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## Qualification Pack



# Mineral Processing Operator

Grinding/ Beneficiation/ Tailing

QP Code: MIN/Q4101

Version: 2.0

NSQF Level: 4

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## Qualification Pack

### MIN/Q4101: Mineral Processing Operator

#### Brief Job Description

Mineral Processing Operator is engaged in mineral beneficiation in setting up crushing, screening, straining, washing, precipitating and other processes like leaching, floating and tailing management according to section in which posted and duties assigned and ensures proper working condition.

#### 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 colour-blindness.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [MIN/N4101: Pre-Operation checks of crusher and crusher sites](#)
2. [MIN/N4102: Operate conveyors and feeders](#)
3. [MIN/N4103: Operation and maintenance of the crusher](#)
4. [MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines \(Including Mine Vocational Training Rule\)](#)
5. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

##### Options(Not mandatory):

###### Option 1: Grinding

1. [MIN/N4104: Grinding of crushed Ore/mineral](#)

###### Option 2: Beneficiation

1. [MIN/N4105: Beneficiation and Mineral recovery](#)

###### Option 3: Tailing

1. [MIN/N4106: Tailing Management](#)



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## Qualification Pack

### Qualification Pack (QP) Parameters

<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Credits</b>	21
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/8112.9900
<b>Minimum Educational Qualification &amp; Experience</b>	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 (3.0 Jr. Mineral Processing Operator with minimum education as 5th grade pass with 2 years relevant experience)
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	20 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Approval Date</b>	17/11/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2022/MIN/SCMS/06986
<b>NQR Version</b>	1



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### Remarks:

Total Notional Duration: 450 Hours; Additional 60 hours for Optional NOS= Domain Theory Duration: 90 Hours; Additional 20 hours for Optional NOS Theory Duration+ Domain Practical Duration: 120 Hours; Additional 20 hours for Optional NOS Practical Duration+ Domain OJT (Mandatory) Duration: 180 Hours; Additional 20 hours for Optional NOS OJT Duration+ Employability Skills Duration: 60 Hours

## Qualification Pack

### MIN/N4101: Pre-Operation checks of crusher and crusher sites

#### Description

This OS unit is about pre-operation check of crusher and crusher sites such as feeder, conveyor, VSI etc. before starting the crusher for operation.

#### Scope

The scope covers the following :

- Pre-Operation check of crusher and crusher sites

#### Elements and Performance Criteria

##### *Pre-Operation check of crusher and crusher sites*

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

- PC1.** check the electric panel and electric supply before starting the crusher
- PC2.** check availability of raw materials at the site
- PC3.** inspect the moveable parts in crushers like conveyor belts, rollers, stringers, etc. for wear and tear
- PC4.** check Vertical Shaft Impactor (VSI) crusher, tips, liners, etc.
- PC5.** coordinate with other vehicle operators for procurement of the raw material as per standards of the organisation
- PC6.** inspect the suitable fire extinguishers and automatically operated fire suppression system and devices including automatic fire detection system at site
- PC7.** interpret the layout and identify components of belt conveyor system including its principal components like, trough, conveyor belt, clips, roller, guards, tensioners, feed and discharge chutes, head, tail and take-up pulleys, bearings, controls such as switches, trip cords, Inter locks, alarms, etc.
- PC8.** discuss the operations of mechanical and electrical driving units including safety devices
- PC9.** conduct conveying of the ore to the processing unit considering parameters like feed/ material rate, alignment of conveyor belts, spillage amount and rate, conveyor jams etc.
- PC10.** take corrective actions against any safety hazards
- PC11.** conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, lubrication of drive head, tail end and rollers , leaks, ensure magnets are operative
- PC12.** take corrective actions on any unusual issues observed during operational checks
- PC13.** check principal components of hoppers and bins, like grizzly rails, chutes, guardrails etc.

#### 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



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- 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.** different types of mines and detail of the mine one is working in
- KU7.** benching in quarries, dressing of overhangs, undercuts, fencing
- KU8.** importance of first aid and hygiene
- KU9.** code of practice in specific areas of the mine
- KU10.** standing orders in force at the mine
- KU11.** importance of safety in the vicinity of machinery
- KU12.** about shot-firing / blasting related safety regulations including taking shelter during blasting
- KU13.** duties of workmen under the Mines Act-1952
- KU14.** provision of compensation and working hours, leaves, etc. as per Mines Act-1952
- KU15.** the outcome of violation of safety procedures
- KU16.** emergency response /disaster management plan prepared by the organization
- KU17.** different types of ore processing processes and associated equipment
- KU18.** mechanism of transmission of power
- KU19.** types of raw materials and its physical qualities
- KU20.** basic electrical functioning and repairs
- KU21.** about Vertical Shaft Impactor (VSI) crusher, tips, liners, etc.
- KU22.** various moveable part of crusher such as conveyor belts, rollers, stringers, etc.

## 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



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- GS15.** analyze and detect any potential problems which could arise during operation
- GS16.** respect persons with disabilities
- GS17.** explain the importance of gender-sensitization at work site
- GS18.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Pre-Operation check of crusher and crusher sites</i>	<b>30</b>	<b>70</b>	-	-
<b>PC1.</b> check the electric panel and electric supply before starting the crusher	3	5	-	-
<b>PC2.</b> check availability of raw materials at the site	3	5	-	-
<b>PC3.</b> inspect the moveable parts in crushers like conveyor belts, rollers, stringers, etc. for wear and tear	2	5	-	-
<b>PC4.</b> check Vertical Shaft Impactor (VSI) crusher, tips, liners, etc.	2	6	-	-
<b>PC5.</b> coordinate with other vehicle operators for procurement of the raw material as per standards of the organisation	3	5	-	-
<b>PC6.</b> inspect the suitable fire extinguishers and automatically operated fire suppression system and devices including automatic fire detection system at site	2	6	-	-
<b>PC7.</b> interpret the layout and identify components of belt conveyor system including its principal components like, trough, conveyor belt, clips, roller, guards, tensioners, feed and discharge chutes, head, tail and take-up pulleys, bearings, controls such as switches, trip cords, Inter locks, alarms, etc.	2	5	-	-
<b>PC8.</b> discuss the operations of mechanical and electrical driving units including safety devices	3	5	-	-
<b>PC9.</b> conduct conveying of the ore to the processing unit considering parameters like feed/ material rate, alignment of conveyor belts, spillage amount and rate, conveyor jams etc.	2	5	-	-
<b>PC10.</b> take corrective actions against any safety hazards	2	6	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, lubrication of drive head, tail end and rollers , leaks, ensure magnets are operative	2	6	-	-
<b>PC12.</b> take corrective actions on any unusual issues observed during operational checks	2	5	-	-
<b>PC13.</b> check principal components of hoppers and bins, like grizzly rails, chutes, guardrails etc.	2	6	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4101
<b>NOS Name</b>	Pre-Operation checks of crusher and crusher sites
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022



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## Qualification Pack

### MIN/N4102: Operate conveyors and feeders

#### Description

This OS unit is about operate conveyors and feeders.

#### Scope

The scope covers the following :

- Operate the feeders
- Operate the conveyors

#### Elements and Performance Criteria

##### *Operate the feeders*

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

- PC1.** interpret the layout and recognize the components of feeders including chains, pans, bearings, rollers, shafts, feed/discharge chute, drive mechanisms, lubrication systems, controls, drive belts, hangers/cables, etc.
- PC2.** conduct feeding of the ore to the crusher considering parameters like feed/ material rate, tilt, jams etc.
- PC3.** take corrective actions against any safety hazards like spillage etc. and issues like unusual noises/ smells, blockages and obstruction, lubrication, leaks, etc.

##### *Operate the conveyors*

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

- PC4.** follow the safe code of practice for erection, installation, operation, repairs, maintenance, dismantling of plant and ancillary equipment and for the prevention of accident and to provide safety , health, convenience and discipline of the workers
- PC5.** check the suitable fire extinguishers and automatically operated fire suppression system and devices including fire detection system
- PC6.** interpret the layout and recognize the components of a belt conveyor system including its principal components like trough, conveyor belt, clips, roller, guards, tensioners, feed and discharge chutes, head, tail and take-up pulleys, bearings, controls such as switches, trip cords, Interlocks, alarms, etc. and operations of mechanical and electrical driving units including safety devices
- PC7.** conduct conveying of the ore to the processing unit considering parameters like feed/ material rate, alignment of conveyor belts, spillage amount and rate, conveyor jams etc.
- PC8.** take corrective actions against any safety hazards
- PC9.** conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, lubrication of drive head, tail end and rollers, leaks, ensure magnets are operative and take corrective actions if required
- PC10.** ensure principal components of hoppers and bins, like grizzly rails, chutes, guardrails, etc. are deployed to control stockpile levels, stability of stockpiles, clearing of the obstruction etc.

#### Knowledge and Understanding (KU)



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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.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to mineral processing operations
- KU7.** different types of mines and detail of the mine one is working in
- KU8.** benching in quarries, dressing of overhangs, undercuts, fencing
- KU9.** importance of 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.** duties of workmen under the Mines Act-1952
- KU15.** provision of compensation and working hours, leaves, etc. as per Mines Act-1952
- KU16.** the outcome of violation of safety procedures
- KU17.** emergency response /disaster management plan prepared by the organization
- KU18.** different types of mineral processing processes and associated equipment
- KU19.** mechanism of transmission of power
- KU20.** proper signals and their correct interpretation
- KU21.** use of warning bells and application of safety devices
- KU22.** operation of different levers and operating switches and loading of mineral
- KU23.** different types of conveyors like belt conveyors, drag conveyors, pneumatic conveyors, airslid conveyors, screw conveyors, bucket elevators and pan conveyors
- KU24.** different types of conveyors principal components, such as screw, screw casing/trough, scrapers, conveyor belt, splices or clips, drive mechanisms, roller chains/belts, buckets, guards, tensioners, feed and discharge chutes, head, tail and take-up pulleys, idlers, bearings, braking system, controls (such as switches, trip cords, side travel switches, level probes, zero speed switches, inter locks, crossovers, audible alarms, magnet, metal detectors, flush water, lubricating systems, weight metre
- KU25.** different types of principal components of hoppers and bins, such as: grizzly rails, chutes, guardrails, entry doors, level probes, covers etc.
- KU26.** different types of feeders which include but are not limited to: pan feeder, screw feeder, belt feeder, pneumatic feeder, tube feeder, vibratory feeder, tripper, apron feeder, rotary valve feeder, drag feeder etc.
- KU27.** different feeders principal components, such as: chains, pans, bearings, (support, hangers, pillow block bearings), sprockets, rollers, roller mounts, return rollers, shafts, centre support rail, feed/discharge chute, drive mechanisms, gear reducer, lubrication systems, guards, skirt boards, controls, scraper, fire extinguishing equipment, drive belts, hangers/cables,etc.
- KU28.** specific safety instructions for conveying systems (pull chord, label switch, fire alarm etc.)



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**KU29.** use of hand drills, guards etc

**KU30.** belt mechanisms/systems (belt fastening, belt jointing etc.)

**KU31.** hazards and safety aspects involved in ore processing activities, and usage of relevant PPEs

### 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.** enter the information in online Enterprise resource planning (ERP) systems under guidance of the supervisor

**GS5.** discuss task lists, schedules and activities

**GS6.** effectively communicate, listen and comprehend the information given by various sources about the site

**GS7.** make decisions pertaining to the concerned area of work

**GS8.** plan and organize the work order and tasks

**GS9.** organize all operation and service manuals so that sorting/ accessing information is easy

**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

**GS18.** explain the importance of gender-sensitization at work site

**GS19.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies



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## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Operate the feeders</i>	<b>9</b>	<b>21</b>	-	-
<b>PC1.</b> interpret the layout and recognize the components of feeders including chains, pans, bearings, rollers, shafts, feed/discharge chute, drive mechanisms, lubrication systems, controls, drive belts, hangers/cables, etc.	3	7	-	-
<b>PC2.</b> conduct feeding of the ore to the crusher considering parameters like feed/ material rate, tilt, jams etc.	3	7	-	-
<b>PC3.</b> take corrective actions against any safety hazards like spillage etc. and issues like unusual noises/ smells, blockages and obstruction, lubrication, leaks, etc.	3	7	-	-
<i>Operate the conveyors</i>	<b>21</b>	<b>49</b>	-	-
<b>PC4.</b> follow the safe code of practice for erection, installation, operation, repairs, maintenance, dismantling of plant and ancillary equipment and for the prevention of accident and to provide safety , health, convenience and discipline of the workers	3	7	-	-
<b>PC5.</b> check the suitable fire extinguishers and automatically operated fire suppression system and devices including fire detection system	3	7	-	-
<b>PC6.</b> interpret the layout and recognize the components of a belt conveyor system including its principal components like trough, conveyor belt, clips, roller, guards, tensioners, feed and discharge chutes, head, tail and take-up pulleys, bearings, controls such as switches, trip cords, Interlocks, alarms, etc. and operations of mechanical and electrical driving units including safety devices	3	7	-	-
<b>PC7.</b> conduct conveying of the ore to the processing unit considering parameters like feed/ material rate, alignment of conveyor belts, spillage amount and rate, conveyor jams etc.	3	7	-	-
<b>PC8.</b> take corrective actions against any safety hazards	3	7	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC9.</b> conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, lubrication of drive head, tail end and rollers, leaks, ensure magnets are operative and take corrective actions if required	3	7	-	-
<b>PC10.</b> ensure principal components of hoppers and bins, like grizzly rails, chutes, guardrails, etc. are deployed to control stockpile levels, stability of stockpiles, clearing of the obstruction etc.	3	7	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-





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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4102
<b>NOS Name</b>	Operate conveyors and feeders
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022



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## Qualification Pack

### MIN/N4103: Operation and maintenance of the crusher

#### Description

This OS unit is about operating crusher and conduct maintenance of the crusher.

#### Scope

The scope covers the following :

- Operation of the crusher
- Operate the crushing screen
- Maintenance and trouble shooting of the crusher

#### Elements and Performance Criteria

##### *Operation of the crusher*

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

- PC1.** start and stop the crusher appropriately
- PC2.** discuss various types of crusher and their crushing principle
- PC3.** identify the important components of a jaw crusher, cone crusher and etc.
- PC4.** discuss the various methods of comminution
- PC5.** check different types of crushing principal components, such as gates, chutes and gaps, feeder, conveyor, dust collectors, water sprays etc.
- PC6.** identify the components towards crushing of the material like drive mechanism, pulleys, crushers, etc.
- PC7.** conduct crushing operations by controlling the feed/material by adjusting opening of gates, chutes and gaps, adjusting speed of feeder, adjusting speed of conveyor, controlling dust by using dust collectors, water sprays, remove and clean excess spillage, etc.
- PC8.** use and identify signals from assistant to start or stop the equipment
- PC9.** check the continuity of flow, safety, and efficient operation as per the instructions
- PC10.** check for proper graded flow of materials into the crushers and control the speed and flow of material through conveyors
- PC11.** test samples materials or products to ensure compliance with Indian standard(IS) specifications
- PC12.** conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, leaks etc. and take corrective actions if required
- PC13.** identify the areas of blockage and clear the crushing blockages periodically
- PC14.** coordinate with the vehicle operators for collection of the output as per instructions from operator/ supervisor safety during operation

##### *Operate the crushing screen*

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

- PC15.** recognize the process requirements for separating feed/material and working around screens, including reporting, control of dust, load limitations, control of feed/material flow rate etc.



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**PC16.** conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, leaks etc.

### *Maintenance and trouble shooting of the crusher*

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

**PC17.** replace crusher component/wear part as per requirement or schedule

**PC18.** check indicators that signal need for replacement

**PC19.** replenish coolants, lubricants, fluids and screeners as and when required

**PC20.** follow the safe code of practice for erection, installation, operation, repairs, maintenance, dismantling of plant and ancillary equipment and for the prevention of accident and to provide safety , health, convenience and discipline of the persons so employed

**PC21.** identify missing or defective components or controls and replace them with genuine OEM recommended components

**PC22.** check oil, fuel tanks for leaks and take necessary actions as per the operational manual

**PC23.** lubricate all the moving parts at regular intervals

## 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.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to mineral processing operations

**KU7.** different types of mines and detail of the mine one is working in

**KU8.** benching in quarries, dressing of overhangs, undercuts, fencing

**KU9.** importance of 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.** duties of workmen under the Mines Act 1952

**KU15.** provision of compensation and working hours, leaves, etc. as per Mines Act 1952

**KU16.** the outcome of violation of safety procedures

**KU17.** emergency response /disaster management plan prepared by the organization

**KU18.** different types of crusher and their importance

**KU19.** different types of crushing principal components, such as gates, chutes and gaps, feeder, conveyor, dust collectors, water sprays etc.

**KU20.** different types of screening equipment like drive mechanism, balance wheel, rocker arms, conveyor belts, guards, etc.

## Qualification Pack

**KU21.** hazards and safety aspects involved in ore processing activities and usage of relevant PPEs

### 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.** enter the information in online Enterprise resource planning (ERP) systems under guidance of the supervisor
- GS6.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS7.** make decisions pertaining to the concerned area of work
- GS8.** plan and organize the work order and tasks
- GS9.** organize all operation and service manuals so that sorting/ accessing information is easy
- 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
- GS18.** explain the importance of gender-sensitization at work site
- GS19.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Operation of the crusher</i>	<b>21</b>	<b>43</b>	-	-
<b>PC1.</b> start and stop the crusher appropriately	2	3	-	-
<b>PC2.</b> discuss various types of crusher and their crushing principle	2	4	-	-
<b>PC3.</b> identify the important components of a jaw crusher, cone crusher and etc.	2	3	-	-
<b>PC4.</b> discuss the various methods of comminution	2	3	-	-
<b>PC5.</b> check different types of crushing principal components, such as gates, chutes and gaps, feeder, conveyor, dust collectors, water sprays etc.	1	3	-	-
<b>PC6.</b> identify the components towards crushing of the material like drive mechanism, pulleys, crushers, etc.	2	3	-	-
<b>PC7.</b> conduct crushing operations by controlling the feed/material by adjusting opening of gates, chutes and gaps, adjusting speed of feeder, adjusting speed of conveyor, controlling dust by using dust collectors, water sprays, remove and clean excess spillage, etc.	2	3	-	-
<b>PC8.</b> use and identify signals from assistant to start or stop the equipment	2	3	-	-
<b>PC9.</b> check the continuity of flow, safety, and efficient operation as per the instructions	1	3	-	-
<b>PC10.</b> check for proper graded flow of materials into the crushers and control the speed and flow of material through conveyors	1	3	-	-
<b>PC11.</b> test samples materials or products to ensure compliance with Indian standard(IS) specifications	1	3	-	-
<b>PC12.</b> conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, leaks etc. and take corrective actions if required	1	3	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> identify the areas of blockage and clear the crushing blockages periodically	1	3	-	-
<b>PC14.</b> coordinate with the vehicle operators for collection of the output as per instructions from operator/ supervisor safety during operation	1	3	-	-
<i>Operate the crushing screen</i>	<b>2</b>	<b>6</b>	-	-
<b>PC15.</b> recognize the process requirements for separating feed/material and working around screens, including reporting, control of dust, load limitations, control of feed/material flow rate etc.	1	3	-	-
<b>PC16.</b> conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction, leaks etc.	1	3	-	-
<i>Maintenance and trouble shooting of the crusher</i>	<b>7</b>	<b>21</b>	-	-
<b>PC17.</b> replace crusher component/wear part as per requirement or schedule	1	3	-	-
<b>PC18.</b> check indicators that signal need for replacement	1	3	-	-
<b>PC19.</b> replenish coolants, lubricants, fluids and screeners as and when required	1	3	-	-
<b>PC20.</b> follow the safe code of practice for erection, installation, operation, repairs, maintenance, dismantling of plant and ancillary equipment and for the prevention of accident and to provide safety , health, convenience and discipline of the persons so employed	1	3	-	-
<b>PC21.</b> identify missing or defective components or controls and replace them with genuine OEM recommended components	1	3	-	-
<b>PC22.</b> check oil, fuel tanks for leaks and take necessary actions as per the operational manual	1	3	-	-
<b>PC23.</b> lubricate all the moving parts at regular intervals	1	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4103
<b>NOS Name</b>	Operation and maintenance of the crusher
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQF Clearance Date</b>	17/11/2022



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## 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





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## 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



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



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## Qualification Pack

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



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N1703
<b>NOS Name</b>	Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mining Operation
<b>Occupation</b>	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
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/06/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022



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## Qualification Pack

### 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:



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- 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.



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**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





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## Qualification Pack

- 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

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> identify employability skills required for jobs in various industries	-	-	-	-
<b>PC2.</b> identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC3.</b> 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.	-	-	-	-
<b>PC4.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>2</b>	<b>4</b>	-	-
<b>PC5.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC6.</b> 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>	<b>2</b>	<b>3</b>	-	-
<b>PC7.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
<b>PC8.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC9.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> understand the difference between job and career	-	-	-	-
<b>PC11.</b> prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC12.</b> follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
<b>PC13.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>2</b>	-	-
<b>PC14.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC15.</b> escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>2</b>	<b>3</b>	-	-
<b>PC16.</b> select financial institutions, products and services as per requirement	-	-	-	-
<b>PC17.</b> carry out offline and online financial transactions, safely and securely	-	-	-	-
<b>PC18.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC19.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	<b>3</b>	<b>4</b>	-	-
<b>PC20.</b> operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
<b>PC21.</b> use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
<b>PC22.</b> use basic features of word processor, spreadsheets, and presentations	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	<b>2</b>	<b>3</b>	-	-
<b>PC23.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC24.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC25.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC26.</b> identify different types of customers	-	-	-	-
<b>PC27.</b> identify and respond to customer requests and needs in a professional manner.	-	-	-	-
<b>PC28.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC29.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC30.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC31.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC32.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC33.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0102
<b>NOS Name</b>	Employability Skills (60 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQF Clearance Date</b>	17/11/2022



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## Qualification Pack

### MIN/N4104: Grinding of crushed Ore/mineral

#### Description

This OS unit is about grinding the crushed ore/mineral.

#### Scope

The scope covers the following :

- Operate the grind mill

#### Elements and Performance Criteria

##### *Operate the grind mill*

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

- PC1.** interpret the layout and recognize components of grinding mills including its principal components like drive motor, motor cooling fan, drive shaft and bearings, clutch, pinion gear, feed chute, shell, liners, lifters and bolts, ring/bull gear, trunnion and bearings, trommel screen, lubrication system, grinding media, controls, like main disconnect, Interlocks, stop/start switches (remote/local), selector switch remote/local), cooling system(s), sound boxes etc.
- PC2.** conduct grinding/ classifier operations considering parameters like load limitations, charging grinding media as required, control of dust, control of feed/material flow rate, control and maintenance of densities, sampling and testing, proper grind, reagent addition etc.
- PC3.** ensure that the control switches are operative and free of build-up and/or obstructions
- PC4.** ensure the lubrication system(s) are at required levels
- PC5.** ensure that the cooling system(s) are operative and at required levels
- PC6.** ensure that the feed and discharge points are free of obstructions and blockages
- PC7.** guard all identified hazards using rope/ bafflers and/or signs, clean up spills and leaks, etc.
- PC8.** inspect classifier and components, such as feed gate, discharge point, trash screen, guards, cyclone, feed lines, launders, skirting, upstream and downstream equipment and related systems, rollers, Spirals
- PC9.** ensure wearing of fall arrest system, control required quantity /quality of discharge by sampling and testing as required, adjusting water flow, adjusting feed rate, control dust by using: dust collectors, water sprays, ensure minimum spillage, etc.
- PC10.** control density (percent solid, SG) by sampling
- PC11.** conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction; Take corrective actions

#### 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



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- 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 mineral processing operations according to company's SOP
- KU7.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to mineral processing operations
- KU8.** different types of mines and detail of the mine one is working in
- KU9.** benching in quarries, dressing of overhangs, undercuts, fencing
- KU10.** importance of first aid and hygiene
- KU11.** code of practice in specific areas of the mine
- KU12.** standing orders in force at the mine
- KU13.** importance of safety in the vicinity of machinery
- KU14.** about shot-firing / blasting related safety regulations including taking shelter during blasting
- 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.** emergency response /disaster management plan prepared by the organization
- KU19.** different types of ore processing processes and associated equipment
- KU20.** specific safety instructions for conveying systems (pull chord, label switch, fire alarm etc.)
- KU21.** different types of mills include: ball mill, pebble mill, autogenous mill/scrubber, semi-autogenous mill, rod mill, regrind mill
- KU22.** different components of mills including its principal components like drive motor, motor cooling fan, drive shaft and bearings, clutch, pinion gear, feed chute, shell, liners, lifters and bolts, ring/bull gear, trunnion and bearings, trommel screen, lubrication system, grinding media, controls, like Interlocks, stop/start switches (remote/local), selector switch (remote/local), cooling system(s), etc.
- KU23.** use of hand drills, guards etc.
- KU24.** belt mechanisms/systems (belt fastening, belt jointing etc.)
- KU25.** hazards and safety aspects involved in ore processing activities, and usage of relevant PPEs

## 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.** enter the information in online Enterprise resource planning (ERP) systems under guidance of the supervisor
- GS5.** discuss task lists, schedules and activities



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- GS6.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS7.** make decisions pertaining to the concerned area of work
- GS8.** plan and organize the work order and tasks
- GS9.** organize all operation and service manuals so that sorting/ accessing information is easy
- 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
- GS18.** explain the importance of gender-sensitization at work site
- GS19.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Operate the grind mill</i>	<b>30</b>	<b>70</b>	-	-
<b>PC1.</b> interpret the layout and recognize components of grinding mills including its principal components like drive motor, motor cooling fan, drive shaft and bearings, clutch, pinion gear, feed chute, shell, liners, lifters and bolts, ring/bull gear, trunnion and bearings, trommel screen, lubrication system, grinding media, controls, like main disconnect, Interlocks, stop/start switches (remote/local), selector switch remote/local), cooling system(s), sound boxes etc.	3	7	-	-
<b>PC2.</b> conduct grinding/ classifier operations considering parameters like load limitations, charging grinding media as required, control of dust, control of feed/material flow rate, control and maintenance of densities, sampling and testing, proper grind, reagent addition etc.	3	7	-	-
<b>PC3.</b> ensure that the control switches are operative and free of build-up and/or obstructions	3	6	-	-
<b>PC4.</b> ensure the lubrication system(s) are at required levels	3	6	-	-
<b>PC5.</b> ensure that the cooling system(s) are operative and at required levels	3	6	-	-
<b>PC6.</b> ensure that the feed and discharge points are free of obstructions and blockages	2	6	-	-
<b>PC7.</b> guard all identified hazards using rope/ bafflers and/or signs, clean up spills and leaks, etc.	2	6	-	-
<b>PC8.</b> inspect classifier and components, such as feed gate, discharge point, trash screen, guards, cyclone, feed lines, launders, skirting, upstream and downstream equipment and related systems, rollers, Spirals	3	6	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC9.</b> ensure wearing of fall arrest system, control required quantity /quality of discharge by sampling and testing as required, adjusting water flow, adjusting feed rate, control dust by using: dust collectors, water sprays, ensure minimum spillage, etc.	3	7	-	-
<b>PC10.</b> control density (percent solid, SG) by sampling	2	7	-	-
<b>PC11.</b> conduct operational checks on areas of potential issues like unusual noises/ smells, blockages and obstruction; Take corrective actions	3	6	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4104
<b>NOS Name</b>	Grinding of crushed Ore/mineral
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022



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## Qualification Pack

### MIN/N4105: Beneficiation and Mineral recovery

#### Description

This OS unit is about recognizing the right beneficiation process to be executed, what reagents will be used, what equipment/ machines will be used and what is the required output considering the standards specified, conducting the beneficiation process or processes towards mineral recovery to the specification.

#### Scope

The scope covers the following :

- Recognize the ore processing requirements and related parameters
- Conduct leaching
- Conduct separation
- Conduct floatation, dewatering and filtration

#### Elements and Performance Criteria

##### *Recognize the ore processing requirements and related parameters*

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

- PC1.** recognize the ore processing methodology and process to be adopted through discussions with the supervisor and reading the process manuals/ work instructions/standard operating procedures
- PC2.** discuss various reagents and their quantities to be used as well as effective reagents handling techniques
- PC3.** monitor the reagent addition rate and mix tank levels continuously during the ore processing
- PC4.** identify the various tools to be used at different steps of ore processing like hand & power tools, pneumatically & hydraulically powered tools, scaffolds, ladders etc.
- PC5.** perform the operations of various equipment used at various stages like mobile equipment and lifting equipment
- PC6.** identify the operations for various tools & equipment as well as the effective equipment handling guidelines
- PC7.** prepare for the emergency situations with required instructions and equipment in place

##### *Conduct leaching*

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

- PC8.** conduct checks on various operational parameters like tank level, ph level, reagent usage, air parameters, alarms, pumps, screens, monitors etc.
- PC9.** add reagents as required, such as acids, carbon, cyanide, calcium as per the process requirements
- PC10.** conduct leaching/ ore beneficiation process to extract the minerals from the grinded ores
- PC11.** check and monitor threshold limit values (tlvs)
- PC12.** guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel

##### *Conduct separation*



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## Qualification Pack

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

- PC13.** check various separation systems like drive system, drums, concentrators, jigs, classifiers etc.
- PC14.** check various operating parameters like operating levels, pressures, cleanliness
- PC15.** ensure the maintenance of flow rate
- PC16.** check and monitor threshold limit values (tlvs)
- PC17.** guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel

### *Conduct floatation, dewatering and filtration*

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

- PC18.** identify the different types of floatation equipment including floatation air, bank of cells, conditioner, collector, floatation column, cells, such as: roughers, scavenger, cleaners, pumping system in-line assay system
- PC19.** start the floatation system and ensure adequate flow
- PC20.** control the quantity of reagents, percent solid, addition of air, level of froth/pulp, launder water, pump speed, ph level
- PC21.** stop floatation circuit in sequence
- PC22.** ensure that the reagent systems contain proper amount, type and strength of reagents
- PC23.** identify different types of dewatering systems including stock tanks, decanters, pumping systems, sampling systems, rakes, drive system, feed wells etc.
- PC24.** operate and maintain dewatering system while checking the shell, rakes (e.g. height, integrity), motor and gear box for unusual noises, pumps, water supply, pumps and valves etc.
- PC25.** guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel
- PC26.** identify the different types of filtration systems and components including stock tanks, pumping systems, sampling systems, drive systems, lubrication systems, hydraulic systems, pneumatic systems, vacuum systems, filter cloth
- PC27.** check the functioning of vacuum system, gear box, bearings etc.
- PC28.** check the condition of the filter (e.g. thickness of filter cake)
- PC29.** conduct filtration while controlling the moisture, filtrate, wash water, pump speed, pressure, density etc.
- PC30.** monitor boot levels and agitation

## 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



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## Qualification Pack

- KU6.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to mineral processing operations
- KU7.** different types of mines and detail of the mine one is working in
- KU8.** benching in quarries, dressing of overhangs, undercuts, fencing
- KU9.** importance of 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.** duties of workmen under the Mines Act-1952
- KU15.** provision of compensation and working hours, leaves, etc. as per Mines Act 1952
- KU16.** the outcome of violation of safety procedures
- KU17.** emergency response /disaster management plan prepared by the organization
- KU18.** different types of mineral processing processes and associated equipment. hazards and safety aspects involved in ore processing activities, handling reagents and usage of relevant PPEs
- KU19.** various separation systems like drive system, drums, concentrators, jigs, classifiers etc.
- KU20.** reagents such as acids, carbon, cyanide, calcium as per the process requirements
- KU21.** different types of floatation equipment including floatation air, bank of cells, conditioner, collector, floatation column, cells, such as: roughers, scavenger, cleaners, pumping system, in-line assay system, scrubbers etc.
- KU22.** different types of dewatering systems include: stock tanks, decanters, pumping systems, sampling systems, rakes, drive system, feed wells
- KU23.** equipment like shell, rakes (e.g. height, integrity), motor and gear box for unusual noises, U/F pumps, etc.
- KU24.** different types of filtration systems and components including stock tanks, pumping systems, sampling systems, drive systems, lubrication systems, hydraulic systems, pneumatic systems, vacuum systems, filter cloth
- KU25.** vacuum system, gear box, bearings, PLC, RLC operation (Logic controls), Pump, hydraulic systems, motors, valves etc.
- KU26.** hazards and safety aspects involved in ore processing activities and usage of relevant PPEs

## 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.** enter the information in online Enterprise resource planning (ERP) systems under guidance of the supervisor



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## Qualification Pack

- GS6.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS7.** make decisions pertaining to the concerned area of work
- GS8.** plan and organize the work order and tasks
- GS9.** organize all operation and service manuals so that sorting/ accessing information is easy
- 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
- GS18.** explain the importance of gender-sensitization at work site
- GS19.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Recognize the ore processing requirements and related parameters</i>	<b>7</b>	<b>14</b>	-	-
<b>PC1.</b> recognize the ore processing methodology and process to be adopted through discussions with the supervisor and reading the process manuals/ work instructions/standard operating procedures	1	2	-	-
<b>PC2.</b> discuss various reagents and their quantities to be used as well as effective reagents handling techniques	1	2	-	-
<b>PC3.</b> monitor the reagent addition rate and mix tank levels continuously during the ore processing	1	2	-	-
<b>PC4.</b> identify the various tools to be used at different steps of ore processing like hand & power tools, pneumatically & hydraulically powered tools, scaffolds, ladders etc.	1	2	-	-
<b>PC5.</b> perform the operations of various equipment used at various stages like mobile equipment and lifting equipment	1	2	-	-
<b>PC6.</b> identify the operations for various tools & equipment as well as the effective equipment handling guidelines	1	2	-	-
<b>PC7.</b> prepare for the emergency situations with required instructions and equipment in place	1	2	-	-
<i>Conduct leaching</i>	<b>5</b>	<b>14</b>	-	-
<b>PC8.</b> conduct checks on various operational parameters like tank level, ph level, reagent usage, air parameters, alarms, pumps, screens, monitors etc.	1	2	-	-
<b>PC9.</b> add reagents as required, such as acids, carbon, cyanide, calcium as per the process requirements	1	3	-	-
<b>PC10.</b> conduct leaching/ ore beneficiation process to extract the minerals from the grinded ores	1	3	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> check and monitor threshold limit values (tlvs)	1	3	-	-
<b>PC12.</b> guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel	1	3	-	-
<i>Conduct separation</i>	<b>5</b>	<b>11</b>	-	-
<b>PC13.</b> check various separation systems like drive system, drums, concentrators, jigs, classifiers etc.	1	2	-	-
<b>PC14.</b> check various operating parameters like operating levels, pressures, cleanliness	1	2	-	-
<b>PC15.</b> ensure the maintenance of flow rate	1	3	-	-
<b>PC16.</b> check and monitor threshold limit values (tlvs)	1	2	-	-
<b>PC17.</b> guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel	1	2	-	-
<i>Conduct floatation, dewatering and filtration</i>	<b>13</b>	<b>31</b>	-	-
<b>PC18.</b> identify the different types of floatation equipment including floatation air, bank of cells, conditioner, collector, floatation column, cells, such as: roughers, scavenger, cleaners, pumping system in-line assay system	1	2	-	-
<b>PC19.</b> start the floatation system and ensure adequate flow	1	2	-	-
<b>PC20.</b> control the quantity of reagents, percent solid, addition of air, level of froth/pulp, launder water, pump speed, ph level	1	2	-	-
<b>PC21.</b> stop floatation circuit in sequence	1	2	-	-
<b>PC22.</b> ensure that the reagent systems contain proper amount, type and strength of reagents	1	2	-	-
<b>PC23.</b> identify different types of dewatering systems including stock tanks, decanters, pumping systems, sampling systems, rakes, drive system, feed wells etc.	1	2	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC24.</b> operate and maintain dewatering system while checking the shell, rakes (e.g. height, integrity), motor and gear box for unusual noises, pumps, water supply, pumps and valves etc.	1	3	-	-
<b>PC25.</b> guard all identified hazards using rope/barriers and/or signs, clean up spills and leaks, report condition to appropriate personnel	1	2	-	-
<b>PC26.</b> identify the different types of filtration systems and components including stock tanks, pumping systems, sampling systems, drive systems, lubrication systems, hydraulic systems, pneumatic systems, vacuum systems, filter cloth	1	3	-	-
<b>PC27.</b> check the functioning of vacuum system, gear box, bearings etc.	1	2	-	-
<b>PC28.</b> check the condition of the filter (e.g. thickness of filter cake)	1	3	-	-
<b>PC29.</b> conduct filtration while controlling the moisture, filtrate, wash water, pump speed, pressure, density etc.	1	3	-	-
<b>PC30.</b> monitor boot levels and agitation	1	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4105
<b>NOS Name</b>	Beneficiation and Mineral recovery
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQF Clearance Date</b>	17/11/2022



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## Qualification Pack

### MIN/N4106: Tailing Management

#### Description

This OS unit is about treating the water and managing the tailings post filtration.

#### Scope

The scope covers the following :

- Treat the water
- Manage the tailings

#### Elements and Performance Criteria

##### *Treat the water*

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

**PC1.** obtain water from the mineral recovery unit and send the same to the treatment area

**PC2.** treat water for chemicals and purify the same to make it fit for reclamation purposes

**PC3.** send water to reclamation area (settling ponds)

**PC4.** sample water and monitor levels of ponds

##### *Manage the tailings*

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

**PC5.** treat the tailings to reduce the toxin levels

**PC6.** check the ph level

**PC7.** dispose of tailings to the appropriate area

#### 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.** safety guidelines specified by Directorate General of Mines Safety (DGMS) specific to mineral processing operations

**KU7.** different types of mines and detail of the mine one is working in

**KU8.** benching in quarries, dressing of overhangs, undercuts, fencing

**KU9.** importance of first aid and hygiene

**KU10.** code of practice in specific areas of the mine

**KU11.** standing orders in force at the mine



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## Qualification Pack

- KU12.** importance of safety in the vicinity of machinery
- KU13.** about shot-firing / blasting related safety regulations including taking shelter during blasting
- KU14.** duties of workmen under the Mines Act-1952
- KU15.** provision of compensation and working hours, leaves, etc. as per Mines Act-1952
- KU16.** the outcome of violation of safety procedures
- KU17.** emergency response /disaster management plan prepared by the organization
- KU18.** hazards and safety aspects involved in ore processing activities and usage of relevant pps
- KU19.** different types of ore processing processes and associated equipment
- KU20.** various water purifying agents
- KU21.** various waste treatment agents
- KU22.** hazards and safety aspects involved in ore processing activities and usage of relevant pps

## 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.** enter the information in online Enterprise resource planning (ERP) systems under guidance of the supervisor
- GS6.** effectively communicate, listen and comprehend the information given by various sources about the site
- GS7.** make decisions pertaining to the concerned area of work
- GS8.** plan and organize the work order and tasks
- GS9.** organize all operation and service manuals so that sorting/ accessing information is easy
- 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
- GS18.** explain the importance of gender-sensitization at work site
- GS19.** state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies



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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Treat the water</i>	<b>17</b>	<b>40</b>	-	-
<b>PC1.</b> obtain water from the mineral recovery unit and send the same to the treatment area	4	10	-	-
<b>PC2.</b> treat water for chemicals and purify the same to make it fit for reclamation purposes	4	10	-	-
<b>PC3.</b> send water to reclamation area (settling ponds)	5	10	-	-
<b>PC4.</b> sample water and monitor levels of ponds	4	10	-	-
<i>Manage the tailings</i>	<b>13</b>	<b>30</b>	-	-
<b>PC5.</b> treat the tailings to reduce the toxin levels	4	10	-	-
<b>PC6.</b> check the ph level	5	10	-	-
<b>PC7.</b> dispose of tailings to the appropriate area	4	10	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



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## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MIN/N4106
<b>NOS Name</b>	Tailing Management
<b>Sector</b>	Mining
<b>Sub-Sector</b>	Mineral Beneficiation
<b>Occupation</b>	Ore Processing
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.



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## Qualification Pack

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/N4101.Pre-Operation checks of crusher and crusher sites	30	70	-	-	100	20
MIN/N4102.Operate conveyors and feeders	30	70	-	-	100	30
MIN/N4103.Operation and maintenance of the crusher	30	70	-	-	100	20
MIN/N1703.Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)	30	70	-	-	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
<b>Total</b>	<b>140</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>450</b>	<b>100</b>

Optional: 1 Grinding

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N4104.Grinding of crushed Ore/mineral	30	70	-	-	100	20
<b>Total</b>	<b>30</b>	<b>70</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>20</b>





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Optional: 2 Beneficiation

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N4105.Beneficiation and Mineral recovery	30	70	-	-	100	20
<b>Total</b>	<b>30</b>	<b>70</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>20</b>

Optional: 3 Tailing

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N4106.Tailing Management	30	70	-	-	100	20
<b>Total</b>	<b>30</b>	<b>70</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>20</b>



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## Qualification Pack

### Acronyms

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

## Qualification Pack

### Glossary

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



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## Qualification Pack

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