> <p>Performance Criteria 10:Use ergonomic workstations to avoid muscle fatigue</p> <p>Performance Criteria 11:Follow standard working posture/position at workplace</p>

	<p>Assessment Task 2</p> <p>Performance Criteria 1: Select grinding wheel according to material</p> <p>Performance Criteria 2: Perform grinding as per standard procedure.</p> <p>Performance Criteria 3: Clamp the tool in tool post & set in required angle</p> <p>Performance Criteria 4: Perform Facing operation by initial touching and adjust the depth of cut as per SOPs.</p> <p>Performance Criteria 5: Clamp and centre the work piece as per SOPs</p> <p>Performance Criteria 6: Clamp the tool in tool post & set in required angle</p> <p>Performance Criteria 7: Fit the drill bit in tail stock.</p> <p>Performance Criteria 8: Perform drilling to produce appropriate hole size for boring as per SOPs.</p> <p>Performance Criteria 9: Adjust welding parameters (current, voltage etc.) of welding plant</p> <p>Performance Criteria 10: Check root, filling and capping passes for any visual discontinuities as per acceptance standards</p> <p>Performance Criteria 11: Identify different types of waste material</p> <p>Performance Criteria 12: Dispose- off waste material according to the safety procedure</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <ul style="list-style-type: none"> ✓ Folder includes Job sheet, office emails and coordination reports, feedback Performa, CV etc. ✓ Folder includes the evidence of disassembly and assembly of diesel engine <p>Performance Criteria 1: Demonstrate different modes of communication to communicate</p> <ul style="list-style-type: none"> • Speaking • Reading • Writing • Listening • Presentation • visual representation etc <p>Performance Criteria 2: Develop CV Skills according requirements</p> <p>Performance Criteria 3: Plan steps to complete tasks.</p> <p>Performance Criteria 4: Review planning and organizing process.</p> <p>Performance Criteria 5: Provide feedback on progress on trainees</p> <p>Performance criteria 6: Fill inspection check list</p> <p>Performance criteria 7: Remove valve cover ,intake and exhaust manifolds</p> <p>Performance criteria 8: Remove Head Gasket</p> <p>Performance criteria 9: Disassemble the Piston and connecting rod</p> <p>Performance criteria 10: Disassemble the engine block according to engine manual</p> <p>Performance criteria 11: Assemble the engine block according to engine manual</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the 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:.....

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							

Each Assessment Task (with performance criteria)				
Assessment Task 1		Description of Assessment Task 1 Perform periodic maintenance of dumper according to the instructions given by assessor.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select tools			
2.	Check hydraulic oil levels			
3.	Replace hoses/pipes			
4.	lubricate bearings, bush and pins			
5.	Change damaged grease fittings			
6.	Repair / replace defective undercarriage components			
7.	Repair /replace defective components of braking system			
8.	Perform basic maintenance of choked drain and valves			
9.	Check and replace damage seal, air lines and valves			
10.	Use ergonomic workstations to avoid muscle fatigue			
11.	Follow standard working posture/position at workplace			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Each Assessment Task (with performance criteria)				
Assessment Task 2		Description of Assessment Task 2 Perform arc welding, grinding, facing, turning and drill a hole on MS round bar according to the instructions given by assessor.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select grinding wheel according to material			
2.	Perform grinding as per standard procedure.			
3.	Clamp the tool in tool post & set in required angle			
4.	Perform Facing operation by initial touching and adjust the depth of cut as per SOPs.			
5.	Clamp and centre the work piece as per SOPs			
6.	Clamp the tool in tool post & set in required angle			
7.	Fit the drill bit in tail stock			
8.	Perform drilling to produce appropriate hole size for boring as per SOPs.			
9.	Adjust welding parameters (current, voltage etc.) of welding plant			
10.	Check root, filling and capping passes for any visual discontinuities as per acceptance standards			
11.	Identify different types of waste material			
12.	Dispose- off waste material according to the safety procedure			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio		Description of Portfolio		
		✓ Folder includes Job sheet, office emails and coordination reports, feedback Performa, CV etc. ✓ Folder includes the evidence of disassembly and assembly of diesel engine		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Demonstrate different modes of communication to communicate <ul style="list-style-type: none"> • Speaking • Reading • Writing • Listening • Presentation • visual representation etc 			
2.	Develop CV Skills according requirements			
3.	Plan steps to complete tasks.			
4.	Review planning and organizing process.			
5.	Provide feedback on progress on trainees			
6.	Fill inspection check list			
7.	Remove valve cover ,intake and exhaust manifolds			
8.	Remove Head Gasket			
9.	Disassemble the Piston and connecting rod			
10.	Disassemble the engine block according to engine manual			
11.	Assemble the engine block according to engine manual			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Written Assessment Guide
For
“Crushing Plant
Technician/Supervisor”
Level 4

(Summative Assessment)

Paper-1



National Vocational & Technical
Training Commission

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology “Crushing Plant Technician/Supervisor”	CS Code:	Level: 4	Version: 01
Competency Standard Title: Establish and Maintain the Occupational Health and Safety System Perform Advance Communication Perform Basic Machining Operations Disassemble and Assemble Diesel Engine Perform Periodic Maintenance of Hauling Machines	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology “Crushing Plant Technician/Supervisor”	CS Code:	Level: 4	Version: 01
Competency Standard Title: Establish and Maintain the Occupational Health and Safety System Perform Advance Communication Perform Basic Machining Operations Disassemble and Assemble Diesel Engine Perform Periodic Maintenance of Hauling Machines	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

WRITTEN ASSESSMENT

Question	Candidate's Answer
1. Write down any 3 main parts of Grinding machine	
2. Write different types of Grinding machines	
3. State any five different type of cutting tools?	
4. State the functions of lathe machine?	
5. Why heat energy is required for welding?	
6. Define Power Stroke.	
7. In which stroke ignition is carried out.	
8. Define Valve lead.	
9. Define wheel Loader.	
10. Enlist types of dump truck.	
11. Enlist types of wheel Loader.	
12. What is a bearing?	
13. What are types of bearing?	
14. Enlist any five different types of training methods.	
15. State four common types of emergencies.	

ANSWER KEY

Sr.	Answers
1.	Bed, table, headstock, tail stock, wheel head, cross feed, wheel guard, etc. 1
2.	Surface grinding machines, Cylindrical grinding machine, Tool and Cutter grinding machine, Center less grinding machine, Jig grinding machine, Pedestal grinder, Disc grinder, Cut off grinding machine, etc. 2
3.	Reamer ,Drill ,Milling tools ,End mill ,Broach ,Tap/thread cutting die 3
4.	Lathe machine is used for the removal of material from revolving job with single point cutting tool as per required sizes and shapes.
5.	Welding is done with the help of heat energy which is used to fuse the base metals. 5
6.	The stroke in which air fuel mixture is combust.
7.	Power Stroke
8.	Opening of both intake and exhaust valve before it time.
9.	The machine used to load a material in dump truck.
10.	Rigid type, Articulated types.
11.	Rigid type ,Articulated types
12.	Bearings are mechanical assemblies that consist of rolling elements and usually inner and outer races which are used for rotating or linear shaft applications,
13.	plain bearings, rolling element bearings, jewel bearings, fluid bearings, magnetic bearings, flexure bearings
14.	<ul style="list-style-type: none"> ○ ELearning ○ Simulation employee training ○ Hands-on training ○ Coaching or mentoring ○ Lectures ○ Group discussion and activities ○ Role-playing
15.	<ul style="list-style-type: none"> ● Earthquakes. ● Floods. ● Home Fires. ● Heat Waves. ● Hurricanes. ● Landslides. ● Power Outages. ● Thunderstorms.

Assessment Evidence Guide For

“Crushing Plant Technician/Supervisor”

Level-4

(Summative Assessment)

Paper-2



**National Vocational & Technical
Training Commission**

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology “Crushing Plant Technician/Supervisor”	CS Code:	Level: 4	Version: 01
Competency Standard Title: Troubleshooting of Crushing Plant Perform Basic Electrical Installations Maintain Hydraulic System Maintain the Power Generator Perform Basic Green Skills for Crush Plant	Assessment Date (DD/MM/YY): Assessment Time: 5 hrs.		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to service the crusher and troubleshoot hydraulic system of crushing plant according to the instructions given by assessor.</p> <p>Assessment Task2: Candidate is required to troubleshoot the generator according to the instructions given by assessor, including:</p> <ul style="list-style-type: none"> • Main alternator • Control panel <p>And complete:</p> <p>3. Knowledge assessment test (Written or Oral)</p> <p>4. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1:Select tools</p> <p>Performance Criteria 2: Check and lubricate bearings, bush and pins</p> <p>Performance Criteria 3: Check and replace greasing nipples</p> <p>Performance Criteria 4: Check and replace spring and cushions</p> <p>Performance Criteria 5:Check and replace the screen</p> <p>Performance Criteria 6:Identify defective components / controls</p> <p>Performance Criteria 7:Clean wind screen</p> <p>Performance Criteria 8:Clean knobs of all lights and siren</p> <p>Performance Criteria 9:Check and replace the damage switches of control panel</p> <p>Performance Criteria 10:Check and lubricate bush and pins of rollers</p> <p>Performance Criteria 11:Check and adjust the conveyer belt</p> <p>Performance Criteria 12:Check and adjust the alignment of motors</p> <p>Performance Criteria 13:Inspect the speed sensors with volt meter</p> <p>Performance Criteria 14:Replace the damage sensors</p> <p>Performance Criteria 15:Check and replace the damage components of conveyor</p> <p>Performance Criteria 16:Lubricate bush and pins of hopper and feeder</p> <p>Performance Criteria 17:Inspect the connecting rode and crushing jaws</p> <p>Performance Criteria 18:Tight nuts and flange</p> <p>Performance Criteria 19:Replace with new bearing</p> <p>Performance Criteria 20:Replace with new shaft</p>

	<p>Performance Criteria 21:Identify various types of waste at site</p> <p>Performance Criteria 22:Sort and categorize reusable waste</p>
	<p>Assessment Task 2</p> <p>Performance Criteria 1:Check stator, rotor, exciter, rectifiers</p> <p>Performance Criteria 2:Replace rectifier and exciter</p> <p>Performance Criteria 3:Check and replace cooling fan</p> <p>Performance Criteria 4:Replace AVR(automatic voltage regulator)</p> <p>Performance Criteria 5: Check and replace switches</p> <p>Performance Criteria 6: Check and replace fuses</p> <p>Performance Criteria 7: Dispose unusable waste as per set standards</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>✓ Folder includes preventive maintenance sheets(Power Generator)</p> <p>✓ Folder includes evidence of basic electrical installation projects</p> <p>Performance Criteria 1:Perform daily maintenance of engine</p> <p>Performance Criteria 2: Perform periodic maintenance of engine.</p> <p>Performance Criteria 3:Perform alternator preventive maintenance</p> <p>Performance Criteria 4:Interpret layout of the job for installations</p> <p>Performance Criteria 5:Interpret electrical drawing for electrical wirings</p> <p>Performance Criteria 6:Connect components of equipment according to drawing</p> <p>Performance Criteria 7: Prepare series circuit on work bench</p> <p>Performance Criteria 8: Prepare parallel circuit on work bench</p> <p>Performance Criteria 9: Prepare head and tail light circuit on work bench</p> <p>Performance Criteria 10: Prepare indicator circuit on work bench</p> <p>Performance Criteria 11:Select cable gauge</p> <p>Performance Criteria 12:Select cables colors</p> <p>Performance Criteria 13:Connect cables</p> <p>Performance Criteria 14:Insulate Joints</p> <p>Performance Criteria 15:Measure voltage</p> <p>Performance Criteria 16:Measure current</p> <p>Performance Criteria 17: Measure resistance</p> <p>Performance Criteria 18:Test continuity</p> <p>Performance Criteria 19:Select electrical appliances</p> <p>Performance Criteria 20:Connect cables with electrical appliances as per operation manual</p> <p>Performance Criteria 21: Verify the connections according to color coding / tagging / numbering.</p> <p>Performance Criteria 22: Check the connectivity of earthing point.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the 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:.....

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							

Each Assessment Task (with performance criteria)				
Assessment Task 1		Description of Assessment Task 1		
		Service the crusher and troubleshoot hydraulic system of crushing plant according to the instructions given by assessor.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select tools			
2.	Check and lubricate bearings, bush and pins			
3.	Check and replace greasing nipples			
4.	Check and replace spring and cushions			
5.	Check and replace the screen			
6.	Identify defective components / controls			
7.	Clean wind screen			
8.	Clean knobs of all lights and siren			
9.	Check and replace the damage switches of control panel			
10.	Check and lubricate bush and pins of rollers			
11.	Check and adjust the conveyer belt			
12.	Check and adjust the alignment of motors			
13.	Inspect the speed sensors with volt meter			
14.	Replace the damage sensors			
15.	Check and replace the damage components of conveyor			
16.	Lubricate bush and pins of hopper and feeder			
17.	Inspect the connecting rode and crushing jaws			
18.	Tight nuts and flange			
19.	Replace with new bearing			
20.	Replace with new shaft			
21.	Identify various types of waste at site			
22.	Sort and categorize reusable waste			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Each Assessment Task (with performance criteria)				
Assessment Task 2		Description of Assessment Task 2 Troubleshoot the generator according to the instructions given by assessor, including: <ul style="list-style-type: none"> • Main alternator • Control panel 		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Check stator, rotor, exciter, rectifiers			
2.	Replace rectifier and exciter			
3.	Check and replace cooling fan			
4.	Replace AVR(automatic voltage regulator)			
5.	Check and replace switches			
6.	Check and replace fuses			
7.	Dispose unusable waste as per set standards			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio		Description of Portfolio		
		✓ Folder includes preventive maintenance sheets(Power Generator) ✓ Folder includes evidence of basic electrical installation projects		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Perform daily maintenance of engine			
2.	Perform periodic maintenance of engine.			
3.	Perform alternator preventive maintenance			
4.	Interpret layout of the job for installations			
5.	Interpret electrical drawing for electrical wirings			
6.	Connect components of equipment according to drawing			
7.	Prepare series circuit on work bench			
8.	Prepare parallel circuit on work bench			
9.	Prepare head and tail light circuit on work bench			
10.	Prepare indicator circuit on work bench			
11.	Select cable gauge			
12.	Select cables colors			
13.	Connect cables			
14.	Insulate Joints			
15.	Measure voltage			
16.	Measure current			
17.	Measure resistance			
18.	Test continuity			
19.	Select electrical appliances			
20.	Connect cables with electrical appliances as per operation manual			
21.	Verify the connections according to color coding / tagging / numbering.			
22.	Check the connectivity of earthing point.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Written Assessment Guide

For

“Crushing Plant Technician/Supervisor”

Level 4

(Summative Assessment)

Paper-2



**National Vocational & Technical
Training Commission**

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology “Crushing Plant Technician/Supervisor”	CS Code:	Level: 4	Version: 01
Competency Standard Title: Troubleshooting of Crushing Plant Perform Basic Electrical Installations Maintain the Power Generator Maintain Hydraulic System Perform Basic Green Skills for Crush Plant	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: National Vocational Certificate Level 4 in Crush Plant Technology "Crushing Plant Technician/Supervisor"	CS Code:	Level: 4	Version: 01
Competency Standard Title: Troubleshooting of Crushing Plant Perform Basic Electrical Installations Maintain the Power Generator Maintain Hydraulic System Perform Basic Green Skills for Crush Plant	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. Define Feeder.	
2. What is the meaning of crushers?	
3. How many types of crushers are there?	
4. Where 3 phase power supplies used?	
5. Define L.C.R meter.	
6. Enlist any ten components of diesel engine.	
7. Define Alternator.	
8. Enlist types of packing.	
9. PPC Stand for.	
10. Define Aeration.	
11. Define environmental degradation?	

ANSWER KEY

Sr.	Answers
1.	Feeders are the mouths of primary crushing plants and must consume into the crusher
2.	A crusher is a machine which breaks up solids by pressing them. A rock crusher is a machine designed to take large rocks and reduce them to smaller rocks.
3.	There are two basic types of jaw crushers: single toggle and double toggle.
4.	Three phase power supplies power grids, data centers, aircraft, shipboard, and other electronic loads larger than 1,000 watts.
5.	Measure the inductance (L), capacitance (C), and resistance (R) of an electronic component.
6.	Piston ,Connecting Rod ,Gudgeon Pin ,Crack Shaft ,PTO (Power Take Off) , fuel injector ,fuel filters, oil filter ,air filter, glow plug ,fly wheel, etc.
7.	The device used to convert mechanical energy into electrical energy.
8.	U Packing ,V Packing
9.	Proportional Pressure Control Valve
10.	The phenomenon whereby air exists in a liquid (oil or water) in the form of fine bubbles, or the condition where by air is mixed in a liquid, is generally known as aeration.
11.	Environmental degradation is a process through which the natural environment is compromised in some way, reducing biological diversity and the general health of the environment