

QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR INFRASTRUCTURE EQUIPMENT INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualification Pack - Junior Tower Crane Operator/ Signalman

SECTOR:	Infrastructure Equipment
SUB SECTOR:	Equipment Operations
OCCUPATION:	Machine Operation
REFERENCE ID:	IES/Q0123
ALIGNED TO:	NCO-2015/8343.0700

Brief Job Description: A junior tower crane operator/ signalman in the work site is responsible for assisting the tower crane operators in loading and unloading of the materials. He provides directions for maneuvering the crane to the load lifting and releasing area. He is also responsible for safety during the crane operations.

Personal Attributes: The job requires an individual to be physically agile, strong and should have good eye sight. He should constantly be in contact with the operator and should maintain safety activities during the operations. He should possess basic numerical skills and is required to be mentally alert at all times.

Qualifications Pack Code	IES/Q0123		
Job Role	Junior Tower Crane Operator/ Signalman		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	13/08/16
Sub-sector	Equipment Operations	Last reviewed on	20/12/17
Occupation	Machine Operation	Next review date	26/12/20
NSQC Clearance on			

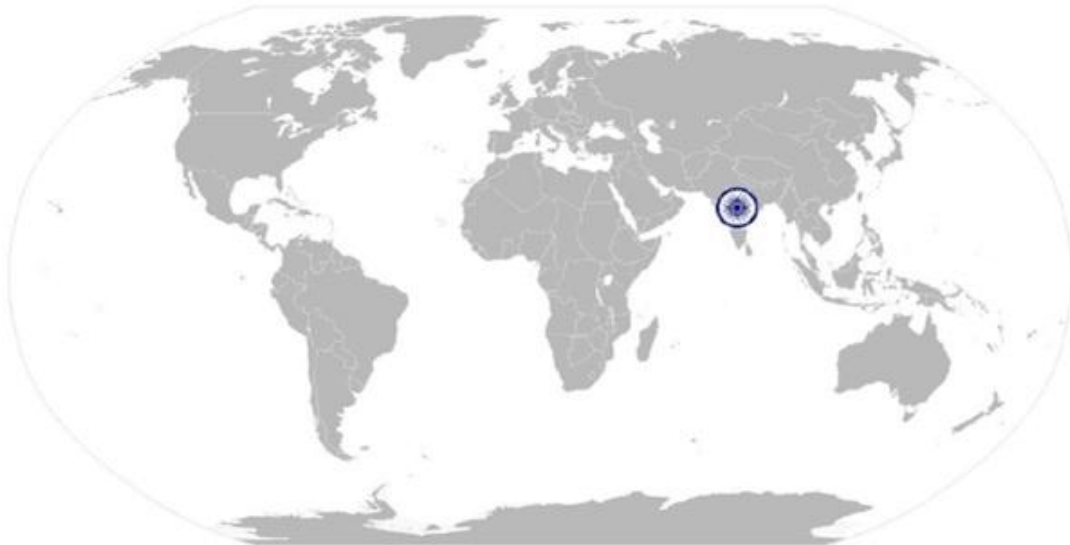
Job Role	Junior Tower Crane Operator/ Signalman
Role Description	A junior tower crane operator/ signalman in tower crane operations is responsible for assisting the tower crane operators in loading and unloading of the loads at the construction site. He provides directions for maneuvering the crane to the load lifting and releasing area. He is also responsible for safety during the crane operations.
NSQF level	3
Minimum Educational Qualifications	Class VIII
Maximum Educational Qualifications	NA
Prerequisite license for Training	Certification Training in Junior tower crane operator/ Signalman Operations preferred
Minimum Job Entry Age	18 years
Experience	1-1.5 years of experience as assistant in equipment operations
Applicable National Occupational Standards (NOS)	Compulsory <ol style="list-style-type: none"> IES/N0146 Assist in pre-lifting operations IES/N0147 Assist in tower crane operations IES/N0148 Assist in regular maintenance of the tower crane IES/N7601 Comply with worksite health and safety guidelines
Performance Criteria	As described in the relevant OS units

Definition

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses 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.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential to fulfil achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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; he/she needs to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria 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 Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification 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 find the required one.
Scope	Scope is the 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 the quality of required performance.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform up to the required standard.

Acronyms	Keywords /Terms	Description
	OS	Occupational Standard(s)
	NOS	National Occupational Standard(s)
	QP	Qualifications Pack
	NSQF	National Skill Qualifications Framework
	ITI	Industrial Training Institute
	HCV	Heavy Commercial Vehicle
	SHE	Safety Health and Environment
	SOP	Standard Operating Procedure
TBD	To Be Determined	

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for preparing to lift the load using cranes.

IES/N0146

Assist in pre-lifting operations

Unit Code	IES/N0146
Unit Title (Task)	Assist in pre-lifting operations
Description	This unit provides insight into activities required to be performed before lifting the load using crane.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Pre-lifting operations
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Pre-lifting operations	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. check for availability of lifting gears, tools and tackles prior to starting lifting works PC2. select and use appropriate rigging gears required for heavy material shifting for structural components at construction site PC3. check and verify for appropriate rigging of the load to the sling as per the requirement of the load PC4. inspect wire rope slings, webbing slings and chain slings that may obstruct the lifting during crane operations PC5. check structural components of the equipment and assembly are placed away from any overhead power lines or service lines PC6. check work location for barricading, presence of signage and availability of required PPEs, provided as per standard practice PC7. ascertain weight of load and determine centre of gravity as per the weight of the load PC8. check for blind spots and estimate clearance of swing path on the site PC9. set up communications for safe lifting operation and test it with the crane operator PC10. prepare base for lifting equipment and load to be lifted as per requirement and instruction from the supervisor
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. the organization operations, maintenance and safety related guidelines KA2. the operational standards & procedures followed in the company in timeframe in which the complaint/problem should be resolved KA3. reporting structure of the company KA4. location of specialized tools and the equipment KA5. location and process for storage and disposal of waste material
B. Technical Knowledge	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. basic principles of measurement, geometry and arithmetic calculation KB2. conversion of units of linear measurements KB3. hand tools required to carry out material lifting activity and their use KB4. rigging tools required to lift structural steel sections or assemblies and their use KB5. required nature of base – level and compaction required for

IES/N0146

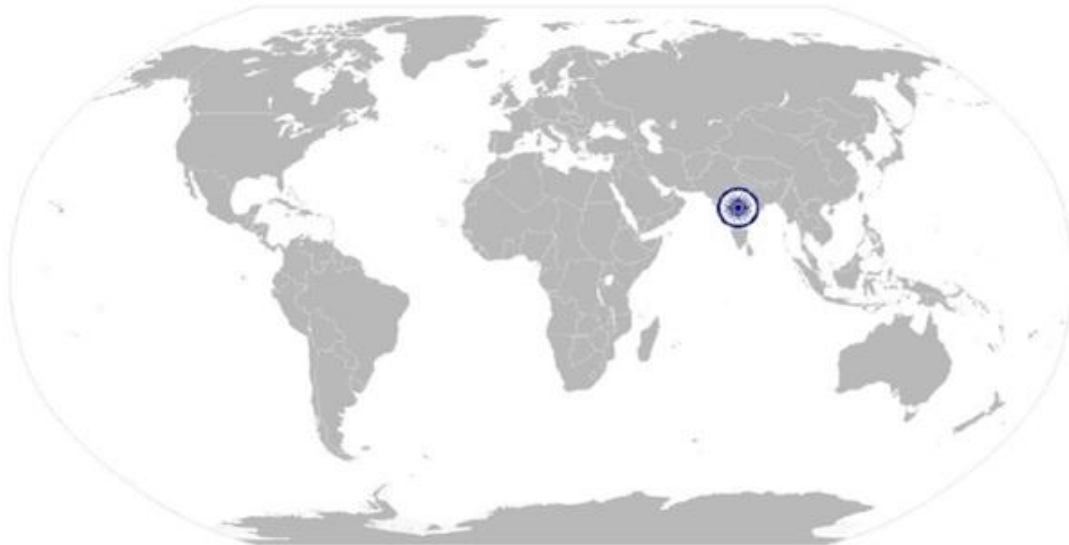
Assist in pre-lifting operations

	<p>equipment during lifting</p> <p>KB6. technique of guiding suspended object through tag lines to location of erection</p> <p>KB7. basic concept of working mechanism of load lifting equipment like cranes winches, etc.</p> <p>KB8. specification of lifting tools and tackles as per load lifting requirement</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. record information/observations on activities/incidents as per the prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor SA5. explain/instruct other team members effectively in a clear and concise manner SA6. listen attentively and understand the queries /comments raised by other team members
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. decide when to escalate and seek assistance if the problem is beyond scope
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB2. prioritize and schedule maintenance activity on equipment to support operational needs SB3. plan and organise the work schedule in coordination with other team members & supervisor SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction
Problem Solving	The user/ individual on the job needs to know and understand how to: SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions

IES/N0146

Assist in pre-lifting operations

	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



IES/N0146

Assist in pre-lifting operations

NOS Version Control

NOS Code	IES/N0146		
Credits (NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	13/08/16
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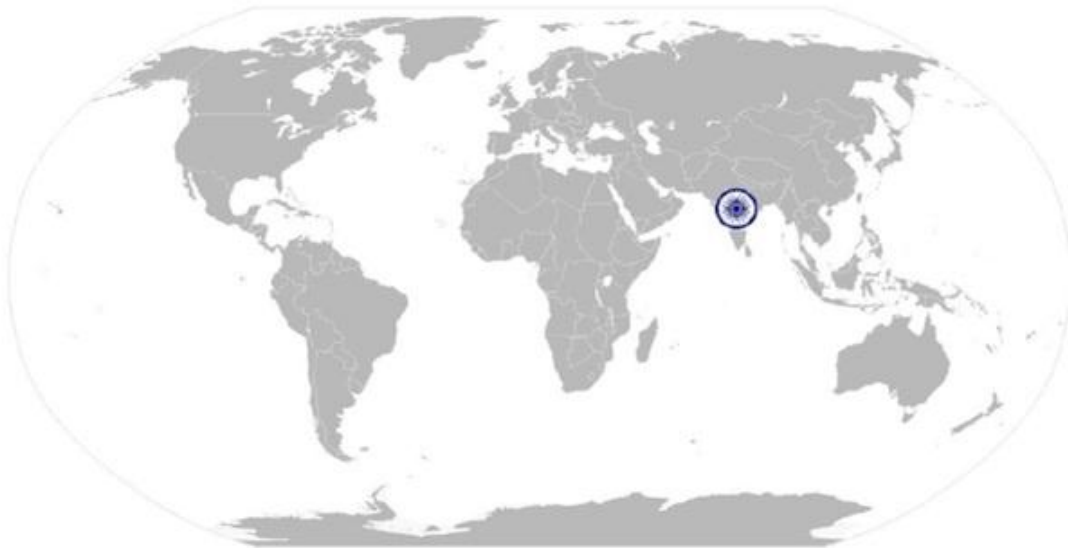
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IES/N0147

Assist in tower crane operations

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for assisting and signaling the crane operator during crane operations.

IES/N0147

Assist in tower crane operations

National Occupational Standard

Unit Code	IES/N0147
Unit Title (Task)	Assist in tower crane operations
Description	This unit gives an insight into the activities that need to be performed by the signalman during the crane operations
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Tower crane operations
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Tower Crane Operations	<p>PC1. analyse the load characteristics including centre of gravity and lifting points to determine the method of slinging</p> <p>PC2. communicate with the crane operator through lifting and maneuvering the load using the communication device or by hand signalling</p> <p>PC3. determine and check the route of the load before and during the lift including distances, clearances and landing position</p> <p>PC4. ensure balance and stability of loads through constant observation of the load during the process</p> <p>PC5. coordinate with the crane operator and others on the worksite while the load is landing</p> <p>PC6. prepare base for unloading of materials along with the supervisor and other workmen at the worksite</p> <p>PC7. assist the site supervisor to cordon off lifting and lowering area using barricades, where applicable, according to lifting plan requirements</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization operations, maintenance and safety related guidelines</p> <p>KA2. the operational standards & procedures followed in the company in timeframe in which the complaint/problem should be resolved</p> <p>KA3. reporting structure of the company</p> <p>KA4. location of specialized tools and the equipment</p> <p>KA5. location and process for storage and disposal of waste material</p> <p>KA6. contact person/area in case of emergency</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. technical specifications, features and performance of different types of cranes</p> <p>KB2. tower Crane equipment, its limitations and all the dynamics involved in crane and boom movement and lifting</p> <p>KB3. standards Hand signals & Voice Signals</p> <p>KB4. factors that affect equipment stability, such as ground and supporting conditions</p> <p>KB5. actual and potential hazards, such as overhead utilities and guide wires, other equipment, personnel and vehicular traffic</p> <p>KB6. safety measures to be followed at the time of emergencies to avoid damage</p> <p>KB7. roles of personnel on site, such as supervisor, operator and others</p>
Skills (S)	

IES/N0147

Assist in tower crane operations

A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. record information/observations on activities/incidents as per the prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor SA5. explain/instruct other team members effectively in a clear and concise manner SA6. listen attentively and understand the queries /comments raised by other team members
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. decide when to escalate and seek assistance if the problem is beyond scope
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB2. prioritize and schedule maintenance activity on equipment to support operational needs SB3. plan and organise the work schedule in coordination with other team members & supervisor SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently	

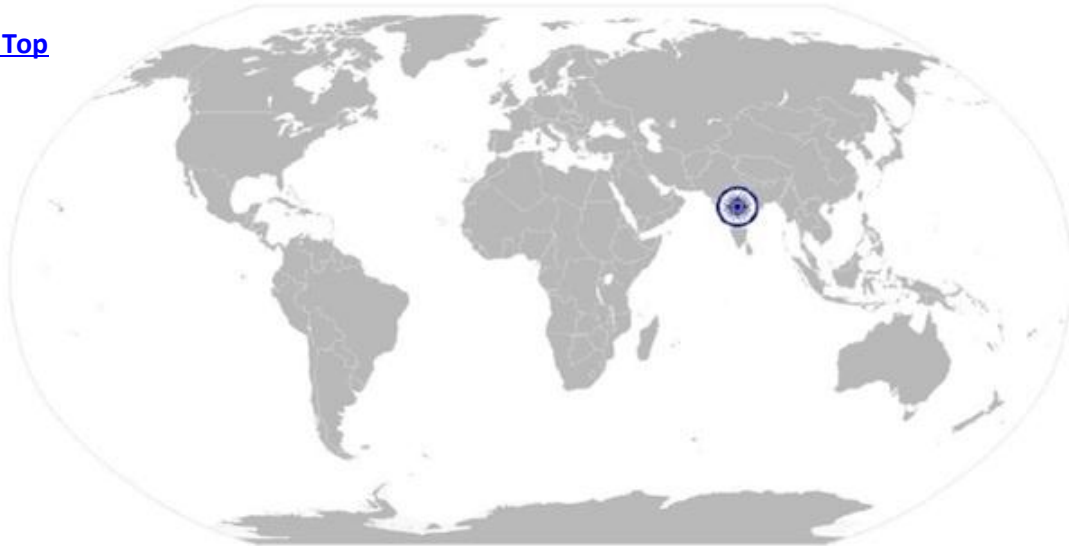
IES/N0147

Assist in tower crane operations

NOS Version Control

NOS Code	IES/N0147		
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Sector	Infrastructure Equipment	Drafted on	13/08/16
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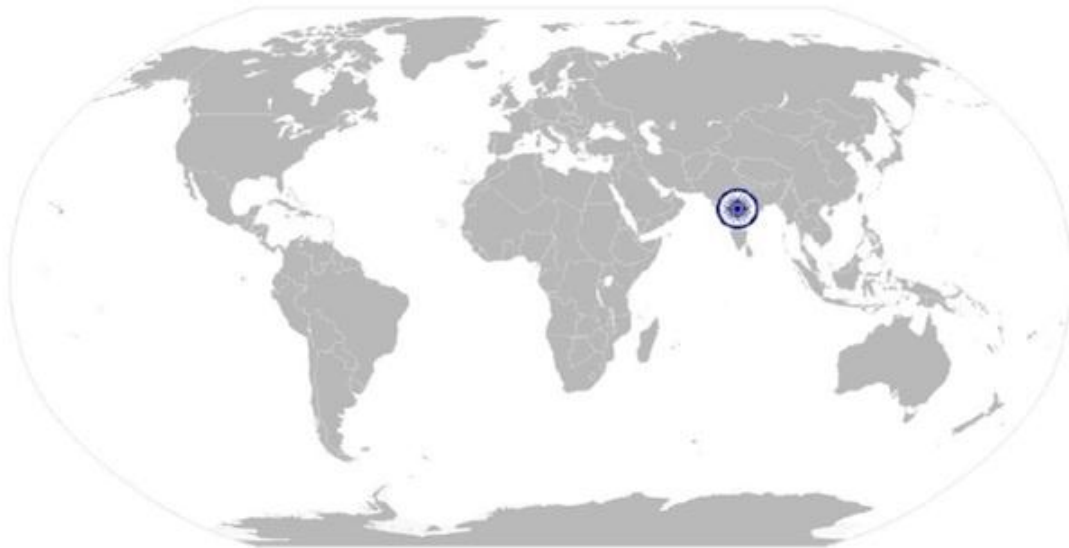
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IES/N0148

Assist in regular maintenance of the tower crane

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for assisting in performing routine maintenance and troubleshooting of a tower crane.

IES/N0148

Assist in regular maintenance of the tower crane

Unit Code	IES/N0148
Unit Title (Task)	Assist in regular maintenance of the tower crane
Description	This unit provides insight into activities that are required for performing routine maintenance and troubleshooting of a tower crane.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Routine maintenance • Repair and troubleshooting • Documentation and reporting
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Routine maintenance	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. assist in replenishing coolants, lubricants and fluids as per the functioning of the machine or as per the operational manual</p> <p>PC2. assist in greasing all greasing pins, trolley pins, hoist and rope and slewing bolts regularly as per the usage of the machine</p> <p>PC3. service lubrications system, electrical service system, hoisting system and stabilizing system as per instructions of the operator/supervisor</p> <p>PC4. service Jib/boom and mast as per the instructions of the operator/supervisor</p> <p>PC5. check battery levels and condition of the terminals and carry out minor adjustments</p> <p>PC6. keep the tools in the designated place after usage as per the organizational guidelines</p>
Repair and troubleshooting	<p>PC7. ensure the main power is turned off from panel completely before carrying out maintenance work</p> <p>PC8. use appropriate tools while troubleshooting</p> <p>PC9. report defects precisely to the operator/supervisor if beyond scope of role</p> <p>PC10. dispose waste as per the guidelines of the site/ organization</p>
Reporting and documentation	<p>PC11. follow reporting procedures as laid down by the employer</p> <p>PC12. complete all documentation in the prescribed standards in a timely manner</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization operations, maintenance and safety related guidelines</p> <p>KA2. the operational standards & procedures followed in the company in timeframe in which the complaint/problem should be resolved</p> <p>KA3. reporting structure of the company</p> <p>KA4. location of specialized tools and the equipment</p> <p>KA5. location and process for storage and disposal of waste material</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. maintenance schedule of the equipment</p> <p>KB2. basics of engine and sub systems; fuel, lubrication and cooling systems</p> <p>KB3. basics of transmission, auto-electrical functioning and repairs</p>

IES/N0148

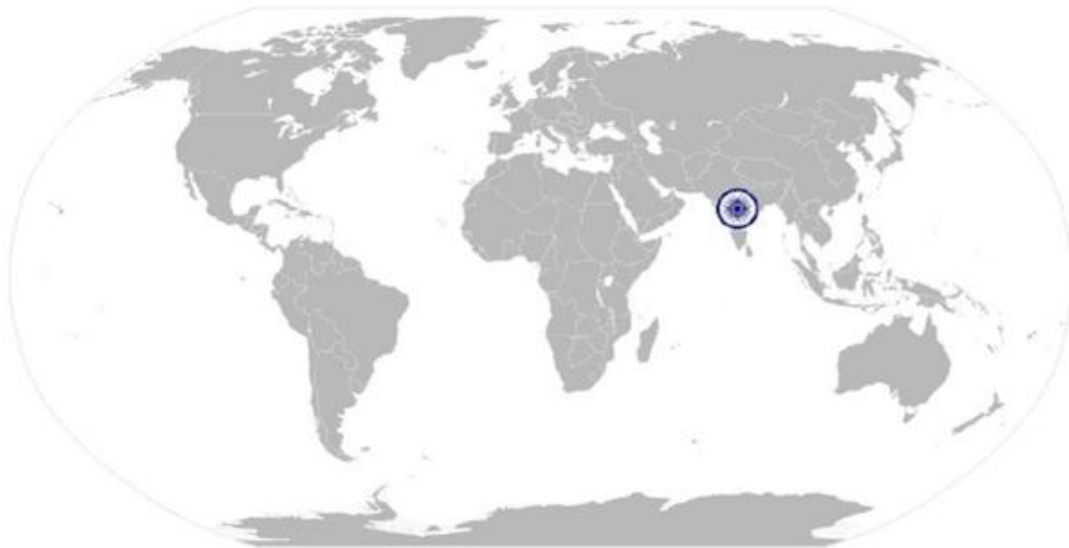
Assist in regular maintenance of the tower crane

	<p>KB4. different types of hydraulic mechanisms, and principles of friction</p> <p>KB5. basics of electrical systems including control panel</p> <p>KB6. control and switches needed to operate the tower crane appropriately</p> <p>KB7. common defects and general causes of breakdown</p> <p>KB8. spill kit procedures</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. record information/observations on activities/incidents as per the prescribed norms</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site</p> <p>SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals</p>
	Oral Communication (Listening and Speaking Skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor</p> <p>SA5. explain/instruct other team members effectively in a clear and concise manner</p> <p>SA6. listen attentively and understand the queries /comments raised by other team members</p>
B. Professional Skills	Decision Making
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. decide when to escalate and seek assistance if the problem is beyond scope</p>
	Plan and Organize
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB2. prioritize and schedule maintenance activity on equipment to support operational needs</p> <p>SB3. plan and organise the work schedule in coordination with other team members & supervisor</p> <p>SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision</p>
	Customer Centricity
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction</p>
	Problem Solving
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions</p>
Analytical Thinking	
<p>The user/ individual on the job needs to know and understand how to:</p>	

IES/N0148

Assist in regular maintenance of the tower crane

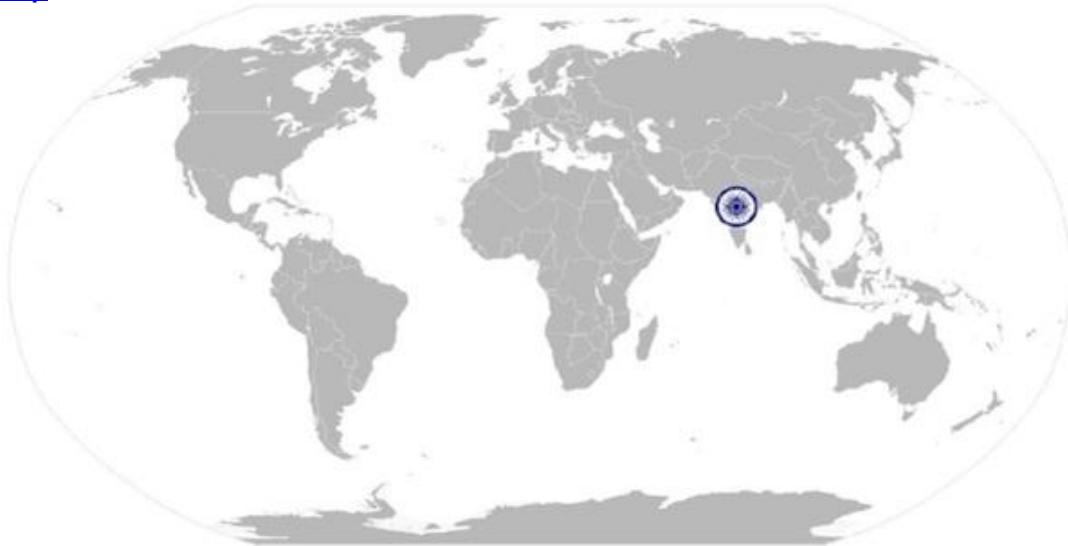
	SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



IES/N0148 Assist in regular maintenance of the tower crane
NOS Version Control

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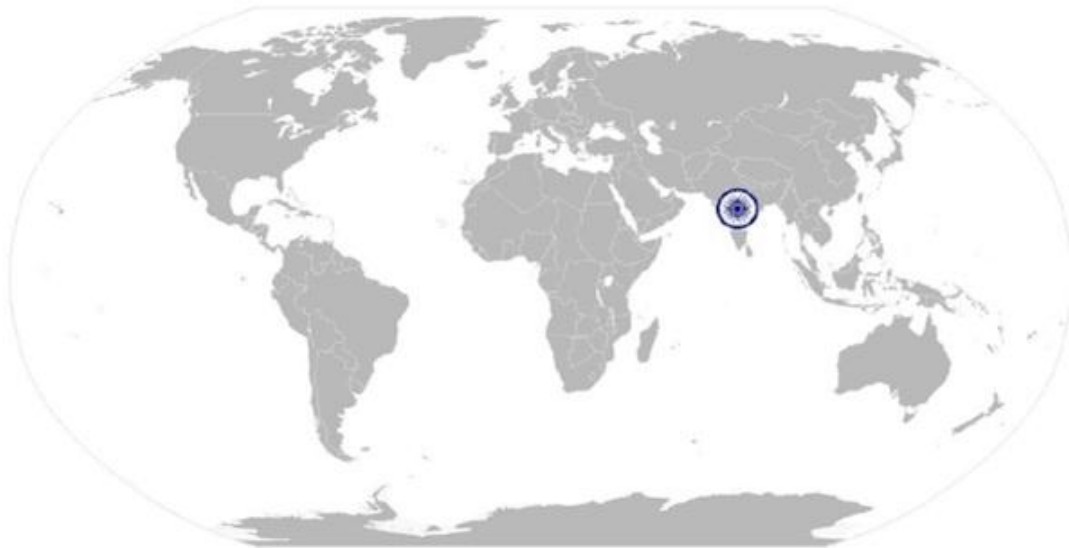
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IES/N7601

Comply with worksite health and safety guidelines

National Occupational Standard



Overview

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

IES/N7601 Comply with worksite health and safety guidelines

Unit Code	IES/N7601
Unit Title (Task)	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	This unit/task covers the following: <ul style="list-style-type: none"> • Worksite health and safety
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Worksite health and safety	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. comply with safety, health, security and environment related regulations/ guidelines at the work site</p> <p>PC2. use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite</p> <p>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</p> <p>PC4. carry out operations as per the manufacturer’s and worksite related health and safety guidelines</p> <p>PC5. handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines</p> <p>PC6. operate various grades of fire extinguishers, as applicable</p> <p>PC7. support in administering basic first aid and report to concerned team members, as required, in case of an accident</p> <p>PC8. respond promptly and appropriately to an accident/ incident or emergency situation, within limits of role and responsibility</p> <p>PC9. record and report details related to operations, incidents or accidents, as applicable</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company/ organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. health, safety, environmental(HSE) and security related policies/ guidelines of the organization and the worksite and its importance</p> <p>KA2. personnel responsible for Health, Safety and environment (HSE) related matters and their contact details</p> <p>KA3. location of worksite storage, HSE team and safe assembly points</p> <p>KA4. reporting and documentation procedures for HSE and security matters</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. manufacturer’s guidelines related to health and safety requirements</p> <p>KB2. common types of health, safety, environment and security risks related to the worksite and operations</p> <p>KB3. types, use and importance of Personal Protective Equipment (PPE) and other safety gear</p> <p>KB4. safe working practices to avoid common hazards and risks</p> <p>KB5. guidelines for transport, storage and disposal of hazardous materials and waste</p>

IES/N7601

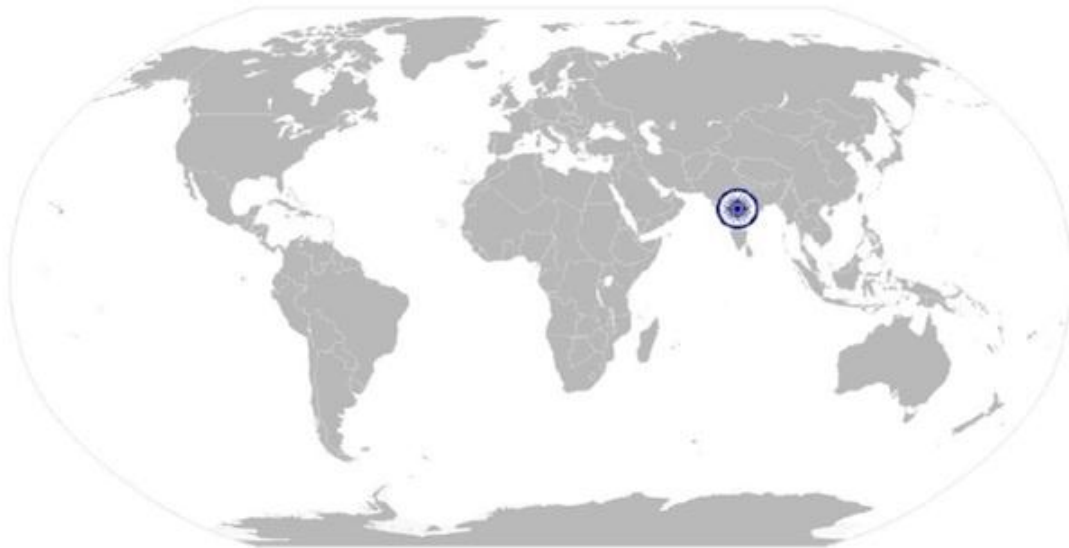
Comply with worksite health and safety guidelines

	<p>KB6. types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown</p> <p>KB7. safe lockdown/ stopping of machinery use in case of emergencies and incidents/accidents</p> <p>KB8. types of fire extinguishers and their use</p> <p>KB9. common injuries and appropriate basic first aid treatment e.g. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries</p>
Skills (S)	
<p>A. Core Skills / Generic Skills</p>	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. record information/observations on any health and safety related incidents/activities as per the prescribed norms</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read and comprehend basic signs, symbols, charts and decals related to health and safety at work site</p> <p>SA3. read and understand the applicable relevant safety aspects of equipment operation at work site</p>
<p>B. Professional Skills</p>	Oral Communication (Listening and Speaking Skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor</p> <p>SA5. explain/instruct other team members effectively in a clear and concise manner</p> <p>SA6. listen attentively and understand the queries /comments raised by other team members</p>
	Decision Making
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. respond in time to emergencies / accidents in-line with organisational /worksite procedures</p> <p>SB2. decide when to escalate and seek assistance if the problem is beyond scope</p>
	Plan and Organize
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB3. plan and organise the work schedule adhering to all safety guidelines and instructions</p> <p>SB4. execute the tasks in a safe manner by ensuring proper use of PPE and other safety gear ; with minimal supervision</p>
Customer Centricity	
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction</p>	
Problem Solving	
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB6. evaluate the possible solutions and initiate appropriate remedial</p>	

IES/N7601

Comply with worksite health and safety guidelines

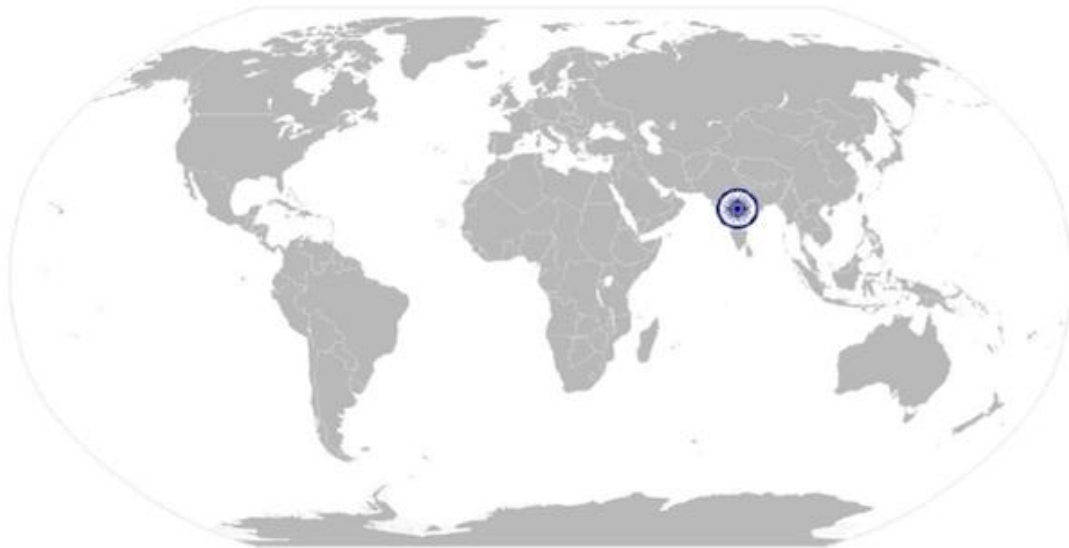
	measures and actions
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



IES/N7601 **Comply with worksite health and safety guidelines**
NOS Version Control

NOS Code	IES/N7601		
Credits (NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	13/08/16
Industry Sub-sector	Equipment Operations	Last reviewed on	20/12/17
Occupation	Machine Operation	Next review date	26/12/20

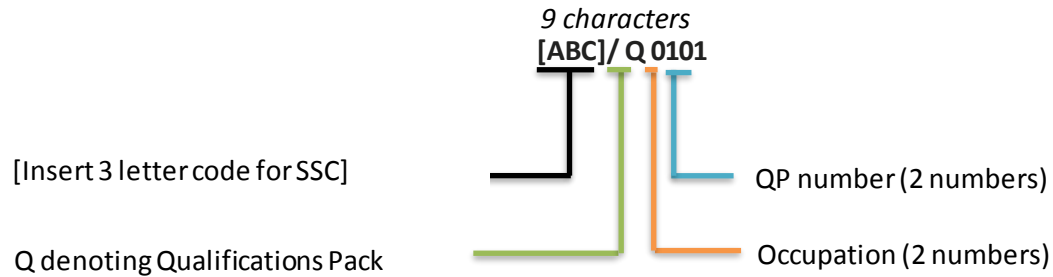
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Annexure

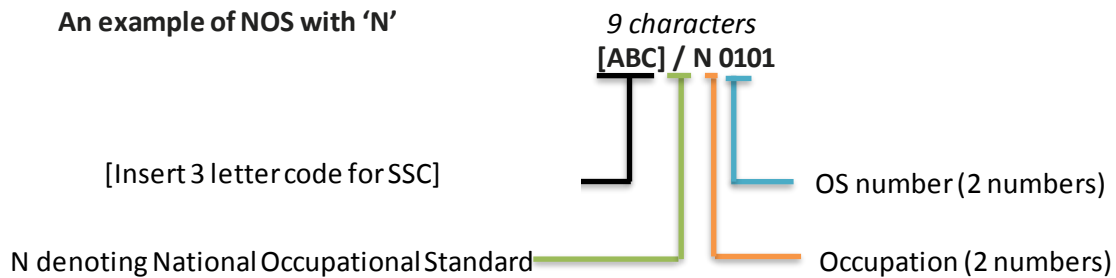
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Equipment Operations	1 to 10
Equipment Service and spares	11 to 20
Equipment Production	21 to 40
Equipment Sales	41 to 50
Equipment Financing	51 to 55
Core Enablers	56 to 65
Other Enablers	66 to 75
Common Occupations	76 to 85

Sequence	Description	Example
Three letters	Industry name	IES
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Junior Tower Crane Operator/ Signalman

Qualification Pack Code IES/Q0123

Sector Skill Council IESC

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each 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 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 this criterion
6. To pass the Qualification Pack, trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Compulsory NOS				Marks Allocation		
Total Marks: 100						
Assessment Outcomes	Assessment criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical	
1. IES/N0146 Assist in pre-lifting operations	PC1. check for availability of lifting gears, tools and tackles prior to starting lifting works	35	3	1	2	
	PC2. select and use appropriate rigging gears required for heavy material shifting for structural components at construction site		4	1	3	
	PC3. check and verify for appropriate rigging of the load to the sling as per the requirement of the load		3	1	2	
	PC4. inspect wire rope slings, webbing slings and chain slings that may obstruct the lifting during crane operations		4	1	3	

	PC5. check structural components of the equipment and assembly are placed away from any overhead power lines or service lines		4	1	3
	PC6. check work location for barricading, presence of signage and availability of required PPEs, provided as per standard practice		4	1	3
	PC7. ascertain weight of load and determine centre of gravity as per the weight of the load		3	1	2
	PC8. check for blind spots and estimate clearance of swing path on the site		4	1	3
	PC9. set up communications for safe lifting operation and test it with the crane operator		3	1	2
	PC10. prepare base for lifting equipment and load to be lifted as per requirement and instruction from the supervisor		3	1	2
	Total		35	10	25
2. IES/N0147 Assist in tower crane operations	PC1. analyse the load characteristics including centre of gravity and lifting points to determine the method of slinging	30	5	2	3
	PC2. communicate with the crane operator through lifting and maneuvering the load using the communication device or by hand signalling		5	2	3
	PC3. determine and check the route of the load before and during the lift including distances, clearances and landing position		5	2	3
	PC4. ensure balance and stability of loads through constant observation of the load during the process		4	1	3
	PC5. coordinate with the crane operator and others on the worksite while the load is landing		4	1	3
	PC6. prepare base for unloading of materials along with the supervisor and other workmen at the worksite		4	1	3
	PC7. assist the site supervisor to cordon off lifting and lowering area using barricades, where applicable, according to lifting plan requirements		3	1	2

			30	10	20
3. IES/N0148 Assist in regular maintenance of the tower crane	PC1. assist in replenishing coolants, lubricants and fluids as per the functioning of the machine or as per the operational manual	20	1.5	0.5	1
	PC2. assist in greasing all greasing pins, trolley pins, hoist and rope and slewing bolts regularly as per the usage of the machine		2	1	1
	PC3. service lubrications system, electrical service system, hoisting system and stabilizing system as per instructions of the operator/supervisor		2	1	1
	PC4. service Jib/boom and mast as per the instructions of the operator/supervisor		2	1	1
	PC5. check battery levels and condition of the terminals and carry out minor adjustments		2	1	1
	PC6. keep the tools in the designated place after usage as per the organizational guidelines		1.5	0.5	1
	PC7. ensure the main power is turned off from panel completely before carrying out maintenance work		1.5	0.5	1
	PC8. use appropriate tools while troubleshooting		1.5	0.5	1
	PC9. report defects precisely to the operator/supervisor if beyond scope of role		1.5	0.5	1
	PC10. dispose waste as per the guidelines of the site/ organization		1.5	0.5	1
	PC11. follow reporting procedures as laid down by the employer		1.5	0.5	1
	PC12. complete all documentation in the prescribed standards in a timely manner		1.5	0.5	1
	Total		20	8	12
4. IES/N7601 Comply with worksite health and safety guidelines	PC1. comply with safety, health, security and environment related regulations/ guidelines at the work site	15	1.5	0.5	1
	PC2. use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite		2.5	0.5	2

	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		2	1	1
	PC4. carry out operations as per the manufacturer's and worksite related health and safety guidelines		1.5	0.5	1
	PC5. handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		1.5	0.5	1
	PC6. operate various grades of fire extinguishers, as applicable		1.5	0.5	1
	PC7. support in administering basic first aid and report to concerned team members, as required, in case of an accident		1.5	0.5	1
	PC8. respond promptly and appropriately to an accident/ incident or emergency situation, within limits of role and responsibility		1.5	0.5	1
	PC9. record and report details related to operations, incidents or accidents, as applicable		1.5	0.5	1
	Total		15	5	10
Grand Total			100	33	67