

## Qualification Pack



# Backhoe Loader Operator

QP Code: IES/Q0101

Version: 2.0

NSQF Level: 4

Infrastructure Equipment Skill Council || Avik Royale - First Floor (Next of Vijaya Bank), No.6, 50 feet  
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## Qualification Pack

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## Qualification Pack

### IES/Q0101: Backhoe Loader Operator

#### Brief Job Description

A backhoe operator drives and controls the backhoe operations safely and as per schedule. He operates the various attachments, as applicable and knows their respective functions. He is responsible for the maintenance of the equipment.

#### 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 behavior 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/N0101: Carry out pre-checks for backhoe operations](#)
2. [IES/N0102: Operate a backhoe loader](#)
3. [IES/N0103: Carry out maintenance and troubleshooting of the backhoe loader](#)
4. [IES/N7601: Comply with worksite health and safety guidelines](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/ 8342.2101

## Qualification Pack

<b>Minimum Educational Qualification &amp; Experience</b>	8th Class (OR • 10th Class Pass + ITI (1year after Class 10th) with 1 year of relevant experience • OR • 10th Class Pass + ITI (2years after Class 10th) • OR • 10th Class Pass and pursuing continuous regular schooling • OR • 3 Year Diploma (After 10th)12th Class Pass with 6 months of relevant experience • OR • Previous relevant Qualification of NSQF Level 3 with 2 years of relevant experience) with 2 Years of experience
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	Light Commercial Vehicle Driving License (LCV) is preferred
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Approval Date</b>	26/05/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2022/IS/IESC/05886
<b>NQR Version</b>	1.0

## Qualification Pack

### IES/N0101: Carry out pre-checks for backhoe operations

#### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to prepare the backhoe loader for a shift.

#### Scope

The scope covers the following :

- This unit/task 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.** examine the body of the backhoe loader to check that it is free of cracks and wear
- PC2.** check for dents and broken welds on the boom and the stick
- PC3.** check differential and hydraulic oil levels
- PC4.** check for leaks in the hydraulic hose and ram
- PC5.** carry out inspections to verify that the parking brake, main horn, reverse horn, and headlight are in proper working order
- PC6.** check fan belt tension, electrolyte level and terminal tightness
- PC7.** get visual inspection conducted to check the various controls, gauges, warning lamp and other safety devices
- PC8.** check load chart is displayed in cabin
- PC9.** check and adjust the driving position, rear and side mirrors, and seat belts to your comfort level
- PC10.** ensure that the air filter dust bowls are clean, and that the gasket and inner filter are in good condition
- PC11.** drain the water and debris from the fuel tank
- PC12.** check to make sure coolant and oil in engine, transmission, etc. are topped up if necessary as per manufacturers indicators
- PC13.** inspect the greasing points to ensure that all greasing pins and pivotpoints are appropriately greased
- PC14.** inspect the compressor unit, as well as any fittings and air lines
- PC15.** check clearance of the drawbar ball and socket, look for excessive freeplay, and adjust if necessary
- PC16.** ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)
- PC17.** at regular intervals, clean the footplates, pedals, and stairs of mud, grime, ice, and snow
- PC18.** certify that the backhoe loader has no one under or on the machine before operating

##### *Documentation and Reporting*

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

**PC19.** keep a checking/maintenance diary in which all actions completed prior to starting the backhoe are recorded

**PC20.** if a fault is found that is outside of the scope of the position, notify the operator immediately

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** the organizations procedures and guidelines related to backhoe loader operations

**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 mechanism 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 process for storage and disposal of waste material

**KU10.** safety policy of the company

**KU11.** responsibilities of the assigned job role

**KU12.** various backhoe loader and their uses and functions

**KU13.** introduction to the engine and transmission, as well as their use and purpose

**KU14.** principles of friction

**KU15.** steering mechanisms and correct way of steering on slopes

**KU16.** the relevance of greasing and oiling backhoe loader components that require routine lubrication

**KU17.** procedure of filling diesel, coolant in the machine

**KU18.** method of greasing and lubrication

**KU19.** optimal engine oil pressure, radiator coolant temperature

**KU20.** instrument panel, their location and operation

**KU21.** the various types of hand signals used on the site

**KU22.** controls, levers and switches in order to operate the backhoe loader properly

**KU23.** optimal working condition of backhoe components

**KU24.** optimal engine oil pressure, radiator coolant temperature

**KU25.** visual inspections are performed ahead of time to detect damage, flaws, cracks, or leaks

## Generic Skills (GS)

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

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- GS1.** keep a record of any deviations or occurrences that do not conform to the specified standards
- GS2.** read and comprehend basic english to read manuals of operations
- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** give clear instructions to co-workers, subordinates and other personnel
- GS5.** when talking with your operator or other personnel, utilize the right technical words
- GS6.** decide when to conduct maintenance checks
- GS7.** work with supervisors/ team mates to carry out work related tasks
- GS8.** plan work according to the required schedule and location
- GS9.** plan for cleaning and lubricating the backhoe loader every day
- GS10.** deliver first-rate service to ensure client satisfaction
- GS11.** identify immediate or temporary solutions to resolve mechanical issues
- GS12.** discover when to seek assistance from supervisor
- GS13.** investigate possible methods to enhance operational efficiency
- 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>	<b>6</b>	<b>51</b>	-	-
<b>PC1.</b> examine the body of the backhoe loader to check that it is free of cracks and wear	-	3	-	-
<b>PC2.</b> check for dents and broken welds on the boom and the stick	-	3	-	-
<b>PC3.</b> check differential and hydraulic oil levels	-	3	-	-
<b>PC4.</b> check for leaks in the hydraulic hose and ram	-	3	-	-
<b>PC5.</b> carry out inspections to verify that the parking brake, main horn, reverse horn, and headlight are in proper working order	-	3	-	-
<b>PC6.</b> check fan belt tension, electrolyte level and terminal tightness	-	3	-	-
<b>PC7.</b> get visual inspection conducted to check the various controls, gauges, warning lamp and other safety devices	-	3	-	-
<b>PC8.</b> check load chart is displayed in cabin	1	2	-	-
<b>PC9.</b> check and adjust the driving position, rear and side mirrors, and seat belts to your comfort level	1	3	-	-
<b>PC10.</b> ensure that the air filter dust bowls are clean, and that the gasket and inner filter are in good condition	-	3	-	-
<b>PC11.</b> drain the water and debris from the fuel tank	-	3	-	-
<b>PC12.</b> check to make sure coolant and oil in engine, transmission, etc. are topped up if necessary as per manufacturers indicators	1	3	-	-
<b>PC13.</b> inspect the greasing points to ensure that all greasing pins and pivotpoints are appropriately greased	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> inspect the compressor unit, as well as any fittings and air lines	-	3	-	-
<b>PC15.</b> check clearance of the drawbar ball and socket, look for excessive freeplay, and adjust if necessary	-	3	-	-
<b>PC16.</b> ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)	-	3	-	-
<b>PC17.</b> at regular intervals, clean the footplates, pedals, and stairs of mud, grime, ice, and snow	1	2	-	-
<b>PC18.</b> certify that the backhoe loader has no one under or on the machine before operating	1	2	-	-
<i>Documentation and Reporting</i>	<b>4</b>	<b>4</b>	-	-
<b>PC19.</b> keep a checking/maintenance diary in which all actions completed prior to starting the backhoe are recorded	2	2	-	-
<b>PC20.</b> if a fault is found that is outside of the scope of the position, notify the operator immediately	2	2	-	-
<b>NOS Total</b>	<b>10</b>	<b>55</b>	-	-

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0101
<b>NOS Name</b>	Carry out pre-checks for backhoe operations
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Qualification Pack

### IES/N0102: Operate a backhoe loader

#### Description

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

#### Scope

The scope covers the following :

- This unit/task covers the following:
- Backhoe start-up operations
- Earth digging
- Load lifting and dumping
- Backhoe shut-down process
- Documentation and reporting

#### Elements and Performance Criteria

##### *Backhoe start-up operations*

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

- PC1.** plan and arrange the work in accordance with the instructions
- PC2.** examine the jobsite for loose soil, concealed deep ditches, or marshy spots where the backhoe might become trapped
- PC3.** prepare worksite ahead of operations in accordance of equipment operations
- PC4.** carry out all pre-use and running checks
- PC5.** ensure gear is on neutral position
- PC6.** wear seatbelt and adjust your sitting position
- PC7.** start the engine by using both the pushbutton switch and the key switch
- PC8.** in cold weather, utilize the priming pump and pre-heater to start the engine
- PC9.** select appropriate attachment as per the job requirement
- PC10.** determine the machine's speed and direction in accordance with the stated purpose
- PC11.** use the emergency stop button to disable all power to the backhoe loader in case of a crisis, as per operator manual

##### *Earth digging*

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

- PC12.** establish weight of load and ensure it is within safe operational limits of the machine
- PC13.** continually monitor hazards and risks , and ensure safety of self, other personnel, plant and equipment
- PC14.** drive and run the machine, and change the operating approach to meet changing work circumstances
- PC15.** effectively use stabilizers to ensure the machinery is completely immobile while digging

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**PC16.** select, attach and apply slings and lifting gear in accordance with safe working load requirements

### *Load lifting and dumping*

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

**PC17.** position and locate machinery to ensure stability to effectively shift materials according to job specifications

**PC18.** move load using hand/audible/communication signals

**PC19.** idle the equipment for a few minutes post the usage

### *Backhoe shut-down process*

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

**PC20.** ensure attachments are cleaned, removed and stored as per organizations protocol

**PC21.** when leaving the equipment unattended, make certain that it is turned off and locked

**PC22.** adhere to the reporting procedures established by the employer

**PC23.** complete all documentation in the prescribed standards in a timely manner

**PC24.** in a timely way, report and escalate problems/incidents as needed

**PC25.** 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.** responsibilities of the assigned job role

**KU2.** job specific documents e.g. daily maintenance checklist and importance of the same

**KU3.** a list of typical occupational hazards and techniques for dealing with them

**KU4.** safety policy of the company

**KU5.** emergency organization of the specific work site

**KU6.** the dangers and consequences of failing to follow clearly specified procedures/work instructions

**KU7.** the performance standards & procedures followed in the company

**KU8.** reporting structure in the company

**KU9.** escalation matrix for reporting unresolved problems

**KU10.** schedule for resolving the complaint/problem

**KU11.** the consequences of process delays for the firm

**KU12.** cost of equipment and loss for the company that result from damage of equipment and direct/ indirect cost of accidents

**KU13.** work goal and review procedure with supervisor for obtaining/giving feedback on performance process

**KU14.** location of tools

**KU15.** if you've any questions about the procedure or the goods, please contact the respect individual

**KU16.** location and procedure for waste storage and disposal

**KU17.** different types of backhoe loaders and their applications

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- KU18.** working of engine, transmission, their use and function
- KU19.** principles of friction
- KU20.** steering mechanisms and correct way of steering on slopes
- KU21.** the instrument panel, its position, and its functionality
- KU22.** optimal working condition of backhoe loaders
- KU23.** optimal engine oil pressure, radiator coolant temperature
- KU24.** the need of stabilizers when digging
- KU25.** the various attachments, their uses, and functions (grappler fork, buckets, side shift forks, sweepers, crane hooks, rock breaker etc)
- KU26.** visual checks to identify damage, defects or leaks beforehand
- KU27.** general safety rules for operating a backhoe
- KU28.** all signs, warnings, and other emergency signals
- KU29.** proper backhoe loader maintenance techniques
- KU30.** the emergency button process and necessity

## Generic Skills (GS)

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

- GS1.** keep record of any deviations or occurrences that do not conform to the specified standards
- GS2.** read and comprehend basic english to read manuals of operations
- GS3.** understand stakes and signs on the road and on the job site
- GS4.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS5.** communicate efficiently with co-workers, subordinates to explain instructions and other concerns
- GS6.** when talking with your supervisor, utilize the right technical words
- GS7.** examine the excavator for any damage or defective components and take appropriate measures
- GS8.** carry out job duties in accordance with the operator's/other supervisors' directions and deadlines
- GS9.** plan work according to the required schedule and location
- GS10.** deliver first-rate service to ensure client satisfaction
- GS11.** identify immediate or temporary solutions to resolve mechanical issues
- GS12.** judge when to seek assistance from supervisor
- GS13.** identify possible ways to improve operational efficiency
- GS14.** suggest methods to avoid accidents/errors while operating machine
- GS15.** 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>Backhoe start-up operations</i>	<b>5</b>	<b>25</b>	-	-
<b>PC1.</b> plan and arrange the work in accordance with the instructions	1	2	-	-
<b>PC2.</b> examine the jobsite for loose soil, concealed deep ditches, or marshy spots where the backhoe might become trapped	-	3	-	-
<b>PC3.</b> prepare worksite ahead of operations in accordance of equipment operations	-	3	-	-
<b>PC4.</b> carry out all pre-use and running checks	1	2	-	-
<b>PC5.</b> ensure gear is on neutral position	-	2	-	-
<b>PC6.</b> wear seatbelt and adjust your sitting position	-	3	-	-
<b>PC7.</b> start the engine by using both the pushbutton switch and the key switch	-	2	-	-
<b>PC8.</b> in cold weather, utilize the priming pump and pre-heater to start the engine	1	2	-	-
<b>PC9.</b> select appropriate attachment as per the job requirement	1	2	-	-
<b>PC10.</b> determine the machine's speed and direction in accordance with the stated purpose	-	2	-	-
<b>PC11.</b> use the emergency stop button to disable all power to the backhoe loader in case of a crisis, as per operator manual	1	2	-	-
<i>Earth digging</i>	<b>3</b>	<b>9</b>	-	-
<b>PC12.</b> establish weight of load and ensure it is within safe operational limits of the machine	1	2	-	-
<b>PC13.</b> continually monitor hazards and risks , and ensure safety of self, other personnel, plant and equipment	1	2	-	-
<b>PC14.</b> drive and run the machine, and change the operating approach to meet changing work circumstances	1	1	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> effectively use stabilizers to ensure the machinery is completely immobile while digging	-	2	-	-
<b>PC16.</b> select, attach and apply slings and lifting gear in accordance with safe working load requirements	-	2	-	-
<i>Load lifting and dumping</i>	-	<b>6</b>	-	-
<b>PC17.</b> position and locate machinery to ensure stability to effectively shift materials according to job specifications	-	2	-	-
<b>PC18.</b> move load using hand/audible/communication signals	-	2	-	-
<b>PC19.</b> idle the equipment for a few minutes post the usage	-	2	-	-
<i>Backhoe shut-down process</i>	<b>5</b>	<b>12</b>	-	-
<b>PC20.</b> ensure attachments are cleaned, removed and stored as per organizations protocol	-	3	-	-
<b>PC21.</b> when leaving the equipment unattended, make certain that it is turned off and locked	1	2	-	-
<b>PC22.</b> adhere to the reporting procedures established by the employer	1	1	-	-
<b>PC23.</b> complete all documentation in the prescribed standards in a timely manner	1	2	-	-
<b>PC24.</b> in a timely way, report and escalate problems/incidents as needed	1	2	-	-
<b>PC25.</b> if a fault is found that is outside the scope of his duty, notify the supervisor immediately	1	2	-	-
<b>NOS Total</b>	<b>13</b>	<b>52</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0102
<b>NOS Name</b>	Operate a backhoe loader
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Qualification Pack

# IES/N0103: Carry out maintenance and troubleshooting of the backhoe loader

## Description

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

## Scope

The scope covers the following :

- This unit/task 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.** assess the right service schedule by tracking machine operating hours
- PC2.** regularly clean air filter bowls dust
- PC3.** clean the footplates and steps to maintain them free of mud, dirt, and grease
- PC4.** refill coolants, lubricants and fluids daily
- PC5.** every day, oil all greasing pins and pivot points
- PC6.** check battery levels and terminal condition, and make small changes as needed
- PC7.** check and maintain the tyre rims, air pressure, wheel nuts, and treads according to the manufacturer's recommendations

### *Basic diagnostics and troubleshooting*

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

- PC8.** before performing any repair, be certain that the machine is on firm and level ground Keep note of machine running hours to determine the best service plan
- PC9.** complete daily/weekly service sheets given by the firm in a punctual and legible manner
- PC10.** ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)
- PC11.** ensure that suitable props/ support devices are used and the bucket is not raised while performing maintenance
- PC12.** when a situation is beyond his capabilities, he should analyze it and report it to appropriately skilled and competent individuals
- PC13.** diagnose the problem
- PC14.** handle and dispose waste based on environmental guidelines at the work place
- PC15.** adhere to the reporting procedures established by the employer

### *Documentation and Reporting*

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

- PC16.** complete all documents in accordance with the required standards in a timely way
- PC17.** report and escalate problems/ incidents as required in a timely manner
- PC18.** 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.** job specific documents e.g. daily maintenance checklist and importance of the same
- KU2.** a list of typical occupational hazards and techniques for dealing with them
- KU3.** safety policy of the company
- KU4.** emergency organization of the specific work site
- KU5.** risk and impact of not following defined procedures/ work instructions
- KU6.** the company's performance criteria and processes
- KU7.** reporting structure in the company
- KU8.** escalation matrix for reporting unresolved problems
- KU9.** schedule for resolving the complaint/problem
- KU10.** the consequences of process delays for the firm
- KU11.** cost of equipment and loss for the company that result from damage of equipment and direct/ indirect cost of accidents
- KU12.** work objective and review method with supervisor for obtaining/giving feedback on performance process
- KU13.** location of tools
- KU14.** if you have any questions about the procedure or the goods, please contact the administrator
- KU15.** location and procedure for waste storage and disposal
- KU16.** responsibilities of the assigned job role
- KU17.** control and switches needed to operate the backhoe appropriately
- KU18.** The fundamental physics and mechanics at work in the different operations of the backhoe loader
- KU19.** common defects and general causes of breakdown
- KU20.** response to emergency situations
- KU21.** the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature
- KU22.** potential causes of any unusual noises coming from the engine

### Generic Skills (GS)

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

- GS1.** keep record of any deviations or occurrences that do not conform to the specified standards
- GS2.** read and comprehend basic English to read manuals of operations

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- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** give clear instructions to co-workers, subordinates and other personnel
- GS5.** when talking with your supervisor, utilize the right technical words
- 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 satisfaction
- GS12.** identify immediate or temporary solutions to resolve mechanical issues
- GS13.** discover when to seek assistance from supervisor
- GS14.** investigate possible methods to enhance operational efficiency
- GS15.** check for damages and diagnose common problems in the backhoe loader and take relevant action
- GS16.** 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>Routine maintenance</i>	<b>3</b>	<b>17</b>	-	-
<b>PC1.</b> assess the right service schedule by tracking machine operating hours	1	3	-	-
<b>PC2.</b> regularly clean air filter bowls dust	-	2	-	-
<b>PC3.</b> clean the footplates and steps to maintain them free of mud, dirt, and grease	1	2	-	-
<b>PC4.</b> refill coolants, lubricants and fluids daily	1	2	-	-
<b>PC5.</b> every day, oil all greasing pins and pivot points	-	2	-	-
<b>PC6.</b> check battery levels and terminal condition, and make small changes as needed	-	3	-	-
<b>PC7.</b> check and maintain the tyre rims, air pressure, wheel nuts, and treads according to the manufacturer's recommendations	-	3	-	-
<i>Basic diagnostics and troubleshooting</i>	<b>4</b>	<b>20</b>	-	-
<b>PC8.</b> before performing any repair, be certain that the machine is on firm and level ground Keep note of machine running hours to determine the best service plan	-	2	-	-
<b>PC9.</b> complete daily/weekly service sheets given by the firm in a punctual and legible manner	1	2	-	-
<b>PC10.</b> ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)	-	2	-	-
<b>PC11.</b> ensure that suitable props/ support devices are used and the bucket is not raised while performing maintenance	-	3	-	-
<b>PC12.</b> when a situation is beyond his capabilities, he should analyze it and report it to appropriately skilled and competent individuals	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> diagnose the problem	1	2	-	-
<b>PC14.</b> handle and dispose waste based on environmental guidelines at the work place	-	3	-	-
<b>PC15.</b> adhere to the reporting procedures established by the employer	1	3	-	-
<i>Documentation and Reporting</i>	<b>4</b>	<b>7</b>	-	-
<b>PC16.</b> complete all documents in accordance with the required standards in a timely way	2	2	-	-
<b>PC17.</b> report and escalate problems/ incidents as required in a timely manner	1	3	-	-
<b>PC18.</b> if a fault is found that is outside the scope of his duty, notify the supervisor immediately	1	2	-	-
<b>NOS Total</b>	<b>11</b>	<b>44</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0103
<b>NOS Name</b>	Carry out maintenance and troubleshooting of the backhoe loader
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Qualification Pack

### IES/N7601: Comply with worksite health and safety guidelines

#### 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>	<b>5</b>	<b>10</b>	-	-
<b>PC1.</b> Comply with safety, health, security and environment related regulations/guidelines at the work site	0.5	1	-	-
<b>PC2.</b> use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite	0.5	1	-	-
<b>PC3.</b> 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	-	-
<b>PC4.</b> Carry out operations as per the manufacturer's and worksite related health and safety guidelines	0.5	1	-	-
<b>PC5.</b> Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines	1	1	-	-
<b>PC6.</b> operate various grades of fire extinguishers, as applicable	0.5	2	-	-
<b>PC7.</b> support in administering basic first aid and report to concerned team members, as required, in case of an accident	0.5	1	-	-
<b>PC8.</b> respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility	0.5	1	-	-
<b>PC9.</b> record and report details related to operations, incidents or accidents, as applicable	0.5	1	-	-
<b>NOS Total</b>	<b>5</b>	<b>10</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N7601
<b>NOS Name</b>	Comply with worksite health and safety guidelines
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	31/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## 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/N0101.Carry out pre-checks for backhoe operations	10	55	0	0	65	35
IES/N0102.Operate a backhoe loader	13	52	0	0	65	35
IES/N0103.Carry out maintenance and troubleshooting of the backhoe loader	11	44	0	0	55	20
IES/N7601.Comply with worksite health and safety guidelines	5	10	0	0	15	10
<b>Total</b>	<b>39</b>	<b>161</b>	<b>0</b>	<b>0</b>	<b>200</b>	<b>100</b>

## Qualification Pack

### Acronyms

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

## Qualification Pack

### Glossary

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	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

<b>Knowledge and Understanding (KU)</b>	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.
<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.