

Qualification Pack



Tyre Mounted Crane Operator

QP Code: IES/Q0109

Version: 3.0

NSQF Level: 4

Infrastructure Equipment Skill Council || Jubilee Building – 2nd Floor, No.45, Museum Road
Bengaluru - 560025

Qualification Pack

Contents

IES/Q0109: Tyre Mounted Crane Operator	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
IES/N0125: Carry out pre-operation checks on tyre mounted crane	5
IES/N0126: Operate Tyre Mounted Crane	11
IES/N0127: Perform routine maintenance and troubleshooting of Tyre Mounted Crane	19
IES/N7601: Comply with worksite health and safety	26
DGT/VSQ/N0101: Employability Skills (30 Hours)	30
Assessment Guidelines and Weightage	35
<i>Assessment Guidelines</i>	35
<i>Assessment Weightage</i>	36
Acronyms	37
Glossary	38

Qualification Pack

IES/Q0109: Tyre Mounted Crane Operator

Brief Job Description

A Tyre Mounted Crane Operator, operates a stationed crane to lift, move, position, and reposition loads. Responsible for operating Tele handler to move, locate, relocate, stack & count merchandise.

Personal Attributes

This job requires the individual to have good hand eye coordination as also comply with industry regulations. Willingness to work, strong work ethics and courteous behaviour with co workers are equally desirable. He should also be physically agile, strong, have good eye sight and not suffer from colour-blindness.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [IES/N0125: Carry out pre-operation checks on tyre mounted crane](#)
2. [IES/N0126: Operate Tyre Mounted Crane](#)
3. [IES/N0127: Perform routine maintenance and troubleshooting of Tyre Mounted Crane](#)
4. [IES/N7601: Comply with worksite health and safety](#)
5. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Infrastructure Equipment
Sub-Sector	Equipment Operations
Occupation	Operator
Country	India
NSQF Level	4
Credits	14
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8343.0500 Mobile Crane Operator

Qualification Pack

Minimum Educational Qualification & Experience	8th grade pass plus 2-year NTC plus 1 Year NAC OR 10th grade pass plus 1-year NTC/ NAC OR 10th grade pass with 2 Years of experience OR 10th grade pass and pursuing continuous schooling OR 11th grade pass
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Light Commercial Vehicle Driving License (LCV) is preferred
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	17/11/2025
NSQC Approval Date	17/11/2022
Version	3.0
Reference code on NQR	2022/IS/IESC/06787
NQR Version	3.0

Qualification Pack

IES/N0125: Carry out pre-operation checks on tyre mounted crane

Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to prepare the Tyre Mounted crane for operation.

Scope

The scope covers the following :

- Pre-operation checks
- Documentation and Reporting

Elements and Performance Criteria

Pre -Operation Checks

To be competent, the user/individual on the job must be able to:

- PC1.** adhere by the time constraints set by the operator
- PC2.** ensure the crane body components is free of cracks and bearing wear
- PC3.** ensures that all labels are visible and in position according to the operating manual
- PC4.** check any hydraulic oil leaks and ensure that the oil level is adequate according to the manufacturer's indication
- PC5.** examine the battery for leaks and ensure that the fluid level is adequate according to the manufacturer's indicator
- PC6.** check the tyre pressure and lug nut torque according to the manufacturer's recommendations
- PC7.** check for engine oil leaks and fluid levels as indicated by the manufacturer's indication
- PC8.** add fuel and oil if needed as per manufacturer's indicator
- PC9.** check the holding and control breaks to ensure that they are functioning properly
- PC10.** check the following components for damage, improperly installed or missing parts as per the manufacturer s manual: Electrical components, wiring and electrical cables Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds Platform, tower, turntable, scissor stack structures, their components and wear pads Tires and wheels Trailer lights and reflectors o Parking brake and electric braking system (including the breakaway system) Drive wheel and motor
- PC11.** check the following components as per operation manual: Outriggers and Wheels Limit switches Pins, nuts, bolts and other fasteners Hitch components Safety chains Engines their fuel systems and related components Axle components Personal protective devices
- PC12.** check that all structural and other key components are present and in working order, as specified in the operating handbook
- PC13.** check that all associated fasteners and pins are in position and properly fastened in accordance with the operating handbook
- PC14.** check that all compartment lids are in place and locked in accordance with the operating manual

Qualification Pack

PC15. visually inspect entire machine for: Cracks in welds or structural components Excessive rust, corrosion or oxidation Dents or damage to machine

Documentation and Reporting

To be competent, the user/individual on the job must be able to:

PC16. keep a checking/maintenance logbook in which all actions conducted prior to operating the crane are recorded

PC17. if a defect is found that is outside the scope of his duty, notify the supervisor immediately

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organizations procedures and guidelines related to breakdown & maintenance services

KU2. the company's performance criteria and processes

KU3. reporting structure in the company

KU4. escalation matrix for reporting unresolved problems

KU5. schedule for resolving the complaint/problem

KU6. work goal and review procedure with supervisor for obtaining/giving feedback on performance process

KU7. location of tools

KU8. contact person in case of queries on procedure or products

KU9. location and procedure for waste storage and disposal

KU10. safety policy of the company

KU11. different types of cranes and their applications and functions

KU12. introduction to engine, transmission, their use and function

KU13. different types of hydraulic mechanisms

KU14. the relevance of greasing and oiling crane components that require routine lubrication

KU15. the instrument panel, its placement and its operation

KU16. controls, levers and switches in order to operate the crane properly

KU17. engine ,hydraulic & electrical functions of a mobile crane

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. keep note of any deviations or occurrences that do not conform to the established criteria

GS2. read and comprehend basic English in order to read and interpret machine/manual operator's decals/indicators

GS3. read instructions, guidelines/procedures/rules related to the worksite and equipment operations

GS4. communicate efficiently with operators to explain instructions and other concerns

GS5. when communicating with the operator and other employees, use appropriate technical terms



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- GS6.** decide when to conduct maintenance checks
- GS7.** evaluate the decision and conduct basic trouble shooting
- GS8.** work with supervisors/ team mates to carry out work related tasks
- GS9.** plan work according to the required schedule and location
- GS10.** plan for regular maintenance on a daily basis before machine operations
- GS11.** deliver first-class service to ensure client happiness
- GS12.** identify immediate or temporary solutions to resolve mechanical issues
- GS13.** judge when to seek assistance from supervisor
- GS14.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Pre -Operation Checks</i>	21	46	-	-
PC1. adhere by the time constraints set by the operator	-	3	-	-
PC2. ensure the crane body components is free of cracks and bearing wear	1	3	-	-
PC3. ensures that all labels are visible and in position according to the operating manual	2	3	-	-
PC4. check any hydraulic oil leaks and ensure that the oil level is adequate according to the manufacturer's indication	1	3	-	-
PC5. examine the battery for leaks and ensure that the fluid level is adequate according to the manufacturer's indicator	2	3	-	-
PC6. check the tyre pressure and lug nut torque according to the manufacturer's recommendations	2	3	-	-
PC7. check for engine oil leaks and fluid levels as indicated by the manufacturer's indication	1	3	-	-
PC8. add fuel and oil if needed as per manufacturer's indicator	1	3	-	-
PC9. check the holding and control breaks to ensure that they are functioning properly	1	3	-	-
PC10. check the following components for damage, improperly installed or missing parts as per the manufacturer s manual: Electrical components, wiring and electrical cables Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds Platform, tower, turntable, scissor stack structures, their components and wear pads Tires and wheels Trailer lights and reflectors o Parking brake and electric braking system (including the breakaway system) Drive wheel and motor	2	4	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check the following components as per operation manual: Outriggers and Wheels Limit switches Pins, nuts, bolts and other fasteners Hitch components Safety chains Engines their fuel systems and related components Axle components Personal protective devices	2	4	-	-
PC12. check that all structural and other key components are present and in working order, as specified in the operating handbook	2	2	-	-
PC13. check that all associated fasteners and pins are in position and properly fastened in accordance with the operating handbook	2	3	-	-
PC14. check that all compartment lids are in place and locked in accordance with the operating manual	2	3	-	-
PC15. visually inspect entire machine for: Cracks in welds or structural components Excessive rust, corrosion or oxidation Dents or damage to machine	-	3	-	-
<i>Documentation and Reporting</i>	4	4	-	-
PC16. keep a checking/maintenance logbook in which all actions conducted prior to operating the crane are recorded	2	2	-	-
PC17. if a defect is found that is outside the scope of his duty, notify the supervisor immediately	2	2	-	-
NOS Total	25	50	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IES/N0125
NOS Name	Carry out pre-operation checks on tyre mounted crane
Sector	Infrastructure Equipment
Sub-Sector	Equipment Operations
Occupation	Operator
NSQF Level	4
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQF Clearance Date	17/11/2022

Qualification Pack

IES/N0126: Operate Tyre Mounted Crane

Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for operating a Tyre Mounted Crane.

Scope

The scope covers the following :

- Start Tyre Mounted Crane operations
- Lift and stacking the load

Elements and Performance Criteria

Documentation and Reporting

To be competent, the user/individual on the job must be able to:

- PC1.** plan and organise the work in accordance with the instructions
- PC2.** inspect the worksite to identify the soil condition to station the tyre mounted crane
- PC3.** make certain that the tyre-mounted crane is always assembled / stationed on solid, level ground
- PC4.** ensure tyre mounted crane is assembled near the load on smooth surface
- PC5.** position the hook in accordance with the operations handbook to attach the sling, shackle and chains
- PC6.** start the engine as per operations manual
- PC7.** ensure outriggers are extended fully as per manufacturer's manual
- PC8.** ensure outriggers are equipped with lock pins per manufacturer's manual
- PC9.** examine the assembly and confirm that all necessary safety precautions have been taken in accordance with the safety guidelines
- PC10.** in case of a crisis use emergency stop button to disable all power to the tyre mounted crane, as per operator manual

Loading and hauling of the load

To be competent, the user/individual on the job must be able to:

- PC11.** ensure safe working load as per operation manual
- PC12.** check that the wind speeds are within the crane's operational limitations
- PC13.** ensure proper boom extension in accordance with the operation manual
- PC14.** before the actual lifting, hoist and release the weight at a low height to ensure that the holding and control breaks are working properly
- PC15.** carry out lifting of load in coordination with rigger as per the requirement
- PC16.** monitor stability whilst moving a load
- PC17.** maintain constant visibility of both ends of the crane arm
- PC18.** ensure that there are no barriers, people, or other impediments throughout the lifting procedure

Qualification Pack

- PC19.** look out for people working and hazards such as trenches, potholes and cables
- PC20.** abide by the time limitations imposed by the supervisors
- PC21.** perform in-service visual inspections on essential temperature and pressure gauges in accordance with the operation manual
- PC22.** in accordance with the operating handbook, choose and apply the appropriate kind of brake in various scenarios and conditions
- PC23.** ensure that walkway rules are observed, such as operating the crane within permissible/allocated zones
- PC24.** use the crane's numerous signaling systems with caution
- PC25.** maintain a safe distance from other plants and vehicles
- PC26.** work safely in accordance with operational requirements and associated safe systems of work

Stacking

To be competent, the user/individual on the job must be able to:

- PC27.** follow the instructions by the rigger
- PC28.** operate and control the boom as per operation manual
- PC29.** ensure that the laydown area is large enough to support the load
- PC30.** ensure the laydown space is free of any obstructions
- PC31.** make certain that no other operators travel on or near the tyre-mounted crane
- PC32.** report any issues encountered when using the tyre-mounted crane to the supervisor/rigger
- PC33.** when the equipment is left unattended, make sure it is properly shut down and secured
- PC34.** appropriately uninstall outriggers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations procedures and guidelines related to breakdown & maintenance services
- KU2.** the company's performance criteria and processes
- KU3.** reporting structure in the company
- KU4.** escalation matrix for reporting unresolved problems
- KU5.** schedule for resolving the complaint/problem
- KU6.** work goal and review procedure with supervisor for obtaining/giving feedback on performance process
- KU7.** location of tools
- KU8.** contact person in case of queries on procedure or products
- KU9.** location and procedure for waste storage and disposal
- KU10.** safety policy of the company
- KU11.** limitations on equipment load capacity
- KU12.** methods to read load charts and accurately determine the load to be lifted
- KU13.** the causes of equipment related accidents and associated preventative measures
- KU14.** the manufacturer's criteria for equipment operations

Qualification Pack

- KU15.** the manufacturer's criteria for equipment modifications
- KU16.** usage of appropriate attachment available as ad-ons with the main crane
- KU17.** proper rigging hardware and slings technique
- KU18.** use of various sorts of rigging setups
- KU19.** load hook-up points
- KU20.** types of material, methods and tools involved in the construction or repair of buildings, roads, heavy engineering equipment, oil wells, metro etc where cranes are used
- KU21.** techniques of hoisting operation
- KU22.** the method of checking holding and control brakes
- KU23.** rigging method that is safe
- KU24.** rigging hardware and tool use
- KU25.** multi-crane operations
- KU26.** conditions and hazards that may impact crane stability
- KU27.** crane tipping prevention techniques.
- KU28.** methods to communicate through hand signals
- KU29.** government regulations and other regulations imposed by crane safety standards
- KU30.** introduction to the engine and transmission, as well as their use and purpose
- KU31.** various types of hydraulic mechanisms
- KU32.** instruments panel, their location and operation
- KU33.** controls, levers and switches in order to operate the tyre mounted crane properly
- KU34.** optimal engine oil pressure, radiator coolant temperature
- KU35.** initial visual inspections to detect damage, flaws, or leaks
- KU36.** basic safety precautions while excavating and piling
- KU37.** all safety signs and other emergency signals should be used
- KU38.** proper tyre mounted crane maintenance methods
- KU39.** methods to response to emergencies e.g. correct way to use fire extinguisher
- KU40.** the position and application of the tyre-mounted crane

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** keep note of any deviations or occurrences that do not conform to the established criteria
- GS2.** read and comprehend basic English in order to read and interpret machine/manual operator's decals/indicators
- GS3.** interpret stakes and signage on the road and during worksite operations
- GS4.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS5.** use correct technical terms while interacting with supervisor
- GS6.** examine the tyre-mounted crane for any damage or defective components and take appropriate measures
- GS7.** work with supervisors/team members to complete job-related tasks

Qualification Pack

- GS8.** plan work according to the required schedule and location
- GS9.** deliver first-class service to ensure client satisfaction
- GS10.** identify immediate or temporary solutions to resolve mechanical issues
- GS11.** determine when to seek assistance from a supervisor
- GS12.** identify possible ways to improve operational efficiency
- GS13.** suggest methods to avoid accidents/errors while operating machine
- GS14.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Documentation and Reporting</i>	7	25	-	-
PC1. plan and organise the work in accordance with the instructions	1	2	-	-
PC2. inspect the worksite to identify the soil condition to station the tyre mounted crane	-	3	-	-
PC3. make certain that the tyre-mounted crane is always assembled / stationed on solid, level ground	-	3	-	-
PC4. ensure tyre mounted crane is assembled near the load on smooth surface	-	3	-	-
PC5. position the hook in accordance with the operations handbook to attach the sling, shackle and chains	1	3	-	-
PC6. start the engine as per operations manual	1	3	-	-
PC7. ensure outriggers are extended fully as per manufacturer's manual	1	3	-	-
PC8. ensure outriggers are equipped with lock pins per manufacturer's manual	1	3	-	-
PC9. examine the assembly and confirm that all necessary safety precautions have been taken in accordance with the safety guidelines	1	1	-	-
PC10. in case of a crisis use emergency stop button to disable all power to the tyre mounted crane, as per operator manual	1	1	-	-
<i>Loading and hauling of the load</i>	9	24	-	-
PC11. ensure safe working load as per operation manual	1	1	-	-
PC12. check that the wind speeds are within the crane's operational limitations	1	2	-	-
PC13. ensure proper boom extension in accordance with the operation manual	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. before the actual lifting, hoist and release the weight at a low height to ensure that the holding and control breaks are working properly	1	3	-	-
PC15. carry out lifting of load in coordination with rigger as per the requirement	-	3	-	-
PC16. monitor stability whilst moving a load	-	2	-	-
PC17. maintain constant visibility of both ends of the crane arm	-	2	-	-
PC18. ensure that there are no barriers, people, or other impediments throughout the lifting procedure	1	1	-	-
PC19. look out for people working and hazards such as trenches, potholes and cables	-	1	-	-
PC20. abide by the time limitations imposed by the supervisors	-	1	-	-
PC21. perform in-service visual inspections on essential temperature and pressure gauges in accordance with the operation manual	1	1	-	-
PC22. in accordance with the operating handbook, choose and apply the appropriate kind of brake in various scenarios and conditions	1	1	-	-
PC23. ensure that walkway rules are observed, such as operating the crane within permissible/allocated zones	-	2	-	-
PC24. use the crane's numerous signaling systems with caution	1	1	-	-
PC25. maintain a safe distance from other plants and vehicles	-	1	-	-
PC26. work safely in accordance with operational requirements and associated safe systems of work	1	1	-	-
<i>Stacking</i>	2	8	-	-
PC27. follow the instructions by the rigger	-	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. operate and control the boom as per operation manual	1	1	-	-
PC29. ensure that the laydown area is large enough to support the load	-	1	-	-
PC30. ensure the laydown space is free of any obstructions	-	1	-	-
PC31. make certain that no other operators travel on or near the tyre-mounted crane	-	1	-	-
PC32. report any issues encountered when using the tyre-mounted crane to the supervisor/rigger	1	1	-	-
PC33. when the equipment is left unattended, make sure it is properly shut down and secured	-	1	-	-
PC34. appropriately uninstall outriggers	-	1	-	-
NOS Total	18	57	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IES/N0126
NOS Name	Operate Tyre Mounted Crane
Sector	Infrastructure Equipment
Sub-Sector	Equipment Operations
Occupation	Operator
NSQF Level	4
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

IES/N0127: Perform routine maintenance and troubleshooting of Tyre Mounted Crane

Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting on the Tyre Mounted Crane.

Scope

The scope covers the following :

- Routine maintenance, basic diagnostics and troubleshooting
- Documentation and Reporting

Elements and Performance Criteria

Routine maintenance

To be competent, the user/individual on the job must be able to:

- PC1.** by monitoring the machine working hours plan the correct service schedule
- PC2.** check crane structure and the following accessories as per operation & maintenance manual
- PC3.** check crane structure for deformed, cracked or corroded members in the structure and boom loose bolts or rivets excessive wear on brake and clutch system parts, deformed wedges, defective cotter keys, pins and guard rails
- PC4.** check for the following in hydraulic system of crane as per operation & maintenance manual: deterioration or leakage in air or hydraulic systems safe and effective operation on hoses, pumps and motors levels of fluid air cleaners for replacement or cleaning
- PC5.** check for the following control mechanisms and monitoring devices as per operation & maintenance manual cables, brakes and levers for poor adjustment or excessive wear marking on the load/radius indicator over full range load moment indicator, boom angle indicator, boom length indicator and anti two-block system
- PC6.** check wire ropes for wear and tear
- PC7.** check the following in the main boom as per operation manual: lift cylinder(s) telescoping cylinder(s) hydraulic hoses / tubing & fittings holding device auxiliary boom head structure
- PC8.** check the following in the lattice boom extension boom extension alignment cords lattices end connections
- PC9.** refill coolants, lubricants and fluids in accordance with the operating and maintenance manual
- PC10.** grease all greasing pins and pivot points in accordance with the operation and maintenance handbook
- PC11.** check battery levels and terminal condition and make minor adjustments based on manufacturer's advice
- PC12.** check and maintain the tyre rims, air pressure, wheel nits and treads in accordance with the manufacturer's recommendations

Basic diagnostics and troubleshooting

Qualification Pack

To be competent, the user/individual on the job must be able to:

- PC13.** before performing any repair, be certain that the machine is on firm and level ground
- PC14.** complete timely and legibly daily/ weekly maintenance sheets as provided by the company
- PC15.** ensure that suitable props/ support devices are used while performing maintenance
- PC16.** make certain that no engine repair is conducted while the engine is running or remains hot
- PC17.** assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel
- PC18.** diagnose the problem
- PC19.** at the work place, waste should be handled and disposed in accordance with environmental regulations
- PC20.** adhere to the reporting procedures established by the employer

Documentation and Reporting

To be competent, the user/individual on the job must be able to:

- PC21.** complete all documents in accordance with the specified standards on time
- PC22.** in a timely way, report and escalate problems/incidents as needed
- PC23.** if a fault is found that is outside the scope of his duty, notify the supervisor immediately

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations procedures and guidelines related to breakdown & maintenance services
- KU2.** the company's performance criteria and processes
- KU3.** reporting structure in the company
- KU4.** escalation matrix for reporting unresolved problems
- KU5.** schedule for resolving the complaint/problem
- KU6.** work objective and review procedure with supervisor for obtaining/giving feedback on performance process
- KU7.** location of tools
- KU8.** contact person in case of queries on procedure or products
- KU9.** location and procedure for waste storage and disposal
- KU10.** safety policy of the company
- KU11.** various components of the equipment and their functions
- KU12.** control and switches needed to operate the tyre mounted crane properly
- KU13.** the underlying physics and mechanics involved in the tyre mounted crane's various functions
- KU14.** typical defects and general reasons of failure
- KU15.** response to emergency situations
- KU16.** the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature
- KU17.** possible sources of any unusual sound emanating from the engine and other parts

Generic Skills (GS)

Qualification Pack

User/individual on the job needs to know how to:

- GS1.** keep note of any deviations or occurrences that do not conform to the established criteria
- GS2.** read and comprehend basic English in order to read and interpret machine/manual operator's decals/indicators
- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** communicate efficiently with operators to explain instructions and other concerns
- GS5.** when communicating with the operator and other employees, use appropriate technical terms
- GS6.** decide when to conduct maintenance checks
- GS7.** evaluate the decision and conduct basic trouble shooting
- GS8.** work with supervisors/ team mates to carry out work related tasks
- GS9.** plan work according to the required schedule and location
- GS10.** plan for regular maintenance on a daily basis before machine operations
- GS11.** deliver first-rate service to ensure client happiness
- GS12.** identify immediate or temporary solutions to resolve mechanical issues
- GS13.** judge when to seek assistance from supervisor
- GS14.** identify possible ways to improve operational efficiency
- GS15.** check for damages and diagnose common problems in the tyre mounted crane and take relevant action
- GS16.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Routine maintenance</i>	4	18	-	-
PC1. by monitoring the machine working hours plan the correct service schedule	-	1	-	-
PC2. check crane structure and the following accessories as per operation & maintenance manual	-	1	-	-
PC3. check crane structure for deformed, cracked or corroded members in the structure and boom loose bolts or rivets excessive wear on brake and clutch system parts, deformed wedges, defective cotter keys, pins and guard rails	1	2	-	-
PC4. check for the following in hydraulic system of crane as per operation & maintenance manual: deterioration or leakage in air or hydraulic systems safe and effective operation on hoses, pumps and motors levels of fluid air cleaners for replacement or cleaning	1	2	-	-
PC5. check for the following control mechanisms and monitoring devices as per operation & maintenance manual cables, brakes and levers for poor adjustment or excessive wear marking on the load/radius indicator over full range load moment indicator, boom angle indicator, boom length indicator and anti two-block system	-	3	-	-
PC6. check wire ropes for wear and tear	-	1	-	-
PC7. check the following in the main boom as per operation manual: lift cylinder(s) telescoping cylinder(s) hydraulic hoses / tubing & fittings holding device auxiliary boom head structure	1	2	-	-
PC8. check the following in the lattice boom extension boom extension alignment cords lattices end connections	1	2	-	-
PC9. refill coolants, lubricants and fluids in accordance with the operating and maintenance manual	-	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. grease all greasing pins and pivot points in accordance with the operation and maintenance handbook	-	1	-	-
PC11. check battery levels and terminal condition and make minor adjustments based on manufacturer's advice	-	1	-	-
PC12. check and maintain the tyre rims, air pressure, wheel nits and treads in accordance with the manufacturer's recommendations	-	1	-	-
<i>Basic diagnostics and troubleshooting</i>	1	8	-	-
PC13. before performing any repair, be certain that the machine is on firm and level ground	-	1	-	-
PC14. complete timely and legibly daily/ weekly maintenance sheets as provided by the company	-	1	-	-
PC15. ensure that suitable props/ support devices are used while performing maintenance	-	1	-	-
PC16. make certain that no engine repair is conducted while the engine is running or remains hot	-	1	-	-
PC17. assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel	-	1	-	-
PC18. diagnose the problem	1	1	-	-
PC19. at the work place, waste should be handled and disposed in accordance with environmental regulations	-	1	-	-
PC20. adhere to the reporting procedures established by the employer	-	1	-	-
<i>Documentation and Reporting</i>	3	1	-	-
PC21. complete all documents in accordance with the specified standards on time	1	1	-	-
PC22. in a timely way, report and escalate problems/incidents as needed	1	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. if a fault is found that is outside the scope of his duty, notify the supervisor immediately	1	-	-	-
NOS Total	8	27	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IES/N0127
NOS Name	Perform routine maintenance and troubleshooting of Tyre Mounted Crane
Sector	Infrastructure Equipment
Sub-Sector	Equipment Operations
Occupation	Operator
NSQF Level	4
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

IES/N7601: Comply with worksite health and safety

Description

This unit is about adhering to health and safety requirements at the worksite during equipment operations.

Scope

The scope covers the following :

- Worksite health and safety

Elements and Performance Criteria

Worksite health and safety

To be competent, the user/individual on the job must be able to:

- PC1.** Comply with safety, health, security and environment related regulations/guidelines at the work site
- PC2.** use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite
- PC3.** Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk
- PC4.** Carry out operations as per the manufacturer's and worksite related health and safety guidelines
- PC5.** Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines
- PC6.** operate various grades of fire extinguishers, as applicable
- PC7.** support in administering basic first aid and report to concerned team members, as required, in case of an accident
- PC8.** respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility
- PC9.** record and report details related to operations, incidents or accidents, as applicable

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** health, safety, environmental (HSE) and security related policies/guidelines of the organization and the worksite and its importance
- KU2.** personnel responsible for health, safety and environment (HSE) related matters and their contact details
- KU3.** location of worksite storage, she team and safe assembly points
- KU4.** reporting and documentation procedures for HSE and security matters
- KU5.** manufacturers guidelines related to health and safety requirements

Qualification Pack

- KU6.** common types of health, safety, environment and security risks related to the worksite and operations
- KU7.** types, use and importance of personal protective equipment (PPE) and other safety gear
- KU8.** safe working practices to avoid common hazards and risks
- KU9.** guidelines for transport, storage and disposal of hazardous materials and waste
- KU10.** types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown
- KU11.** knowledge of safe lockdown/stop of machinery use in case of emergencies and incidents/accidents
- KU12.** types of fire extinguishers and their use
- KU13.** common injuries and appropriate basic first aid treatment e.g. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document and report any health and safety related incidents/accidents
- GS2.** read and comprehend basic English to read manuals of operations
- GS3.** read all organizational and equipment related health and safety manuals and documents
- GS4.** read instructions, guidelines / procedures /rules related to the worksite and equipment operations
- GS5.** Give clear instructions to co-workers, subordinates and other personnel
- GS6.** Use correct technical terms while interacting with supervisor
- GS7.** Make an appropriate timely decision in responding to emergencies/accidents in line with organizational/worksite guidelines
- GS8.** Use correct PPE and other safety gear while at the worksite
- GS9.** Work with supervisors/ team mates to carry out work related tasks
- GS10.** Plan work according to the required schedule and location
- GS11.** Build and maintain positive and effective relationships with colleagues and customers
- GS12.** Seek appropriate assistance from other sources to resolve problems
- GS13.** Assess the intensity of the fire accident and operate fire extinguishers
- GS14.** Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Worksite health and safety</i>	5	10	-	-
PC1. Comply with safety, health, security and environment related regulations/guidelines at the work site	0.5	1	-	-
PC2. use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite	0.5	1	-	-
PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk	0.5	1	-	-
PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines	0.5	1	-	-
PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines	1	1	-	-
PC6. operate various grades of fire extinguishers, as applicable	0.5	2	-	-
PC7. support in administering basic first aid and report to concerned team members, as required, in case of an accident	0.5	1	-	-
PC8. respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility	0.5	1	-	-
PC9. record and report details related to operations, incidents or accidents, as applicable	0.5	1	-	-
NOS Total	5	10	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IES/N7601
NOS Name	Comply with worksite health and safety
Sector	Infrastructure Equipment
Sub-Sector	Equipment Operations
Occupation	Operator
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQF Clearance Date	17/11/2022

Qualification Pack

DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values - Citizenship

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

Communication Skills

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

Qualification Pack

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

To be competent, the user/individual on the job must be able to:

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

Qualification Pack

- KU10.** how to compute income and expenses
- KU11.** importance of maintaining safety and security in financial transactions
- KU12.** different legal rights and laws
- KU13.** how to operate digital devices and applications safely and securely
- KU14.** ways to identify business opportunities
- KU15.** types of customers and their needs
- KU16.** how to apply for a job and prepare for an interview
- KU17.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** communicate effectively using appropriate language
- GS2.** behave politely and appropriately with all
- GS3.** perform basic calculations
- GS4.** solve problems effectively
- GS5.** be careful and attentive at work
- GS6.** use time effectively
- GS7.** maintain hygiene and sanitisation to avoid infection

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
<i>Communication Skills</i>	1	1	-	-
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	1	-	-
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
<i>Financial and Legal Literacy</i>	3	4	-	-
PC9. use various financial products and services safely and securely	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
<i>Essential Digital Skills</i>	4	6	-	-
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
<i>Entrepreneurship</i>	3	5	-	-
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
<i>Customer Service</i>	2	2	-	-
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	1	3	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	NA
Next Review Date	27/05/2024
NSQC Clearance Date	27/05/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IES/N0125.Carry out pre-operation checks on tyre mounted crane	25	50	-	-	75	20
IES/N0126.Operate Tyre Mounted Crane	18	57	-	-	75	30
IES/N0127.Perform routine maintenance and troubleshooting of Tyre Mounted Crane	8	27	-	-	35	20
IES/N7601.Comply with worksite health and safety	5	10	-	-	15	15
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	15
Total	76	174	-	-	250	100



Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Qualification Pack

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.