

Model Curriculum

Junior Excavator Operator

SECTOR: INFRASTRUCTURE EQUIPMENT
SUB-SECTOR: EQUIPMENT OPERATIONS
OCCUPATION: OPERATOR
REF. ID: IES /Q 0104 VERSION 1.0
NSQF LEVEL: 3



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INFRASTRUCTURE EQUIPMENT SKILL COUNCIL

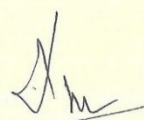
for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Junior Excavator Operator' QP No. 'IES/Q 0104 NSQF Level 3'

Date of Issuance: December 30th, 2015

Valid up to: March 31st, 2017



Authorised Signatory
(Infrastructure Equipment Skill Council)

TABLE OF CONTENTS

1. Curriculum	01
2. Trainer Prerequisites	06
3. Annexure: Assessment Criteria	07

Junior Excavator Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Junior Excavator Operator”, in the “Infrastructure Equipment” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Junior Excavator Operators Course		
Qualification Pack Name & Reference ID.	IES/Q 0104		
Version No.	1.0	Version Update Date	30-12 -2015
Pre-requisites to Training	<ul style="list-style-type: none"> • Preferably Class VIII • <i>Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966, if working in the mining area under DGMS</i> 		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Assist in carrying out pre-operation checks for excavator operations. General introduction to excavator machine, basic working of engine, hydraulic and electrical systems, operational controls and instrument panel, preparing machine for operations • Assist in excavator operations. Starting of excavator, proceeding to worksite and carrying out earth digging, load lifting, hauling and dumping; parking and shutting down the machine; post-operative checks • Assist in regular maintenance of excavator. General maintenance procedures and periodic service schedule; common faults and their diagnosis; reports and documents. • Comply with worksite health and safety guidelines. Health, safety and environment policies; personal protective equipment, fire-fighting equipment, basic first aid for common injuries at work site 		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Junior Excavator Operator” Qualification Pack issued by “SSC: Infrastructure Equipment Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Assist Pre-Operation Checks</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 30:00</p> <p>Corresponding NOS Code IES/N 0107</p>	<p>Organisational Context:</p> <ul style="list-style-type: none"> Organisation structure, reporting and escalation line. Performance standards and procedures in the company. Work target and review mechanism with supervisor Location and process for storage and disposal of waste. <p>Technical Knowledge:</p> <ul style="list-style-type: none"> Overview of various types of excavators, their attachments and use Basic working of engine and all systems; hydraulic & electrical. Controls, levers, switches and instrument panel & fuse box Procedure for checking filling and topping up of fuel, coolant, oils Method of greasing and lubrication. Optimal working condition of components and monitoring systems Various hand signals and safety & emergency signs at work site. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> Read & understand general instructions/ guidelines related to equipment & worksite ops. Write and record any incidents & deviations on the prescribed formats. Orally communicate information & instructions to operator and co-workers in a clear and concise manner. Plan and organise work related tasks with all concerned in most efficient and cost effective way. <p>Performance Criteria:</p> <ul style="list-style-type: none"> Assist in examining the machine for cracks and dents in the body work and weld joints. Assist in inspecting all ground engaging tools Assist in checking all fluid levels in the engine, transmission & hydraulic systems; top up where necessary Assist in inspecting air filters and gaskets; clean and empty dust bowls Drain water sediments in the fuel system Check battery electrolyte levels and terminal tightness. Check tension of fan belt and compressor belt if fitted 	<ul style="list-style-type: none"> <u>Excavator Machine</u> with standard tools and equipment. Class room with audio-video system Manufacturers O and M video & Manual Safety video PPE Items <u>Open ground</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Inspect all greasing points and pivots and ensure lubrication Check and clean footplates and steps are free of mud and oil spills. Assist in checking all controls, gauges, lights and horns are functional Assist in maintaining logbook to record activities before starting backhoe loader Report defects precisely to operator if beyond his scope. 	
2	<p>Assist in Excavator Operations</p> <p>Theory Duration (hh:mm) 18:00</p> <p>Practical Duration (hh:mm) 28:00</p> <p>Corresponding NOS Code IES/N 0108</p>	<p>Organisational Context</p> <ul style="list-style-type: none"> Responsibilities and time frame for assigned jobs. Emergency organisation and reporting channel work site. Equipment costs and delay implications to company. Location and process for storage and disposal of waste. Work target and performance review mechanism with supervisor. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Besides technical knowledge related to pre-op checks should know Different attachments, their usage and functions. Steering mechanisms and correct way of negotiating slopes <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> In addition to core and generic skills listed above Interpret signage on road and at work site operations correctly. Use correct terminology while interacting with others at site Plan work schedule in time bound and cost effective way. Identify operational slow-downs and take timely remedial action. <p>Performance Criteria.</p> <ul style="list-style-type: none"> Start up : Assist in carrying out all pre- use and running checks; proceeding to site Operations: Assist in inspection of worksite to identify areas where machine can get stuck. Assist in preparing work site and identifying / selecting appropriate attachment Assist in modifying operating techniques to suit changing work conditions. Hauling & Loading: Assist in positioning machine correctly to lift load safely & ensuring stability. Dumping: Assist in shifting and dumping load safely; using correct hand and communication signals. 	<ul style="list-style-type: none"> <u>Excavator Machine</u> with standard tools and equipment. Class room with audio-video system Manufacturers O and M video & Operation Manual Safety video PPE Items <u>Open ground</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Shutdown: Assist operator in moving and parking the machine in garage. Assist in removing attachments after use; clean and store removed attachments Assist in inspecting for damages; leaks etc and report / take appropriate action as laid down. 	
3	<p>Assist in Regular Maintenance</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code IES/N 0109</p>	<p>Organisational Context:</p> <ul style="list-style-type: none"> Organisation structure and maintenance policy. Location of special tools and equipment/ accessories. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Maintenance and service Schedule Common defects and general causes for breakdown. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> In addition to core and generic skills listed above; Plan maintenance & servicing keeping op needs in mind. <p>Performance Criteria</p> <ul style="list-style-type: none"> Assist in Routine Maintenance: Ensure machine correctly and safely positioned before carrying out maintenance. Clean machine outside and inside thoroughly of all spilt oils, grease, mud and dirt. Clean air filter, replenish fuel, lubes and coolants as necessary Grease all pins and pivot points daily. Check battery electrolyte levels and terminals Assist in Basic Diagnostics & Trouble Shooting In addition to the above assist operator in identifying and locating fault. Documentation & Reporting: Ensure documentation on prescribed formats completed in time. Report defects and problems in time to operator and escalate as necessary 	<ul style="list-style-type: none"> <u>Excavator Machine</u> with standard tools and equipment. Class room with audio-video system Manufacturers O and M video, Maintenance Manual & Chart Safety video PPE Items <u>Lab /workshop</u>
4	<p>Comply with Worksite Health and Safety Guidelines</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 12:00</p> <p>Corresponding NOS Code IES/N 7601</p>	<p>Organisational Context</p> <ul style="list-style-type: none"> Health, safety, environmental (HSE) policies and guidelines of the company & their importance Contact details of personnel responsible for HSE related matters & in case of emergencies. <p>Technical Knowledge</p> <ul style="list-style-type: none"> OEMs guidelines for health, safety and security requirements. Types, use and importance of Personal Protective Equipment (PPE) Types of common hazards and risks at worksite and preventive measures. In case of emergencies procedure to stop/ shut down machinery. Common injuries and appropriate basic first aid 	<ul style="list-style-type: none"> <u>Excavator Machine</u> with standard tools and equipment. Class room with audio-video system. Company's ESH video. PPE Items & Safety Gear. <u>Firefighting Eqpt.</u> <u>First Aid Kit.</u> <u>Open ground.</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>treatment.</p> <ul style="list-style-type: none"> • Firefighting equipment: Basic knowledge of handling and using them <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> • In addition to the core and generic skills listed above • Use correct PPE and other safety gear at work site. <p>Performance Criteria</p> <ul style="list-style-type: none"> • Comply with safety, health, environment and security related regulations & guidelines at work. • Correct use of Personal Protective Equipment (PPE) and other safety gear at work site. • Follow safety measures during operations to ensure health and safety of self and others, general public not at risk. • Operate fire extinguishers as applicable. • Support in administering basic first aid. • Record and report details as related to operations, incidents or accidents as applicable. 	
	<p>Total Duration:</p> <p>Theory Duration (hh:mm) 60:00</p> <p>Practical Duration (hh:mm) 110:00</p>	<p>Unique Equipment Required:</p> <ul style="list-style-type: none"> • Excavator Machine with standard attachments, tools and equipment. • Class room with audio-video projection system • Manufacturers O and M Manual & Video • Safety video and charts • PPE Equipment: Helmet, gloves, harness, earplugs, goggles, mask • Firefighting equipment • First Aid Box and Charts • Open ground and Lab/workshop 	

Grand Total Course Duration: 170 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by SSC: Infrastructure Equipment Skill Council)

Annexure: Assessment Criteria

Assessment Criteria for Junior Excavator Operator	
Job Role	Junior Excavator Operator
Qualification Pack	IES/Q 0104 Version 1.0
Sector Skill Council	Infrastructure Equipment

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for Qualification Pack has been laid down based on the NOS's. Each Performance Criteria (PC) has been assigned marks proportional to its importance within NOS and weightages have also been given among the NOSs accordingly.
2	The assessment of the theory/knowledge will be based on written test/viva or both while skill test shall be hands on practical. Behaviour and attitude will be assessed while performing the assigned task.
3	The assessment shall be done as per the guidelines formulated by IESC. The assessment agencies in consultation with IESC will create unique question papers for theory/knowledge and practical skills at each IESC accredited testing centres (as per assessment criteria below)
4	To pass the Qualification Pack, every trainee should score a minimum of 40% in each NOS and 50% aggregate. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification pack.

				Marks Allocation	
NOS	Performance Criteria	Total Mark	Out of	Theory	Skills Practical
1. IES/N0110 Assist in carrying out pre – operation checks of an excavator operations	PC1. Adhere to time limits given by supervisor	30	1	0	1
	PC2. Assist in visual inspection of the body components for cracks and bearing wear		2	1	1
	PC3. Assist in checking the sprocket for worn or cracked teeth		1	0	1
	PC4. Assist in inspecting the boom and the stick for dents and cracked welds		2	1	1
	PC5. Assist in checking the forks for bends		2	1	1
	PC6. Inspect all ground engaging tools to ensure stability		1	0	1
	PC7. Assist in checking that oil levels of engine, transmission, radiant coolant and brake are as per manufacturer's indicators		4	1	3
	PC8. Assist in checking the differential and hydraulic oil levels		1	0	1
	PC9. Assist in checking the hydraulic hose and ram for leakages		2	1	1
	PC10. Assist in conducting checks to ensure proper condition of parking brake, main horn, reverse horn and head light		1	0	1
	PC11. Assist in checking fan belt tension, electrolyte level and terminal tightness		1	0	1
	PC12. Assist in conducting visual inspection to check the various controls, gauges, warning lamp and other safety devices		1	0	1
	PC13. Check and set out all necessary work signs as required		1	0	1
	PC14. Check load chart is displayed in cabin		1	0	1
	PC15. Assist in checking the circle turn gear and clean if required		1	0	1
	PC16. Clean air filter dust bowls and check the gasket and inner filter		1	0	1

				Marks Allocation	
NOS	Performance Criteria	Total Mark	Out of	Theory	Skills Practical
	PC17. Drain water and sediment from the fuel tank		2	1	1
	PC18. Top up coolant and oil in engine, transmission, etc. if necessary as per manufacturer's indicators		1	0	1
	PC19. Grease all the greasing pins and pivots points		1	0	1
	PC20. examine the compressor unit and all fittings and air lines		1	0	1
	PC21. Clean footplates and steps to keep them free from mud, dirt and oil		2	1	1
		Total	30	7	23
2. IES/N0111 Assist in operating an excavator	PC1. Assist in inspecting the worksite to identify and loose soil, hidden deep trenches or marshy patches where excavator could get stuck	20	2	1	1
	PC2. Assist in identifying and selecting the required attachment to be used for performing the task at a work site		1	0	1
	PC3. Assist in ensuring excavator load and operating speed is within limits specified by the manufacturer		4	1	3
	PC4. Assist in taking precaution for hazards such as trenches, potholes and cables		2	1	1
	PC5. Adhere to time limits given by the operator and supervisors		1	0	1
	PC6. Assist in determining a safe distance from a tip edge and usage of an approved stop block before tipping over an edge		2	1	1
	PC7. Assist in keeping a safe distance from other plant or vehicles		1	0	1
	PC8. Assist in ensuring that excavator is always parked on firm, level ground; with handbrake applied and drive and controls disengaged		4	1	3

				Marks Allocation	
NOS	Performance Criteria	Total Mark	Out of	Theory	Skills Practical
	PC9. Assist in determining a position for discharging the load safely and in the manner designated by the supervisor		1	0	1
	PC10. Assist in ensuring that no other operators travel on or stand near the Excavator		1	0	1
	PC11. Inform supervisor of any problems while assisting in operating the Excavator		1	0	1
		Total	20	5	15
3. IES/N0112 Assist in regular maintenance of an excavator	PC1. Assist in assessing the right service schedule by tracking machine operating hours	30	2	1	1
	PC2. Clean air filter dust bowls at regular intervals		2	1	1
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow at regular intervals		2	1	1
	PC4. Drain water and sediment/ fuel separators everyday		1	0	1
	PC5. Replenish coolants, lubricants and fluids everyday		3	0	3
	PC6. Grease all greasing pins and pivot points everyday		2	1	1
	PC7. Assist in checking battery levels and condition of the terminals and carry out minor adjustments if required		1	0	1
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads as per manufacturer's indicators		4	1	3
	PC9. Assist in ensuring the machine is on firm and level ground before any maintenance is carried out; assist in tracking machine operating hours to assess the right service schedule		2	1	1
	PC10. Assist in completing timely and legibly daily/ weekly maintenance sheets as provided by the company		1	0	1

				Marks Allocation	
NOS	Performance Criteria	Total Mark	Out of	Theory	Skills Practical
	PC11. Assist in ensuring that suitable props/ support devices are used and the bucket is not raised while performing maintenance		2	1	1
	PC12. Assist in ensuring that no maintenance task on the engine is performed when running or still hot		1	0	1
	PC13. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		2	1	1
	PC14. Handle and dispose waste based on environmental guidelines at the work place		1	0	1
	PC15. Follow reporting procedures as laid down by the employer		1	0	1
	PC16. Report defects precisely to the operator if beyond scope of his role		1	0	1
	PC17. Report defects precisely to the operator and supervisor if beyond scope of his role		2	1	1
	Total		30	9	21
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	20	2	1	1
	PC2. Use Personal Protective Equipment (PPE) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection		3	0	3
	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		3	0	3

				Marks Allocation	
NOS	Performance Criteria	Total Mark	Out of	Theory	Skills Practical
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		4	1	3
	PC6. Follow safety regulations and procedures with regard to worksite hazards and risks		2	1	1
	PC7. Operate various grades of fire extinguishers, as applicable		1	0	1
	PC8. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		1	0	1
	PC9. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		1	0	1
	PC10. Record and report details related to operations, incidents or accidents, as applicable		1	0	1
		Total	20	4	16



Infrastructure Equipment Skill Council

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