



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack



Assistant-Opencast Mines

Options: Mechanical/ HEMM/ Electrical

QP Code: MIN/Q1101

Version: 1.0

NSQF Level: 2

Skill Council for Mining Sector || FIMI House, B-311, Okhla Industrial Area, Phase-I
New Delhi-110020



Skill Council For Mining Sector



Qualification Pack

Contents

MIN/Q1101: Assistant-Opencast Mines	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Option 1: Mechanical</i>	3
<i>Option 2: HEMM</i>	3
<i>Option 3: Electrical</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
MIN/N1101: Handle material	5
MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)	9
MIN/N1102: Assist in Pre-Operational Checks and Servicing of machinery	15
MIN/N1103: Assist in shifting and operation of the opencast machines	21
MIN/N1104: Assist in installation and maintenance of electrical systems and equipment	26
Assessment Guidelines and Weightage	30
<i>Assessment Guidelines</i>	30
<i>Assessment Weightage</i>	31
Acronyms	33
Glossary	34

Qualification Pack

MIN/Q1101: Assistant-Opencast Mines

Brief Job Description

The Assistant in an Open Cast Mine assists the Operator/ Fitter/ Technician in handling material, pre-operational checks, servicing Heavy Earth Moving Machinery (HEMM), shifting and operation of open cast machines, and installation and maintenance of electrical systems and equipment.

Personal Attributes

This job requires the individual to concentrate on the job at hand and complete it efficiently and effectively. The individual should be physically agile, strong, have good eye-sight, and not suffer from color-blindness.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [MIN/N1101: Handle material](#)
2. [MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines \(Including Mine Vocational Training Rule\)](#)

Options(Not mandatory):

Option 1: Mechanical

This unit is about providing necessary assistance in pre-operational checks and servicing of machinery.

1. [MIN/N1102: Assist in Pre-Operational Checks and Servicing of machinery](#)

Option 2: HEMM

This unit is about providing necessary assistance in regard to shifting and operation of the machines of opencast mines.

1. [MIN/N1103: Assist in shifting and operation of the opencast machines](#)

Option 3: Electrical

This unit is about providing necessary assistance in the operation and maintenance of electrical systems and equipment.

1. [MIN/N1104: Assist in installation and maintenance of electrical systems and equipment](#)



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

Qualification Pack (QP) Parameters

Sector	Mining
Sub-Sector	Mining Operation
Occupation	Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Opencast, Loading and Hauling - Underground, Specialized Operations, HSE Functions, Electrical Services
Country	India
NSQF Level	2
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/9311.0100, NCO-2015/7411.0200
Minimum Educational Qualification & Experience	5th Class with 2 Years of experience relevant OR 8th Class
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	27/01/2022
Next Review Date	27/01/2025
Deactivation Date	27/01/2025
NSQC Approval Date	27/01/2022
Version	1.0
Reference code on NQR	2022/MIN/SCMS/05238
NQR Version	1.0

Qualification Pack

MIN/N1101: Handle material

Description

This unit is about performing material handling activities in the mining area.

Scope

The scope covers the following :

- Move material within the mining area
- Load/unload the materials
- Reject unwanted materials

Elements and Performance Criteria

Move material within the mining area

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

- PC1.** pack and transport material, as per the instructions from the supervisor
- PC2.** follow the traffic rules and area restrictions within the mining area

Load/unload the materials

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

- PC3.** lift materials manually and dump the material
- PC4.** select and use appropriate tools and tackles
- PC5.** record count of material received and stack the material as instructed

Reject unwanted materials

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

- PC6.** sort visually, shift and create separate piles from the mineral rejects
- PC7.** inform supervisor of problems that are beyond scope of his role

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** job specific documents e.g. daily time log and importance of the same
- KU2.** safety policy of the company
- KU3.** risk and impact of not following defined procedures/work instructions
- KU4.** escalation matrix for reporting identified problems
- KU5.** implications of delays in process to the company
- KU6.** different types of mines and overview of the mine a person is working in
- KU7.** commonly used mining terminology - benches (width, height etc.), haul roads (width, gradient), stability of slopes, over hang, under cut, danger from high side etc.
- KU8.** code of practice in specific areas of mine
- KU9.** duties of workmen under mines act



Skill Council For Mining Sector



Qualification Pack

- KU10.** the outcome of violation of safety law
- KU11.** provision of leaves, wages and working hours under mines act
- KU12.** mining safety procedures
- KU13.** environmental impact of mining
- KU14.** sources of dust, noise, and vibration and measures to minimize them
- KU15.** refresher training as per the fourth schedule of Mines Vocational Training Rules (MVTR), 1966, within one month of joining duties following an absence from duties for a period exceeding one year
- KU16.** general safety rules vis-a-vis loading and stocking
- KU17.** importance of signage, mining area signs and other safety and emergency signals
- KU18.** traffic rules to be followed inside the mining yard and movement of persons in the mines
- KU19.** how to respond to emergencies, e.g. correct way to use a fire extinguisher
- KU20.** different tools and tackles and their uses
- KU21.** the significance of fences
- KU22.** importance of sensitization towards different genders and persons with disabilities (PWD)
- KU23.** importance of following infection control policies, '5-S' practices, and waste management as prescribed by regulatory authorities
- KU24.** importance of water/material/energy conservation and management
- KU25.** importance of Safety Management Plan (SMP) and Emergency Management Plan (EMP), prepared by the organization, as per DGMS guideline

Generic Skills (GS)

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

- GS1.** fill out daily time log or any other administrative forms
- GS2.** read and comprehend banners /signage
- GS3.** communicate with supervisors and peers
- GS4.** plan and organize the work assigned



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Move material within the mining area</i>	9	14	-	6
PC1. pack and transport material, as per the instructions from the supervisor	5	7	-	3
PC2. follow the traffic rules and area restrictions within the mining area	4	7	-	3
<i>Load/unload the materials</i>	14	21	-	9
PC3. lift materials manually and dump the material	6	7	-	3
PC4. select and use appropriate tools and tackles	4	7	-	3
PC5. record count of material received and stack the material as instructed	4	7	-	3
<i>Reject unwanted materials</i>	7	15	-	5
PC6. sort visually, shift and create separate piles from the mineral rejects	4	8	-	3
PC7. inform supervisor of problems that are beyond scope of his role	3	7	-	2
NOS Total	30	50	-	20



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N·S·D·C
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1101
NOS Name	Handle material
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Opencast, Specialized Operations, HSE Functions, Loading and Hauling - Underground
NSQF Level	2
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

Qualification Pack

MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)

Description

This unit is about adhering to health, safety and environmental guidelines at the Open Cast Mines while executing various tasks, maintenance and operations.

Scope

The scope covers the following :

- Follow work-site health and safety measures
- Follow Environmental guidelines

Elements and Performance Criteria

Follow work-site health and safety measures

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

- PC1.** comply with safety, health, and security-related regulations/guidelines at the opencast mine
- PC2.** follow the safety instructions given by the workman's inspector
- PC3.** follow adequate safety while working at haul roads, heights, overburden dumps, sump area, stockyard, near moving parts, etc.
- PC4.** take safety precautions while working on sites (sub-station, workshop etc.), with equipment, and conducting welding and cutting operations
- PC5.** follow appropriate Safe Operating Procedure (SOP) while dealing with explosives
- PC6.** respond promptly and appropriately to an accident/ incident or an emergency situation, within limits of the role and responsibility
- PC7.** provide first aid to an injured person
- PC8.** operate various types of fire extinguishers to control different types of fire at a worksite when required
- PC9.** use appropriate PPE as per the requirement
- PC10.** maintain hand hygiene by washing hands with alcohol based sanitisers/soap
- PC11.** disinfect the machine/tools before and after work/task
- PC12.** maintain hygiene at the work site
- PC13.** report any symptoms of illness to the shift-incharge

Follow Environmental guidelines

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

- PC14.** identify the environmental impact of related opencast mining operations
- PC15.** follow the process for collecting, storing and disposing of the hazardous material and waste (like used oil, lubricant, battery, etc.) in compliance with worksite guidelines
- PC16.** ensure not to mix topsoil with waste in day to day tasks
- PC17.** ensure that HEMM is washed at the designated location



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N·S·D·C
REIMAGINE FUTURE

Qualification Pack

- PC18.** ensure the productivity of the machine for material/fuel conservation
- PC19.** follow the mineral conservation practices specified by the organization in accordance with MCDR-2017 (Mineral Conservation and Development Rules)
- PC20.** assist supervisor for reducing environmental impact caused due to related mining operations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** about various environmental awareness program related to mining, organized by the various government bodies/company
- KU2.** safety guidelines specified by Directorate General of Mine Safety (DGMS)
- KU3.** basic mining terminologies and definitions
- KU4.** means of access and egress from the mines, location of workshop, haul roads and working face including dump yards
- KU5.** duties of workers under The Mines act-1952
- KU6.** working hours and accident compensation as per The Mines act-1952
- KU7.** about precautions to be taken when handling heavy equipment
- KU8.** various problems/incidents likely to occur
- KU9.** hierarchy of the reporting
- KU10.** machine operation, condition of the machine and worksite
- KU11.** proper documents specific to the machine
- KU12.** role of workmen inspector, safety committee and internal safety organization
- KU13.** the process of top soil removal and management
- KU14.** mine sump and pumping system of the mines
- KU15.** about mine safety standard including light illumination level, noise levels, dust level, pollutants, etc at the work-site
- KU16.** common sources of pollution in the mines and ways to minimize it
- KU17.** safety equipment like safety shoes, safety belt, tight fit clothing, hand gloves, safety goggles, gas detector, safety lamp, self-contained breathing apparatus, gum boots, ear plugs, face mask, etc.
- KU18.** shot-firing / blasting related safety regulations including taking shelter during blasting
- KU19.** emergency response /disaster management plan prepared by the organization
- KU20.** signages, mining area-specific signs, and other safety and emergency signals
- KU21.** the outcome of violation of safety procedures
- KU22.** basic personal and workplace hygiene
- KU23.** importance of sensitization towards different genders and PWD (Persons with Disabilities)

Generic Skills (GS)

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

- GS1.** fill up documentation applicable to one's role



Skill Council For Mining Sector



Qualification Pack

- GS2.** make decisions on the concerned area of work
- GS3.** read and interpret manuals, health, and safety instructions, memos, etc.
- GS4.** plan and organize the work order and jobs
- GS5.** use reasoning skills to identify and resolve fundamental problems
- GS6.** complete the assigned tasks timely

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow work-site health and safety measures</i>	20	34	-	15
PC1. comply with safety, health, and security-related regulations/guidelines at the opencast mine	2	2	-	1
PC2. follow the safety instructions given by the workman's inspector	1	3	-	1
PC3. follow adequate safety while working at haul roads, heights, overburden dumps, sump area, stockyard, near moving parts, etc.	3	3	-	1
PC4. take safety precautions while working on sites (sub-station, workshop etc.), with equipment, and conducting welding and cutting operations	1	3	-	1
PC5. follow appropriate Safe Operating Procedure (SOP) while dealing with explosives	2	3	-	2
PC6. respond promptly and appropriately to an accident/ incident or an emergency situation, within limits of the role and responsibility	2	3	-	1
PC7. provide first aid to an injured person	2	3	-	1
PC8. operate various types of fire extinguishers to control different types of fire at a worksite when required	1	3	-	1
PC9. use appropriate PPE as per the requirement	2	4	-	2
PC10. maintain hand hygiene by washing hands with alcohol based sanitisers/soap	1	2	-	1
PC11. disinfect the machine/tools before and after work/task	1	2	-	1
PC12. maintain hygiene at the work site	1	1	-	1
PC13. report any symptoms of illness to the shift-incharge	1	2	-	1
<i>Follow Environmental guidelines</i>	10	16	-	5



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. identify the environmental impact of related opencast mining operations	2	2	-	1
PC15. follow the process for collecting, storing and disposing of the hazardous material and waste (like used oil, lubricant, battery, etc.) in compliance with worksite guidelines	1	2	-	1
PC16. ensure not to mix topsoil with waste in day to day tasks	2	2	-	1
PC17. ensure that HEMM is washed at the designated location	2	2	-	1
PC18. ensure the productivity of the machine for material/fuel conservation	1	3	-	-
PC19. follow the mineral conservation practices specified by the organization in accordance with MCDR-2017 (Mineral Conservation and Development Rules)	1	3	-	1
PC20. assist supervisor for reducing environmental impact caused due to related mining operations	1	2	-	-
NOS Total	30	50	-	20



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1703
NOS Name	Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)
Sector	Mining
Sub-Sector	Mining Operation
Occupation	HSE Functions, , Exploration, Mineral Estimation, Planning, Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Opencast, Specialized Operations, Electrical Services, Mechanical Services, Instrumentation and Control Systems, Ore Processing
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/06/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

MIN/N1102: Assist in Pre-Operational Checks and Servicing of machinery

Description

This OS unit is about providing necessary assistance to operators/ technicians in conducting the pre-operational checks of the HEMM and routine maintenance of HEMM, automotive fleet, and other machinery.

Scope

The scope covers the following :

- Assist in conducting the pre-operational checks of the HEMM
- Assist in conducting routine maintenance of HEMM, automotive fleet, and other machinery

Elements and Performance Criteria

Assist in conducting the pre-operational checks of the HEMM

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

- PC1.** assist in visual inspection of the components of HEMM for cracks and wear, and communicate the same to technician/ operator; parameters- unusual noise, vibration, leak, spillage, accumulation, etc.
- PC2.** inspect the bucket for any crack or damage of tooth points, lock pin, etc.
- PC3.** check the hydraulic oil levels, radiator water levels, anti-freeze levels, etc.
- PC4.** check the track chain pad, bolts, and links in crawler mounted equipment and tighten bolts, as required
- PC5.** check if gauges, indicators, and sensor are fully functional and report the same to technician or operator; parameters- alarm message
- PC6.** check for any leakage in compressor unit, airline, and other components
- PC7.** check for any defect in trailing cable and cable joints
- PC8.** carry all the tools and tackles, required for the assigned job

Assist in conducting routine maintenance of HEMM, automotive fleet, and other machinery

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

- PC9.** clean the work area and assist the Technician in conducting the inspection of HEMM and automotive fleet
- PC10.** follow all the work instruction from Fitter / Technician related to routine maintenance
- PC11.** ensure that no maintenance task on the engine is performed when running or still hot
- PC12.** repair or replace faulty parts as per Technician or Operator's instructions
- PC13.** use various kinds of hand held and power-tools to lift, dismantle or assemble machine components
- PC14.** perform greasing & lubrication, as directed by operator/ technician
- PC15.** assist in changing oil, oil filters, air filters and replacing hoses, belts, water pumps, and other parts
- PC16.** check fan belts, hoses, wiper blades, and other safety equipment



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

- PC17.** assist the Technician in maintaining and repairing the automotive fleet, HEMM, and other equipment
- PC18.** check the air in tires, inflate them, change and repair them, as required
- PC19.** respond to road service calls and tow broken-down vehicles
- PC20.** refuel, wash, and clean machinery, as required
- PC21.** assist in welding services, as needed
- PC22.** assist in fitting of pipes and shifting of pumps

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** workplace standing instructions
- KU2.** performance standards and procedure followed in the company
- KU3.** reporting structure of organization
- KU4.** location of tools
- KU5.** spares issuance policy
- KU6.** safety features of machine
- KU7.** work instructions
- KU8.** different greasing points in the equipment
- KU9.** optimum level of water in radiator
- KU10.** the capacity of the machine for different types of oils
- KU11.** capacity of fuel tank in the machine
- KU12.** basics of compressed air operated equipment
- KU13.** basics of electrical driven equipment
- KU14.** application of different types of hand tools
- KU15.** visual checks to identify damage, defects, cracks or leaks beforehand.
- KU16.** fitting of pipes and shifting of pumps

Generic Skills (GS)

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

- GS1.** should be able to write log book and other reports.
- GS2.** read the instructions, guidelines, procedure, rules, signage's related to the works
- GS3.** read the risk management plan of the job
- GS4.** interact effectively with operator in order to clarify instruction and other issues
- GS5.** present reports to concerned authority or person with details
- GS6.** decide on types of tools and tackles to be used
- GS7.** plan work according to the schedule
- GS8.** plan for cleaning of the equipments
- GS9.** identify sources of support that can be availed for problem solving



Skill Council For Mining Sector



Qualification Pack

GS10. analyze, evaluate and apply the information gathered from observations and experience

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assist in conducting the pre-operational checks of the HEMM</i>	13	21	-	7
PC1. assist in visual inspection of the components of HEMM for cracks and wear, and communicate the same to technician/ operator; parameters- unusual noise, vibration, leak, spillage, accumulation, etc.	1	2	-	-
PC2. inspect the bucket for any crack or damage of tooth points, lock pin, etc.	1	2	-	1
PC3. check the hydraulic oil levels, radiator water levels, anti-freeze levels, etc.	2	3	-	1
PC4. check the track chain pad, bolts, and links in crawler mounted equipment and tighten bolts, as required	2	3	-	1
PC5. check if gauges, indicators, and sensor are fully functional and report the same to technician or operator; parameters- alarm message	2	3	-	1
PC6. check for any leakage in compressor unit, airline, and other components	2	3	-	1
PC7. check for any defect in trailing cable and cable joints	1	2	-	1
PC8. carry all the tools and tackles, required for the assigned job	2	3	-	1
<i>Assist in conducting routine maintenance of HEMM, automotive fleet, and other machinery</i>	17	29	-	13
PC9. clean the work area and assist the Technician in conducting the inspection of HEMM and automotive fleet	1	2	-	1
PC10. follow all the work instruction from Fitter / Technician related to routine maintenance	1	2	-	1
PC11. ensure that no maintenance task on the engine is performed when running or still hot	1	2	-	1



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. repair or replace faulty parts as per Technician or Operator's instructions	1	2	-	1
PC13. use various kinds of hand held and power-tools to lift, dismantle or assemble machine components	1	2	-	1
PC14. perform greasing & lubrication, as directed by operator/ technician	1	2	-	1
PC15. assist in changing oil, oil filters, air filters and replacing hoses, belts, water pumps, and other parts	1	2	-	1
PC16. check fan belts, hoses, wiper blades, and other safety equipment	1	2	-	1
PC17. assist the Technician in maintaining and repairing the automotive fleet, HEMM, and other equipment	1	1	-	1
PC18. check the air in tires, inflate them, change and repair them, as required	2	2	-	1
PC19. respond to road service calls and tow broken-down vehicles	1	1	-	1
PC20. refuel, wash, and clean machinery, as required	2	3	-	1
PC21. assist in welding services, as needed	1	3	-	1
PC22. assist in fitting of pipes and shifting of pumps	2	3	-	-
NOS Total	30	50	-	20



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N·S·D·C
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1102
NOS Name	Assist in Pre-Operational Checks and Servicing of machinery
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Underground, Specialized Operations, HSE Functions, Loading and Hauling - Opencast
NSQF Level	2
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

Qualification Pack

MIN/N1103: Assist in shifting and operation of the opencast machines

Description

This unit is about providing necessary assistance to the operator in shifting, placement, cleanliness, and operation of the machine at the place designated by the in-charge.

Scope

The scope covers the following :

- Assist in shifting and placement of the machine
- Assist during the operation of machines
- Clean the equipment

Elements and Performance Criteria

Assist in shifting and placement of the machine

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

- PC1.** follow the work instruction for shifting and positioning of machine such as dragline, dumper, etc.
- PC2.** ensure that the path is free from any obstruction
- PC3.** ensure that no blasting operation is in progress in the area to be shifted
- PC4.** carry the trailing cable while placement of machine in case of electrical driven machines
- PC5.** guide the operator for placement of drill machine at distinctly marked position given by Mechanic/Technician/ surveyor
- PC6.** carry out visual inspection of the area before starting the operation
- PC7.** ensure that the dumping area is free from cracks and subsidence
- PC8.** inspect the unloading area properly for any persons or machinery before starting the dumping operation
- PC9.** ensure that no person is present at the toe of unloading area

Assist during the operation of machines

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

- PC10.** report any abnormality in the machine operation to the operator
- PC11.** perform water spraying on muck pile, if in practice

Clean the equipment

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

- PC12.** clean the operator's cabin and its glasses for better visibility, before starting the machine in a shift
- PC13.** set-up devices and machine parts, using hand tools

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N·S·D·C
REIMAGINE FUTURE

Qualification Pack

- KU1.** performance standards and procedures followed in organization
- KU2.** reporting structure of organization
- KU3.** contact person in case of queries
- KU4.** location and process for disposal of scrap material
- KU5.** risk management plan for the job
- KU6.** work at height-safety measures
- KU7.** basic knowledge of machine features
- KU8.** code of practice for different operations
- KU9.** health hazards and ergonomics

Generic Skills (GS)

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

- GS1.** write simple records of any observation or incident
- GS2.** note measurement, gauge reading etc. for various process in the prescribed format
- GS3.** read the instructions and signage at work place
- GS4.** interact effectively with machine operator in order to clarify instructions and other issues
- GS5.** alert all persons in the immediate vicinity in case of any emergency
- GS6.** use correct technical terms while communicating with operator
- GS7.** take decision on types of tools to be used
- GS8.** plan work according to the job location
- GS9.** report problems that you cannot resolve to appropriate authority
- GS10.** evaluate the complexity of the task to determine if he/she needs any assistance from the senior
- GS11.** analyze, evaluate and apply the information gathered from observation, experience, reasoning to act efficiently and effectively

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assist in shifting and placement of the machine</i>	19	34	-	13
PC1. follow the work instruction for shifting and positioning of machine such as dragline, dumper, etc.	2	4	-	1
PC2. ensure that the path is free from any obstruction	2	4	-	2
PC3. ensure that no blasting operation is in progress in the area to be shifted	2	4	-	2
PC4. carry the trailing cable while placement of machine in case of electrical driven machines	2	5	-	2
PC5. guide the operator for placement of drill machine at distinctly marked position given by Mechanic/Technician/ surveyor	2	4	-	2
PC6. carry out visual inspection of the area before starting the operation	2	4	-	1
PC7. ensure that the dumping area is free from cracks and subsidence	1	1	-	1
PC8. inspect the unloading area properly for any persons or machinery before starting the dumping operation	3	4	-	1
PC9. ensure that no person is present at the toe of unloading area	3	4	-	1
<i>Assist during the operation of machines</i>	4	8	-	3
PC10. report any abnormality in the machine operation to the operator	2	4	-	1
PC11. perform water spraying on muck pile, if in practice	2	4	-	2
<i>Clean the equipment</i>	7	8	-	4
PC12. clean the operator's cabin and its glasses for better visibility, before starting the machine in a shift	4	4	-	2



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. set-up devices and machine parts, using hand tools	3	4	-	2
NOS Total	30	50	-	20



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1103
NOS Name	Assist in shifting and operation of the opencast machines
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Opencast, Loading and Hauling - Underground, Specialized Operations, HSE Functions
NSQF Level	2
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

Qualification Pack

MIN/N1104: Assist in installation and maintenance of electrical systems and equipment

Description

This unit is about assisting Mine Electrician in the installation, operation, and maintenance of the electrical supply system and electrical equipment.

Scope

The scope covers the following :

- Assist in installation & operation of the electrical supply system and electrical equipment
- Assist in the maintenance of electrical supply system and electrical equipment

Elements and Performance Criteria

Assist in installation & operation of the electrical supply system and electrical equipment

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

- PC1.** follow all the work instruction from Mine Electrician and assist him/her for installation and operation of electrical supply and electrical equipment such as transformers, generators, circuit breakers, etc.
- PC2.** use necessary tools such as screw drivers, pliers, etc. and equipment such as ladder for working at height, cables of required specifications, etc.
- PC3.** put Lock Out Tag Out (LOTO) label and ensure zero energy state before starting the job
- PC4.** ensure proper laying of cable to protect from any damage
- PC5.** ensure proper housekeeping of the area after completion of the job and disposal of the scrap material, as per the guideline of the organization

Assist in the maintenance of electrical supply system and electrical equipment

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

- PC6.** assist Mine Electrician in maintenance of transformers, generators, circuit breakers, isolators, bus bars, control panel, switch board, wiring, protective relays etc.
- PC7.** ensure cleaning of electronic components, as per instruction from Mine Electrician or manufacturer's manual.
- PC8.** assist in replacing the spare parts, as per Mine Electrician's instructions
- PC9.** replenish/change the consumables, as per service manual/Mine Electrician's instructions
- PC10.** interpret displayed messages and outputs and share the same with Mine Electrician
- PC11.** perform a visual inspection to verify proper functioning of electronic/electrical components, as per manufacturer's manual
- PC12.** ensure proper earthing for welding machines and hand tools, as required

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



Skill Council For Mining Sector



Qualification Pack

- KU1.** time required to solve the problem
- KU2.** workplace standing instructions & standard operating procedures (SOP)
- KU3.** different types of electrical requirement at mines
- KU4.** the reporting structure of the organization
- KU5.** location of tools
- KU6.** process for storage and disposal of waste material
- KU7.** safety policy of the company
- KU8.** the basic principle of electrical energy
- KU9.** operation and maintenance procedures for electrical systems
- KU10.** different electrical specifications
- KU11.** symbols used in electrical/electronics/instrumentation circuit diagrams
- KU12.** various components of electrical/electronics/instrumentation systems
- KU13.** importance of safety devices, such as circuit protection, fuses, safety switches, etc.
- KU14.** different types of tools and electrical equipment and their usage
- KU15.** techniques to clean/service different electrical/electronic/instrumentation parts
- KU16.** electrical hazards and their prevention techniques
- KU17.** the process of energy isolation
- KU18.** different types of cables
- KU19.** importance of LOTO
- KU20.** precautions to be taken while working at height
- KU21.** various types of transformers and transformer oil
- KU22.** importance of cable jointing, soldering, insulation, etc.
- KU23.** earthing of equipment

Generic Skills (GS)

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

- GS1.** note down observations (if any)
- GS2.** note measurement and readings from equipment panel for various processes
- GS3.** write requisition to internal departments on the requirement of tools, gauges etc.
- GS4.** read the instructions and symbols given at workplace
- GS5.** read information sent by the others
- GS6.** read the risk management plan of the job
- GS7.** read equipment manuals and process documents
- GS8.** communicate effectively with the team members
- GS9.** comprehend the information given by speaker
- GS10.** make decisions in case of emergency and if Mine Electrician or Supervisor is not available
- GS11.** plan work according to the schedule and place given by Mine Electrician

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assist in installation & operation of the electrical supply system and electrical equipment</i>	13	22	-	8
PC1. follow all the work instruction from Mine Electrician and assist him/her for installation and operation of electrical supply and electrical equipment such as transformers, generators, circuit breakers, etc.	3	5	-	2
PC2. use necessary tools such as screw drivers, pliers, etc. and equipment such as ladder for working at height, cables of required specifications, etc.	3	5	-	2
PC3. put Lock Out Tag Out (LOTO) label and ensure zero energy state before starting the job	3	4	-	2
PC4. ensure proper laying of cable to protect from any damage	2	4	-	1
PC5. ensure proper housekeeping of the area after completion of the job and disposal of the scrap material, as per the guideline of the organization	2	4	-	1
<i>Assist in the maintenance of electrical supply system and electrical equipment</i>	17	28	-	12
PC6. assist Mine Electrician in maintenance of transformers, generators, circuit breakers, isolators, bus bars, control panel, switch board, wiring, protective relays etc.	2	4	-	2
PC7. ensure cleaning of electronic components, as per instruction from Mine Electrician or manufacturer's manual.	2	4	-	1
PC8. assist in replacing the spare parts, as per Mine Electrician's instructions	2	4	-	1
PC9. replenish/change the consumables, as per service manual/Mine Electrician's instructions	2	4	-	2
PC10. interpret displayed messages and outputs and share the same with Mine Electrician	3	4	-	2



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. perform a visual inspection to verify proper functioning of electronic/electrical components, as per manufacturer's manual	3	4	-	2
PC12. ensure proper earthing for welding machines and hand tools, as required	3	4	-	2
NOS Total	30	50	-	20



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1104
NOS Name	Assist in installation and maintenance of electrical systems and equipment
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Opencast, Loading and Hauling - Underground, Specialized Operations, HSE Functions, Electrical Services
NSQF Level	2
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQF Clearance Date	27/01/2022

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 %

Qualification Pack

aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the 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
MIN/N1101.Material Handling by Assistant	30	50	-	20	100	50
MIN/N1703.Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)	30	50	-	20	100	50
Total	60	100	-	40	200	100

Optional: 1 Mechanical

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1102.Assist in Pre-Operational Checks and Servicing of HEMM	30	50	-	20	100	40
Total	30	50	-	20	100	40

Optional: 2 HEMM



Skill Council For Mining Sector



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



NSDC
REIMAGINE FUTURE

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1103.Assist in shifting and operation of the opencast machines	30	50	-	20	100	40
Total	30	50	-	20	100	40

Optional: 3 Electrical

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1104.Assist in installation and maintenance of electrical systems and equipment	30	50	-	20	100	40
Total	30	50	-	20	100	40



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N·S·D·C
REIMAGINE FUTURE

Qualification Pack

Acronyms

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



Skill Council For Mining Sector



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



NCVET
कौशल गुणवत्ता प्रगति



N.S.D.C
REIMAGINE FUTURE

Qualification Pack

Glossary

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



Skill Council For Mining Sector



Qualification Pack

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