



Bulldozer Operator

QP Code: IES/MIN/Q1401

Version: 2.0

NSQF Level: 4

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

Borrowed Qualification Pack (QP) Parameters

Originating SSC	Mining
Borrowing SSC	Infrastructure Equipment
Borrowing Request Validity	26/07/2023 to 26/07/2025
Assessment and Certification to be conducted by	Infrastructure Equipment
Certification Logos to be included	Infrastructure Equipment

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MIN/Q1401: Bulldozer Operator

Brief Job Description

The bulldozer operator uses the bulldozer to scoop out soil, move rocks and ore to other site of the location and level the ground. They are also responsible for confirming that the safety systems are working correctly and performing essential maintenance on the bulldozer.

Personal Attributes

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

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [MIN/N1401: Prepare the Bulldozer for operations](#)
2. [MIN/N1402: Perform bulldozer operations](#)
3. [MIN/N1403: Perform basic maintenance and troubleshooting of the Bulldozer](#)
4. [MIN/N1404: Carry out reporting and documentation related to the bulldozer Operation](#)
5. [MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines \(Including Mine Vocational Training Rule\)](#)
6. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Infrastructure Equipment
Sub-Sector	
Occupation	Loading and Hauling - Opencast
Country	India
NSQF Level	4
Credits	17
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8342.0101

Minimum Educational Qualification & Experience	<p>8th grade pass plus 2-year NTC plus 1 Year NAC OR 8th pass plus 1-year NTC plus 1-Year NAC plus CITS OR 10th grade pass and pursuing continuous schooling OR 10th grade pass (with 2 years relevant experience) OR Previous relevant Qualification of NSQF Level (Level 3.0 Jr. Bulldozer Operator with minimum education as 5th Grade pass with 2 years relevant experience)</p>
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	Preferable Heavy Motor Vehicle Driving License
Minimum Job Entry Age	20 Years
Last Reviewed On	NA
Next Review Date	17/11/2025
NSQC Approval Date	
Version	2.0

Remarks:

Total Notional Duration: 510 Hours= Domain Theory duration: 120 Hours+ Domain Practical duration: 150 Hours+ Domain OJT (Mandatory) duration: 180 Hours+ Employability Skills duration: 60 Hours

MIN/N1401: Prepare the Bulldozer for operations

Description

This unit is about preparing the bulldozer for activities that need to be carried out during the shift

Scope

The scope covers the following :

- Conducting pre-operation checks and routine maintenance of the bulldozer
- Recording and reporting the details of bulldozer's pre-operation inspection and maintenance

Elements and Performance Criteria

Conducting pre-operation checks and routine maintenance of the bulldozer

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

- PC1.** follow the work related instructions given by the supervisor before the shift starts
- PC2.** check oil levels of engine, transmission, differential, hydraulic tank etc. and top up as required
- PC3.** check water level in the radiator and top up as required
- PC4.** check the condition of the parking brake, main horn, reverse horn, warning lamp and headlight
- PC5.** confirm availability and functionality of safety features in the bulldozer like audiovisual alarm, reverse camera, mirrors, horn, seat belt, Roll-Over Protection Structure (ROPS) and Falling Object Protective Structure (FOPS)
- PC6.** check fan belt tension, electrolyte level, and batteries' terminal tightness
- PC7.** clean the bulldozer and outer element of an air cleaner with compressed air
- PC8.** apply grease to all the required parts
- PC9.** drain accumulated water from the diesel tank
- PC10.** examine track's tension and take action as required
- PC11.** check and take action as per the entries done by the previous operator in the bulldozer logbook
- PC12.** check for any spills/leakages in the engine, hydraulic systems, transmission etc.
- PC13.** plug spill, leakage of oil and lubricants and escalate to appropriate authority if unable to rectify
- PC14.** inspect the work site before the commencement of the work

Recording and reporting the details of bulldozer's pre-operation inspection and maintenance

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

- PC15.** maintain the operation and maintenance logbook to detail all activities conducted before starting the bulldozer
- PC16.** inform the supervisor of those problems which are not under one's purview

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** job-specific documents e.g. daily maintenance checklist and importance of the same
- KU2.** risk and impact of not following defined procedures/work instructions
- KU3.** the hierarchy for reporting identified problems
- KU4.** cost of equipment and loss for the company that results from damage of equipment
- KU5.** implications of delays in the process
- KU6.** handover and takeover procedures of the bulldozer according to company's SOP
- KU7.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to bulldozer operations
- KU8.** different types of mines and detail of the mine one is working in
- KU9.** benching in quarries, dressing of overhangs, undercuts, fencing, first aid, and hygiene
- KU10.** code of practice in specific areas of the mine
- KU11.** standing orders in force at the mine
- KU12.** importance of safety in the vicinity of machinery
- KU13.** about shot-firing / blasting related safety regulations including taking shelter during blasting
- KU14.** about tramways and siding, haulage rooms, winding rooms, boilers, electrical Gears, etc.
- KU15.** duties of workmen under the Mines Act-1952
- KU16.** provision of compensation and working hours, leaves, etc. as per Mines Act-1952
- KU17.** the outcome of violation of safety procedures
- KU18.** about levers, switches, instrument panel and various controls in order to operate the bulldozer properly
- KU19.** emergency response /disaster management plan prepared by the organization
- KU20.** preparation process of working bench for drilling, compacting, and grading of haul roads and Over Burden (OB) handling at the tipping site of dump yard
- KU21.** signages, mining area-specific signs, and other safety and emergency signals
- KU22.** correct maintenance procedures for the bulldozer
- KU23.** response to emergencies e.g. fire /inundation
- KU24.** the optimal working condition of bulldozer components and the oil lever e.g. parking brake, main horn, reverse horn, etc and the oil level of the engine, transmission, etc.
- KU25.** parts of bulldozer that need routine lubrication
- KU26.** optimal engine oil pressure, radiator coolant temperature , Lube oil pressure, transmission oil pressure etc. during operation
- KU27.** power transmission circuit from engine to final drive
- KU28.** importance of gender-sensitization at work site
- KU29.** basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

Generic Skills (GS)

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

- GS1.** note down observations (if any)
- GS2.** read and interpret symbols and readings
- GS3.** read information documents
- GS4.** discuss task lists, schedules, and activities

- GS5.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS6.** make decisions pertaining to the concerned area of work
- GS7.** plan and organize the work order and tasks
- GS8.** organize all operation and service manuals so that sorting/ accessing information is easy
- GS9.** detect problems in day to day tasks
- GS10.** discuss possible solution with the supervisor for problem solving
- GS11.** make decisions in emergency conditions
- GS12.** follow instructions and work on areas of improvement identified
- GS13.** complete the assigned tasks timely
- GS14.** use reasoning skills to identify and resolve basic problems
- GS15.** analyze and detect any potential problems which could arise during operation
- GS16.** respect persons with disabilities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conducting pre-operation checks and routine maintenance of the bulldozer</i>	26	65	-	-
PC1. follow the work related instructions given by the supervisor before the shift starts	2	-	-	-
PC2. check oil levels of engine, transmission, differential, hydraulic tank etc. and top up as required	1	2	-	-
PC3. check water level in the radiator and top up as required	1	5	-	-
PC4. check the condition of the parking brake, main horn, reverse horn, warning lamp and headlight	2	5	-	-
PC5. confirm availability and functionality of safety features in the bulldozer like audiovisual alarm, reverse camera, mirrors, horn, seat belt, Roll-Over Protection Structure (ROPS) and Falling Object Protective Structure (FOPS)	2	8	-	-
PC6. check fan belt tension, electrolyte level, and batteries' terminal tightness	2	5	-	-
PC7. clean the bulldozer and outer element of an air cleaner with compressed air	2	10	-	-
PC8. apply grease to all the required parts	2	5	-	-
PC9. drain accumulated water from the diesel tank	2	5	-	-
PC10. examine track's tension and take action as required	2	5	-	-
PC11. check and take action as per the entries done by the previous operator in the bulldozer logbook	2	-	-	-
PC12. check for any spills/leakages in the engine, hydraulic systems, transmission etc.	2	5	-	-
PC13. plug spill, leakage of oil and lubricants and escalate to appropriate authority if unable to rectify	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. inspect the work site before the commencement of the work	2	5	-	-
<i>Recording and reporting the details of bulldozer's pre-operation inspection and maintenance</i>	4	5	-	-
PC15. maintain the operation and maintenance logbook to detail all activities conducted before starting the bulldozer	2	5	-	-
PC16. inform the supervisor of those problems which are not under one's purview	2	-	-	-
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1401
NOS Name	Prepare the Bulldozer for operations
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Loading and Hauling - Opencast,
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQF Clearance Date	17/11/2022

MIN/N1402: Perform bulldozer operations

Description

This unit is about performing various bulldozer operations in the mines during the shift.

Scope

The scope covers the following :

- Starting and driving the bulldozer to the operation area
- Engage and maneuver the blade to level the ground

Elements and Performance Criteria

Starting and driving the bulldozer to the operation area

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

- PC1.** inspect the site to identify any loose soil, hidden deep trenches or marshy patches where the bulldozer could get stuck before starting the work
- PC2.** follow the load targets, operating speed and time limits specified by the supervisor
- PC3.** inform the supervisor of any problems, while operating the bulldozer
- PC4.** use the correct slings and links
- PC5.** take proper precautions for the safety of other workers and machine while using ripper attachment and blade
- PC6.** follow the walkway rules e.g. operating the bulldozer within the permissible/allocated areas
- PC7.** execute dozing operation safely on down slopes, near banks, bench edges and dump yard

Engage and maneuver the blade to level the ground

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

- PC8.** maintain the ground level during accumulation of waste/reject/stack/secondary material
- PC9.** execute dozing operation near the mining working faces/site for proper maneuverability of excavator and dumper
- PC10.** confirm that no other operators travel or stand near the bulldozer during the operation
- PC11.** create space for rain water drainage on the side of the haul road while preparing it
- PC12.** change blade position efficiently as per the requirement
- PC13.** perform dozing operation in conjunction with tilting operation of the blade as per work requirement
- PC14.** prepare the haul road by maintaining the required road quality and dimensions such as width and thickness

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** emergency response /disaster management plan prepared by the organization
- KU2.** safety guidelines for bulldozer operations specified by Directorate General of Mines Safety (DGMS)

- KU3.** different types of mines and detail of the mine one is working in
- KU4.** benching in quarries, dressing of overhangs, undercuts, fencing, etc.
- KU5.** importance of first aid, and hygiene
- KU6.** about shot-firing / blasting related safety regulations including taking shelter during blasting
- KU7.** duties of workmen under the Mines Act-1952
- KU8.** about instrument panel, levers, switches and various controls in order to operate the bulldozer properly
- KU9.** preparation process of working bench for drilling, compacting, and grading of haul roads and Over Burden (OB) handling at the tipping site of the dump yard
- KU10.** response to emergencies e.g. fire /inundation
- KU11.** provision of compensation and working hours, leaves, etc as per Mines Act-1952
- KU12.** guidelines for working in congested places e.g. stock piles, below overhangs
- KU13.** correct operating procedures while using the bulldozer
- KU14.** precautions to be taken in the dump-yard
- KU15.** importance of gender-sensitization at work site

Generic Skills (GS)

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

- GS1.** note down observations (if any)
- GS2.** read and interpret symbols and readings
- GS3.** read information documents
- GS4.** discuss task lists, schedules, and activities
- GS5.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS6.** make decisions pertaining to the concerned area of work
- GS7.** plan and organize the work order and tasks
- GS8.** organize all operation and service manuals so that sorting/ accessing information is easy
- GS9.** detect problems in day to day tasks
- GS10.** discuss possible solution with the supervisor for problem solving
- GS11.** make decisions in emergency conditions
- GS12.** follow instructions and work on areas of improvement identified
- GS13.** complete the assigned tasks timely

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Starting and driving the bulldozer to the operation area</i>	15	30	-	-
PC1. inspect the site to identify any loose soil, hidden deep trenches or marshy patches where the bulldozer could get stuck before starting the work	2	5	-	-
PC2. follow the load targets, operating speed and time limits specified by the supervisor	3	5	-	-
PC3. inform the supervisor of any problems, while operating the bulldozer	3	-	-	-
PC4. use the correct slings and links	1	5	-	-
PC5. take proper precautions for the safety of other workers and machine while using ripper attachment and blade	2	5	-	-
PC6. follow the walkway rules e.g. operating the bulldozer within the permissible/allocated areas	2	5	-	-
PC7. execute dozing operation safely on down slopes, near banks, bench edges and dump yard	2	5	-	-
<i>Engage and maneuver the blade to level the ground</i>	15	40	-	-
PC8. maintain the ground level during accumulation of waste/reject/stack/secondary material	2	5	-	-
PC9. execute dozing operation near the mining working faces/site for proper maneuverability of excavator and dumper	3	5	-	-
PC10. confirm that no other operators travel or stand near the bulldozer during the operation	2	5	-	-
PC11. create space for rain water drainage on the side of the haul road while preparing it	2	5	-	-
PC12. change blade position efficiently as per the requirement	2	5	-	-
PC13. perform dozing operation in conjunction with tilting operation of the blade as per work requirement	2	10	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. prepare the haul road by maintaining the required road quality and dimensions such as width and thickness	2	5	-	-
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1402
NOS Name	Perform bulldozer operations
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Loading and Hauling - Opencast,
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQF Clearance Date	17/11/2022

MIN/N1403: Perform basic maintenance and troubleshooting of the Bulldozer

Description

This unit is about performing basic maintenance and troubleshooting of the bulldozer.

Scope

The scope covers the following :

- Performing preventive maintenance
- Performing basic diagnostics and troubleshooting

Elements and Performance Criteria

Performing preventive maintenance

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

- PC1.** track machine operating hours to assess the right service schedule
- PC2.** ensure that the Original Equipment Manufacturer (OEM) recommended procedure and checklist is followed for routine servicing
- PC3.** carry out the maintenance with Heavy Earth Moving Machinery (HEMM) mechanic or superior in case of non-routine service or repair
- PC4.** assist HEMM Mechanic and auto-electrician as and when required
- PC5.** fill the daily, weekly and monthly maintenance/defect sheets as per the organization

Performing basic diagnostics and troubleshooting

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

- PC6.** ensure that no maintenance task on the machine is performed when it is running or is still hot
- PC7.** check the instrument panel and control gauge to identify out of range readings to find the defect/cause of failure
- PC8.** conduct scheduled, routine examination and assessments against equipment specifications to identify wear, damage, corrosion, inadequate fluid levels, leaks and general condition and serviceability
- PC9.** check complaint sheet, logbook and history sheet of the equipment and identify repair requirements
- PC10.** use diagnostic procedures as defined in the troubleshooting checklist prepared by the Original Equipment Manufacturer (OEM)
- PC11.** assess when the problem is beyond one's competence and report the problem to concerned person

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** job specific documents e.g. daily maintenance checklist and importance of the same

- KU2.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to bulldozer operations
- KU3.** different types of mines and detail of the mine one is working in
- KU4.** benching in quarries, dressing of overhangs, undercuts, fencing, etc.
- KU5.** importance of safety in the vicinity of machinery
- KU6.** duties of workmen under the Mines Act-1952
- KU7.** the outcome of violation of safety procedures
- KU8.** about levers, switches, instrument panel and various controls in order to operate the bulldozer properly
- KU9.** correct maintenance procedures for the bulldozer
- KU10.** response to emergencies e.g. fire /inundation
- KU11.** correct operating procedures while using the bulldozer
- KU12.** guidelines for working in congested places e.g. stock piles, below overhangs
- KU13.** optimal working condition of bulldozer components e.g. hoists, propel system, power train, and other attachments
- KU14.** about visual checks to identify damage, defects or leaks
- KU15.** parts of the bulldozer that need routine lubrication to be identified
- KU16.** importance of gender-sensitization at work site
- KU17.** basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

Generic Skills (GS)

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

- GS1.** note down observations (if any)
- GS2.** read and interpret symbols and readings
- GS3.** read information documents
- GS4.** discuss task lists, schedules, and activities
- GS5.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS6.** make decisions pertaining to the concerned area of work
- GS7.** plan and organize the work order and tasks
- GS8.** organize all operation and service manuals so that sorting/ accessing information is easy
- GS9.** report about all activities to the supervisor
- GS10.** detect problems in day to day tasks
- GS11.** discuss possible solution with the supervisor for problem solving
- GS12.** make decisions in emergency conditions
- GS13.** follow instructions and work on areas of improvement identified
- GS14.** complete the assigned tasks timely
- GS15.** use reasoning skills to identify and resolve basic problems
- GS16.** analyze and detect any potential problems which could arise during operation
- GS17.** respect persons with disabilities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Performing preventive maintenance</i>	14	40	-	-
PC1. track machine operating hours to assess the right service schedule	2	5	-	-
PC2. ensure that the Original Equipment Manufacturer (OEM) recommended procedure and checklist is followed for routine servicing	2	5	-	-
PC3. carry out the maintenance with Heavy Earth Moving Machinery (HEMM) mechanic or superior in case of non-routine service or repair	4	10	-	-
PC4. assist HEMM Mechanic and auto-electrician as and when required	3	10	-	-
PC5. fill the daily, weekly and monthly maintenance/defect sheets as per the organization	3	10	-	-
<i>Performing basic diagnostics and troubleshooting</i>	16	30	-	-
PC6. ensure that no maintenance task on the machine is performed when it is running or is still hot	3	5	-	-
PC7. check the instrument panel and control gauge to identify out of range readings to find the defect/cause of failure	2	5	-	-
PC8. conduct scheduled, routine examination and assessments against equipment specifications to identify wear, damage, corrosion, inadequate fluid levels, leaks and general condition and serviceability	3	5	-	-
PC9. check complaint sheet, logbook and history sheet of the equipment and identify repair requirements	3	5	-	-
PC10. use diagnostic procedures as defined in the troubleshooting checklist prepared by the Original Equipment Manufacturer (OEM)	2	5	-	-
PC11. assess when the problem is beyond one's competence and report the problem to concerned person	3	5	-	-
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1403
NOS Name	Perform basic maintenance and troubleshooting of the Bulldozer
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Loading and Hauling - Opencast
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQF Clearance Date	17/11/2022

MIN/N1404: Carry out reporting and documentation related to the bulldozer Operation

Description

This unit is about carrying out reporting and documentation related to the bulldozer operation.

Scope

The scope covers the following :

- Reporting and documentation

Elements and Performance Criteria

Reporting and documentation

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

- PC1.** report problems/incidents as applicable in a timely manner
- PC2.** record the details accurately using the appropriate format
- PC3.** identify documentation to be completed
- PC4.** prepare all documentation correctly on time
- PC5.** ensure that all documents are available to appropriate authorities for inspection
- PC6.** use Mineral Conservation and Development Rules (MCDR) based logbook and fill accurate data in the correct format along with the signature at the end
- PC7.** handover all important information to the reliever in a proper manner

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** types of documentation in organization e.g. daily maintenance checklist and importance of the same
- KU2.** different types of mines and detail of the mine one is working in
- KU3.** commonly used mining terminologies
- KU4.** duties of workers under The Mines Act-1952
- KU5.** precautions to be taken when handling heavy equipment
- KU6.** various problems/incidents likely to occur
- KU7.** importance of gender-sensitization at the work-site
- KU8.** basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

Generic Skills (GS)

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

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

- GS2.** make decisions on the concerned area of work
- GS3.** read and explain 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
- GS7.** maintain a good relationship with the supervisor/ and staff
- GS8.** detect problems in day to day tasks
- GS9.** respect persons with disabilities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Reporting and documentation</i>	30	70	-	-
PC1. report problems/incidents as applicable in a timely manner	4	10	-	-
PC2. record the details accurately using the appropriate format	4	10	-	-
PC3. identify documentation to be completed	5	10	-	-
PC4. prepare all documentation correctly on time	4	10	-	-
PC5. ensure that all documents are available to appropriate authorities for inspection	4	10	-	-
PC6. use Mineral Conservation and Development Rules (MCDR) based logbook and fill accurate data in the correct format along with the signature at the end	4	10	-	-
PC7. handover all important information to the reliever in a proper manner	5	10	-	-
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1404
NOS Name	Carry out reporting and documentation related to the bulldozer Operation
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Loading and Hauling - Opencast
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

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
- 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
- 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

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
PC14. identify the environmental impact of related opencast mining operations	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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

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

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Introduction to Employability Skills

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

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values - Citizenship

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

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

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

- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

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

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

- PC30.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC31.** apply to identified job openings using offline /online methods as per requirement
- PC32.** answer questions politely, with clarity and confidence, during recruitment and selection
- PC33.** identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** need for employability skills and different learning and employability related portals
- KU2.** various constitutional and personal values
- KU3.** different environmentally sustainable practices and their importance
- KU4.** Twenty first (21st) century skills and their importance
- KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
- KU6.** importance of career development and setting long- and short-term goals
- KU7.** about effective communication
- KU8.** POSH Act
- KU9.** Gender sensitivity and inclusivity
- KU10.** different types of financial institutes, products, and services
- KU11.** how to compute income and expenditure
- KU12.** importance of maintaining safety and security in offline and online financial transactions
- KU13.** different legal rights and laws
- KU14.** different types of digital devices and the procedure to operate them safely and securely
- KU15.** how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.
- KU16.** how to identify business opportunities
- KU17.** types and needs of customers
- KU18.** how to apply for a job and prepare for an interview
- KU19.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

- GS1.** read and write different types of documents/instructions/correspondence
- GS2.** communicate effectively using appropriate language in formal and informal settings
- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently

GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values – Citizenship</i>	1	1	-	-
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-
PC10. understand the difference between job and career	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQF Clearance Date	28/02/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
5. In case of successfully passing an only a certain number of NOSs, the trainee is eligible to take the subsequent assessment on the balance NOS's to pass the Qualification Pack.
6. 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/N1401.Prepare the Bulldozer for operations	30	70	-	-	100	20
MIN/N1402.Perform basic maintenance and troubleshooting of the Bulldozer	30	70	-	-	100	20
MIN/N1403.Perform basic maintenance and troubleshooting of the Bulldozer	30	70	-	-	100	20
MIN/N1404.Carry out reporting and documentation related to the bulldozer Operation	30	70	-	-	100	10
MIN/N1703.Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)	30	50	-	20	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
Total	170	360	0	0	550	100

Acronyms

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

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.
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.