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REIMAGINE FUTURE

Qualification Pack



Mine Roof Bolter

U/G Coal/ U/G Metal

QP Code: MIN/Q1601

Version: 1.0

NSQF Level: 4

Skill Council for Mining Sector || FIMI House, B-311, Okhla Industrial Area, Phase-I
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MIN/Q1601: Mine Roof Bolter

Brief Job Description

A Mine Roof Bolter recognizes processes and equipment requirements for roof bolting and conducts the roof bolting process.

Personal Attributes

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

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [MIN/N1601: Recognize processes and equipment requirement for roof bolting](#)
2. [MIN/N1602: Conduct roof bolting process](#)
3. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Electives (mandatory to select at least one):

Elective 1: U/G Coal

1. [MIN/N1704: Follow Health, Safety, and Environmental guidelines for underground coal mines \(Including Mine Vocational Training Rule and Mine Rescue Rule\)](#)

Elective 2: U/G Metal

1. [MIN/N1702: Follow Health, Safety and Environmental guidelines for Underground Metalliferous Mines \(UMM\) \(Including Mine Vocational Training Rule and Mine Rescue Rule\)](#)

Qualification Pack (QP) Parameters

Sector	Mining
Sub-Sector	Mining Operation



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Occupation	Specialized Operations
Country	India
NSQF Level	4
Credits	21
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8111.1300
Minimum Educational Qualification & Experience	<p>12th grade Pass OR 11th grade pass (+ 1-year experience in relevant field) OR 10th grade pass (+ 2-year NTC in relevant field) OR 10th grade pass (+ 1-year NTC+1 Year NAC in relevant field) OR 8th grade pass (+ 2 year NTC + 1 Year NAC +1-year experience in relevant field) OR 10th grade pass (with 2 years of experience in relevant field) OR Certificate-NSQF (NSQF Level 3.0 with minimum education as 8th grade pass with 2 years of relevant experience (Jr. Mine Roof Bolter))</p>
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	NA
Next Review Date	17/05/2023
NSQC Approval Date	17/11/2022
Version	1.0
Reference code on NQR	2022/MIN/SCMS/06477
NQR Version	1



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MIN/N1601: Recognize processes and equipment requirement for roof bolting

Description

This OS unit is about understanding the job requirement, what processes need to be executed, what equipment will be used for the project and what is the required output considering the standards specified

Scope

The scope covers the following :

- Recognize the roof bolting requirements

Elements and Performance Criteria

Recognize the roof bolting requirements

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

- PC1.** ensure the right bolting methodology and process to be adopted for completing the work order through discussions with the supervisor/ master technician and reading the process manuals/ Work Instructions/Standard Operating Procedures
- PC2.** check the various parameters tension, bolting angle, process cycle time etc before starting the process, as mentioned in the Work Instructions/ SOP manual
- PC3.** ensure the material and equipments availability such as bearing plates, bolting rods and adequate quantity of cement and resin capsules of approved size
- PC4.** assess the area for Immediate requirement of dressing and temporary support before conducting roof bolting
- PC5.** conduct pre operation check of roof bolting machine there lockbality, different pneumatic/hydraulic units are functioning properly
- PC6.** check electrical apparatus condition for - overload protection, earth leakage and other functioning
- PC7.** check of levers, meters, gauges and preliminary maintenance operation of the drilling mast

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** different types of mines and detail of the mine he is working in
- KU2.** classification of gassy seam and permitted apparatus related to perform work belowground
- KU3.** placement of support strictly in accordance to support plan
- KU4.** to see no roof bolting materials are left behind in working belowground
- KU5.** mine organisation, time keeping, need for discipline and punctuality
- KU6.** galleries in underground mine, dressing of roof, stable and unstable strata etc
- KU7.** standing orders in force at the mine. Safety in the vicinity of machinery



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- KU8.** shot-firing and Safety regulations. How and where to take shelter
- KU9.** evacuation to safe location threatening the safety and health of workers
- KU10.** duties and responsibility of workmen
- KU11.** provision of wages, working hours and accident compensation as per Mines act
- KU12.** mining safety procedures
- KU13.** impact of violation of safety procedures
- KU14.** relevant standards and procedures followed in the company
- KU15.** processes like Procurement, Store management, inventory management, quality management, and key contact points for query resolution
- KU16.** safely returning tools carried for underground working
- KU17.** mechanism of roof strata behaviour as per different types of rocks and bed separation process
- KU18.** purpose and theory of roof bolting
- KU19.** different types of bolting processes and associated equipment
- KU20.** the impact of various Operational parameters – e.g. anchorage and load bearing, condition of intermediate strata, geological disturbances, make of water in strata
- KU21.** elements of roof bolting design, width, quality of materials, drilling and bolting
- KU22.** levers, meters, gauges and working of the drilling mast
- KU23.** conversant with different guidelines and directive issued by safety and statutory authorities from time to time
- KU24.** hazards and safety aspects involved and usage of relevant PPEs

Generic Skills (GS)

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

- GS1.** note down observations (if any) related to the bolting process
- GS2.** write information documents to internal departments/ internal teams or enter the information in online ERP systems under the guidance of the supervisor
- GS3.** read and interpret symbols and measurements used in the drawings
- GS4.** read equipment manuals and process documents to understand the equipment and processes better
- GS5.** read internal information documents sent by internal teams
- GS6.** discuss task lists, schedules and activities with the supervisor
- GS7.** communicate effectively with the team members
- GS8.** question the supervisor in order to understand the nature of the problem and to clarify queries
- GS9.** listen with full attention and comprehend the information given by the speaker
- GS10.** alert others for any prevailing dangers related the said operation
- GS11.** plan and organize the work order and received from supervisor
- GS12.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS13.** support the supervisor in scheduling tasks for helper and assistant supervisor



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- GS14.** report shortage of support materials in his district
- GS15.** use common sense and make judgments during day to day basis
- GS16.** use reasoning skills to identify and resolve basic problems
- GS17.** use intuition to detect any potential problems which could arise during operations
- GS18.** follow instructions and work on areas of improvement identified
- GS19.** complete the assigned tasks with minimum supervision
- GS20.** complete the job defined by the supervisor within timelines and quality norms
- GS21.** detect problems in day to day tasks
- GS22.** support supervisor in using specific problem solving techniques and detailing out the problems
- GS23.** discuss possible solution with the supervisor for problem solving
- GS24.** make decisions in emergency conditions in case the supervisor are not available(as per the authority matrix defined by the organization)



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Recognize the roof bolting requirements</i>	30	50	-	20
PC1. ensure the right bolting methodology and process to be adopted for completing the work order through discussions with the supervisor/ master technician and reading the process manuals/ Work Instructions/Standard Operating Procedures	5	8	-	3
PC2. check the various parameters tension, bolting angle, process cycle time etc before starting the process, as mentioned in the Work Instructions/ SOP manual	5	7	-	3
PC3. ensure the material and equipments availability such as bearing plates, bolting rods and adequate quantity of cement and resin capsules of approved size	4	7	-	3
PC4. assess the area for Immediate requirement of dressing and temporary support before conducting roof bolting	4	7	-	3
PC5. conduct pre operation check of roof bolting machine there lockbality, different pneumatic/hydraulic units are functioning properly	4	7	-	3
PC6. check electrical apparatus condition for - overload protection, earth leakage and other functioning	4	7	-	3
PC7. check of levers, meters, gauges and preliminary maintainance operation of the drilling mast	4	7	-	2
NOS Total	30	50	-	20



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National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1601
NOS Name	Recognize processes and equipment requirement for roof bolting
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Specialized Operations
NSQF Level	4
Credits	5
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/05/2023
NSQC Clearance Date	17/11/2022



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MIN/N1602: Conduct roof bolting process

Description

This OS unit is about conducting Bolting Operation as per the methodology selected and approved SSR (Systematic Support Rule) for the particular mine and the Standard Operating Procedures defined by the Organization and the outcome of the work order.

Scope

The scope covers the following :

- Check the operations of the machines and auxiliaries and conduct a test process
- Conduct the actual bolting process
- Monitor process parameters to ensure error free process

Elements and Performance Criteria

Check the operations of the machines and auxiliaries and conduct a test process

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

PC1. check for operation of core equipment as per setup documentation

PC2. inform machine setter/ engineer/ supervisor in case any defect or malfunction is observed

Conduct the actual bolting process

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

PC3. drill bolt holes into roofs at specified distances from ribs or adjacent bolts or as per SSR (approved Systematic support Rule by DGMS)

PC4. force bolts into holes, using hydraulic mechanisms of self-propelled bolting machines, or other prevailing practice in the organization

PC5. remove drill bits from chucks after drilling holes and insert bolts into chucks.

PC6. position safety jacks to support underground mine roofs until bolts can be installed.

PC7. position bolting machines, and insert drill bits into chucks.

PC8. rotate chucks to turn bolts and open expansion heads against rock formations

PC9. install truss bolts/ W-straps /roof stitching traversing entire ceiling spans

PC10. tighten ends of anchored truss bolts/w-straps using turnbuckles

PC11. allow settling time and tighten the nut by torque wrench

Monitor process parameters to ensure error free process

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

PC12. note down the observations in the prescribed format

PC13. observe and analyze any irregularity in the process and take preventive steps so that the overall quality is as per the desired standards

PC14. inform the supervisor of any irregularity in process/ equipment Malfunctioning

Knowledge and Understanding (KU)



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The individual on the job needs to know and understand:

- KU1.** different types of mines and detail of the mine he is working in
- KU2.** classification of gassy seam into degree of gassiness according to the percentage of inflammable gas in general body of air
- KU3.** mine organisation, time keeping, need for discipline and punctuality
- KU4.** galleries in underground mine, dressing of roof, stable and unstable strata etc.
- KU5.** standing orders in force at the mine. Safety in the vicinity of machinery
- KU6.** shot-firing and safety regulations. How and where to take shelter
- KU7.** duties and responsibility of workmen
- KU8.** provision of wages, working hours and accident compensation as per Mines act
- KU9.** mining safety procedures
- KU10.** impact of violation of safely procedures
- KU11.** relevant manufacturing standards and procedures followed in the company
- KU12.** processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU13.** quality norms and standards prescribed in the Quality Manual by the organization
- KU14.** different types of bolting processes and associated equipment
- KU15.** different types of defects in bolting and their impacts
- KU16.** different guidelines and directives issued by DGMS for roof bolting
- KU17.** mechanism of roof strata behaviour as per different types of rocks and bed separation process
- KU18.** purpose and theory of roof bolting
- KU19.** development work freshly exposed roof and other working
- KU20.** withdrawn of support , tools extra supports sequence positioning supervision
- KU21.** the impact of various Operational parameters – e.g. anchorage and load bearing, condition of intermediate strata, geological disturbances, make of water in strata
- KU22.** levers, meters, gauges and working of the drilling mast
- KU23.** basic understanding of electrical functioning (overload, earth leakage etc.) and mechanical functioning (pneumatic, hydraulic systems) of equipment
- KU24.** basic level operations of lifting equipment like hoists, cranes, pulley etc
- KU25.** potential health and safety hazards and related Safety precautions to be undertaken

Generic Skills (GS)

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

- GS1.** note measurements, equipment panel readings for various process parameters in the required reporting formats
- GS2.** record of every inspection shall be maintained in a bound paged book kept for purpose dully signed and dated by person inspection
- GS3.** tagging of roof bolts where anchorage testing is performed for checking load capacity



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- GS4.** read equipment manuals and process documents to understand the equipment and processes better
- GS5.** read internal information documents send by internal customers (other functions within the organization) the equipment in the plant area
- GS6.** read parameter reading on various types of monitoring panels
- GS7.** discuss task lists, schedules and activities with the operator and supervisor
- GS8.** communicate with the team members Question the operator/ supervisor in order to understand the nature of the problem and to clarify queries
- GS9.** listen with full attention and comprehend the information given by the speaker
- GS10.** plan and organize the work order and jobs received from the supervisor
- GS11.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS12.** support the supervisor in scheduling tasks for helper and assistant operator
- GS13.** use common sense and make judgments during day to day basis
- GS14.** use reasoning skills to identify and resolve basic problems
- GS15.** use intuition to detect any potential problems which could arise during operations
- GS16.** follow instructions and work on areas of improvement identified
- GS17.** complete the assigned tasks with minimum supervisions
- GS18.** complete the job defined by the supervisor within the timelines and quality norms
- GS19.** how to detect problems in day to day activities
- GS20.** support supervisor in using specific problem solving techniques and detailing out the problems
- GS21.** discuss possible solution with the supervisor for problem solving
- GS22.** make decisions in emergency conditions in case the supervisor is not available(as per the authority matrix defined by the organization)
- GS23.** support the supervisor and master technique in problem solving using specific problem solving techniques
- GS24.** guide the helper and the assistant operator in maintaining the quality
- GS25.** quality Standards as described in the internal Quality Manual
- GS26.** relate the impact of various processes and parameters the product quality, dimension

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Check the operations of the machines and auxiliaries and conduct a test process</i>	4	6	-	2
PC1. check for operation of core equipment as per setup documentation	2	3	-	1
PC2. inform machine setter/ engineer/ supervisor in case any defect or malfunction is observed	2	3	-	1
<i>Conduct the actual bolting process</i>	20	35	-	15
PC3. drill bolt holes into roofs at specified distances from ribs or adjacent bolts or as per SSR (approved Systematic support Rule by DGMS)	3	4	-	2
PC4. force bolts into holes, using hydraulic mechanisms of self-propelled bolting machines, or other prevailing practice in the organization	3	4	-	2
PC5. remove drill bits from chucks after drilling holes and insert bolts into chucks.	2	4	-	2
PC6. position safety jacks to support underground mine roofs until bolts can be installed.	2	4	-	2
PC7. position bolting machines, and insert drill bits into chucks.	2	4	-	2
PC8. rotate chucks to turn bolts and open expansion heads against rock formations	2	4	-	2
PC9. install truss bolts/ W-straps /roof stitching traversing entire ceiling spans	2	4	-	1
PC10. tighten ends of anchored truss bolts/w-straps using turnbuckles	2	4	-	1
PC11. allow settling time and tighten the nut by torque wrench	2	3	-	1
<i>Monitor process parameters to ensure error free process</i>	6	9	-	3



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. note down the observations in the prescribed format	2	3	-	1
PC13. observe and analyze any irregularity in the process and take preventive steps so that the overall quality is as per the desired standards	2	3	-	1
PC14. inform the supervisor of any irregularity in process/ equipment Malfunctioning	2	3	-	1
NOS Total	30	50	-	20



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National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1602
NOS Name	Conduct roof bolting process
Sector	Mining
Sub-Sector	Mining Operation
Occupation	Specialized Operations
NSQF Level	4
Credits	6
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/05/2023
NSQC Clearance Date	17/11/2022



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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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- 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



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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	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
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	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	2	3	-	-
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	-	-	-	-
<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	-	-



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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	27/01/2025
NSQC Clearance Date	27/01/2022



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MIN/N1704: Follow Health, Safety, and Environmental guidelines for underground coal mines (Including Mine Vocational Training Rule and Mine Rescue Rule)

Description

This unit is about adhering to health, safety and environmental guidelines in Underground Coal Mines (UCM) during execution of various tasks, operations and maintenance.

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.** follow preventive measures against firedamp, whitedamp, blackdamp etc.
- PC2.** use the flame safety lamp for detecting the methane gas as per Standard Operating Procedure (SOP)
- PC3.** undertake "The Take-5 (Personal Risk Assessment)" before commencement of any work
- PC4.** comply with safety, health and security-related regulations/guidelines at the mine e.g. SOP for material handling in underground (U/G) mine
- PC5.** ensure that oil, grease, canvas or other inflammable material are stored in fire-proof receptacle
- PC6.** ensure that every instrument, apparatus and equipment are DGMS approved before these are used
- PC7.** ensure that Armoured face conveyor (AFC) and chocks must be kept in a straight line for every cycle of operations and tightened up to the setting pressure while keeping it in full contact with the roof, applicable for longwall mining
- PC8.** provide first aid to an injured person
- PC9.** follow safety precautions against spontaneous heating of the coal
- PC10.** operate various types of fire extinguishers to control different types of fire at worksite, if required
- PC11.** ensure that no person is traveling/working/staying under unsupported roof
- PC12.** check that roof supporting is as per Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR) while undertaking work in an area
- PC13.** take precaution against occupational health hazards (like dust, water, mine gases etc.) due to U/G working environment
- PC14.** use self-rescue apparatus appropriately when required
- PC15.** follow Safety Management Plan (SMP) and Emergency Management Plan (EMP)



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- PC16.** follow precautions against U/G electrical appliances
- PC17.** take proper care against damage and accidents while loading, transporting, dismantling and erecting of roof supports
- PC18.** follow appropriate SOP while working near any isolated and sealed off area of the mine
- PC19.** ensure that the roof and the sidewalls of the mine face (or newly exposed area of the mines) have been scaled/dressed properly
- PC20.** take relevant safety precautions during depillaring operation in UCM
- PC21.** follow appropriate safety practices while traveling on U/G haul roads, incase of post blast fumes and misfire
- PC22.** follow the manufacturer's instructions for care and safe operation of mine machinery and equipment
- PC23.** identify the working ventilation district from line diagram of ventilation circuit to direct air to the working face
- PC24.** follow laid out SOP in case of alarm signal for leakage of inflammable gases
- PC25.** follow the process of reporting any unsafe act/condition in the working area to the concerned person
- PC26.** use underground mine communication system
- PC27.** ensure positive isolation near the work place if applicable
- PC28.** use appropriate Personal Protective Equipment (PPE) as per the requirement
- PC29.** maintain hand hygiene by washing hands with alcohol based sanitisers/soap
- PC30.** disinfect the machine/tools before and after work/task
- PC31.** maintain hygiene at the work site
- PC32.** report any symptoms of illness to the shift-incharge
- PC33.** identify six directional hazards at workplace and take decisions accordingly

Follow environmental guidelines

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

- PC34.** identify the environmental impact of mining related operations and follow steps to reduce those impact
- PC35.** follow the mineral conservation practices in U/G mining operations to achieve optimum ore or mineral recovery
- PC36.** ensure that the stowing practices produce minimum disturbance to the surface
- PC37.** ensure that the subgrade coal is carried out to surface and stacked separately at the earmarked place
- PC38.** ensure the productivity of the machine for material/fuel conservation
- PC39.** 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
- PC40.** follow the "5-S" practice at work site like cleaning oil from ground (to avoid soil from getting damaged), etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



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- KU1.** safety guidelines specified by Directorate General of Mine Safety (DGMS)
- KU2.** duties and rights of workers
- KU3.** selection process of person for rescue training
- KU4.** about Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR)
- KU5.** isolation and sealed off area of the mine
- KU6.** various types of gases available in the mine and their effects; and their control measures
- KU7.** self-rescue apparatus and their uses
- KU8.** provision of medical examination (Initial Medical Examination (IME) & Periodical Medical Examination (PME)) of a person employed, as per Mines Rules 1955
- KU9.** importance of first aid and hygiene
- KU10.** about different types of machineries used in U/G mines
- KU11.** different types of supporting system used in U/G mines as per SSP and SSR
- KU12.** about precautions to be taken when handling heavy equipment
- KU13.** various problems/incidents likely to occur
- KU14.** role of Internal Safety Organization, safety committee, workman's inspector and DGMS
- 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.** various types of fire extinguishers
- KU18.** 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.
- KU19.** shot-firing / blasting related safety regulations including taking shelter during blasting
- KU20.** mining area-specific signs, and other safety and emergency signals
- KU21.** the outcome of violation of safety procedures
- KU22.** Take-5 (Personal Risk Assessment) training (DGMS Tech. circulars 2/2014)
- KU23.** hazardous material safety, security rules and regulations
- KU24.** safety appliances and rescue equipment
- KU25.** importance and use of various communication system used in UG mines
- KU26.** importance of positive isolation at working site
- KU27.** safety and occupational health policy of organisation
- KU28.** six directional hazard identification process
- KU29.** basic personal and workplace hygiene
- KU30.** importance of FAB (Fresh Air Base)
- KU31.** basic provisions in Mines Creche Rules, 1966 (MCR) for any females employed in the mines
- KU32.** about basic safety regulations of Coal Mines Regulation, 2017 (CMR)
- KU33.** types of stone dust barrier and its importance
- KU34.** coal dust explosion and its preventive measures
- KU35.** classification of coal mines as per the degree of gassiness of coal seams such as first degree, second degree, and third-degree mines
- KU36.** precautions as per the gassiness of the coal mines



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- KU37.** use of flame safety lamp and its parts
- KU38.** about coal mines occupational disease such as pneumoconiosis or 'black lung' and their preventive measures
- KU39.** Standard of Ventilation as per the section 153 of the CMR 2017
- KU40.** Standard of Lighting as per the section 178 of the CMR 2017
- KU41.** the roles, duties and responsibilities of rescue team members, rescue room and rescue station and how to contact them in case of emergency
- KU42.** the correct steps for conducting any rescue work as per Mine Rescue Rule (MRR)
- KU43.** importance of taking shelter at the miner's station during blasting operation
- KU44.** importance of sensitization towards different genders and persons with disabilities (PWD)
- KU45.** importance of following infection control policies, '5-S' practices, and waste management
- KU46.** importance of water/material/energy conservation and management
- KU47.** importance of SMP and EMP, prepared by the organization, as per DGMS guideline

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 basic English language
- GS4.** read and interpret manuals, health, and safety instructions, memos, etc.
- GS5.** use the digital information from a machine
- GS6.** plan and organize the work order and tasks
- GS7.** use basic applications of the computer
- GS8.** use reasoning skills to identify and resolve fundamental problems
- GS9.** 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>	24	43	-	14
PC1. follow preventive measures against firedamp, whitedamp, blackdamp etc.	1	1	-	-
PC2. use the flame safety lamp for detecting the methane gas as per Standard Operating Procedure (SOP)	-	1	-	-
PC3. undertake "The Take-5 (Personal Risk Assessment)" before commencement of any work	1	1	-	1
PC4. comply with safety, health and security-related regulations/guidelines at the mine e.g. SOP for material handling in underground (U/G) mine	1	1	-	1
PC5. ensure that oil, grease, canvas or other inflammable material are stored in fire-proof receptacle	-	1	-	-
PC6. ensure that every instrument, apparatus and equipment are DGMS approved before these are used	1	1	-	-
PC7. ensure that Armoured face conveyor (AFC) and chocks must be kept in a straight line for every cycle of operations and tightened up to the setting pressure while keeping it in full contact with the roof, applicable for longwall mining	3	3	-	-
PC8. provide first aid to an injured person	1	2	-	1
PC9. follow safety precautions against spontaneous heating of the coal	1	1	-	-
PC10. operate various types of fire extinguishers to control different types of fire at worksite, if required	-	2	-	-
PC11. ensure that no person is traveling/working/staying under unsupported roof	1	-	-	-
PC12. check that roof supporting is as per Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR) while undertaking work in an area	-	2	-	1

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. take precaution against occupational health hazards (like dust, water, mine gases etc.) due to U/G working environment	-	1	-	1
PC14. use self-rescue apparatus appropriately when required	-	2	-	-
PC15. follow Safety Management Plan (SMP) and Emergency Management Plan (EMP)	1	2	-	1
PC16. follow precautions against U/G electrical appliances	2	2	-	1
PC17. take proper care against damage and accidents while loading, transporting, dismantling and erecting of roof supports	1	2	-	-
PC18. follow appropriate SOP while working near any isolated and sealed off area of the mine	1	1	-	1
PC19. ensure that the roof and the sidewalls of the mine face (or newly exposed area of the mines) have been scaled/dressed properly	1	1	-	-
PC20. take relevant safety precautions during depillaring operation in UCM	-	2	-	1
PC21. follow appropriate safety practices while traveling on U/G haul roads, incase of post blast fumes and misfire	1	1	-	-
PC22. follow the manufacturer's instructions for care and safe operation of mine machinery and equipment	-	1	-	1
PC23. identify the working ventilation district from line diagram of ventilation circuit to direct air to the working face	-	1	-	1
PC24. follow laid out SOP in case of alarm signal for leakage of inflammable gases	1	1	-	-
PC25. follow the process of reporting any unsafe act/condition in the working area to the concerned person	-	1	-	1
PC26. use underground mine communication system	-	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. ensure positive isolation near the work place if applicable	1	1	-	-
PC28. use appropriate Personal Protective Equipment (PPE) as per the requirement	2	2	-	1
PC29. maintain hand hygiene by washing hands with alcohol based sanitisers/soap	-	1	-	-
PC30. disinfect the machine/tools before and after work/task	1	1	-	-
PC31. maintain hygiene at the work site	1	1	-	-
PC32. report any symptoms of illness to the shift-incharge	1	1	-	-
PC33. identify six directional hazards at workplace and take decisions accordingly	-	1	-	1
<i>Follow environmental guidelines</i>	6	7	-	6
PC34. identify the environmental impact of mining related operations and follow steps to reduce those impact	1	1	-	1
PC35. follow the mineral conservation practices in U/G mining operations to achieve optimum ore or mineral recovery	1	1	-	1
PC36. ensure that the stowing practices produce minimum disturbance to the surface	1	1	-	-
PC37. ensure that the subgrade coal is carried out to surface and stacked separately at the earmarked place	1	1	-	1
PC38. ensure the productivity of the machine for material/fuel conservation	1	1	-	1
PC39. 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	-	1
PC40. follow the "5-S" practice at work site like cleaning oil from ground (to avoid soil from getting damaged), etc.	1	1	-	1



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	30	50	-	20



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National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1704
NOS Name	Follow Health, Safety, and Environmental guidelines for underground coal mines (Including Mine Vocational Training Rule and Mine Rescue Rule)
Sector	Mining
Sub-Sector	Mining Operation
Occupation	HSE Functions, Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Underground, Specialized Operations, Electrical Services, Mechanical Services
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



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Qualification Pack

MIN/N1702: Follow Health, Safety and Environmental guidelines for Underground Metalliferous Mines (UMM) (Including Mine Vocational Training Rule and Mine Rescue Rule)

Description

This unit is about adhering to health, safety and environmental guidelines in Underground Metalliferous Mines (UMM) during the execution of various tasks and operations and maintenance.

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.** undertake "The Take-5 (Personal Risk Assessment)" before commencement of any work
- PC2.** comply with safety, health and security-related regulations/guidelines at the mine e.g. follow Standard Operating Procedure (SOP) for material handling in underground (U/G) mine
- PC3.** operate various types of fire extinguishers to control different types of fire at a worksite when required
- PC4.** check that roof supporting is as per Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR) while undertaking work in an area
- PC5.** take precaution against occupational health hazards (like dust, water, mine gases etc.) due to U/G working environment
- PC6.** use self-rescue apparatus, appropriately when required
- PC7.** follow appropriate emergency response procedure during emergency such as fire, water inrush, fall of ground etc.
- PC8.** follow precautions against U/G electrical appliances
- PC9.** follow appropriate Standard Operating Procedure while working near any isolated and sealed off area of the mine
- PC10.** follow appropriate safety practices while traveling on U/G haul roads, incase of post blast fumes and misfire
- PC11.** follow the manufacturer's instructions for care and safe operation of mine machinery and equipment
- PC12.** identify the working ventilation district from line diagram of ventilation circuit to direct air to the working face
- PC13.** follow Safety Management Plan (SMP) and Emergency Management Plan (EMP)
- PC14.** follow gas detecting alarm signal on leakage of inflammable gases and laid out procedure to ensure safety



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- PC15.** follow process for reporting any unsafe act/condition in work area to the concerned person
- PC16.** use underground mine communication system
- PC17.** ensure positive isolation near the work place if applicable
- PC18.** use appropriate PPE as per the requirement
- PC19.** maintain hand hygiene by washing hands with alcohol based sanitisers/soap
- PC20.** disinfect the machine/tools before and after work/task
- PC21.** maintain hygiene at the work site
- PC22.** report any symptoms of illness to the shift-incharge
- PC23.** identify six directional hazards at workplace and take decisions accordingly

Follow environmental guidelines

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

- PC24.** identify the environmental impact of mining related operations and follow steps to reduce those impact
- PC25.** follow the mineral conservation practices in U/G mining operations to achieve optimum ore or mineral recovery
- PC26.** ensure that the stowing practices produce minimum disturbance to the surface
- PC27.** ensure that the subgrade ore is carried out to surface and stacked separately at the earmarked place
- PC28.** ensure the productivity of the machine for material/fuel conservation
- PC29.** 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
- PC30.** follow the "5-S" practice at work site like cleaning oil from ground (to avoid soil from getting damaged), etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safety guidelines specified by Directorate General of Mine Safety (DGMS)
- KU2.** duties and rights of workers
- KU3.** selection process of person for rescue training
- KU4.** about Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR)
- KU5.** isolation and sealed off area of the mine
- KU6.** various types of gases found in the mine and their effect
- KU7.** self-rescue apparatus and their uses
- KU8.** provision of medical examination (IME & PME) of person employed as per Mines Rules 1955
- KU9.** importance of first aid and hygiene
- KU10.** about different types of machinery used in U/G mines
- KU11.** different types of supporting systems used in U/G mines as per SSP and SSR
- KU12.** about precautions to be taken when handling heavy equipment
- KU13.** various problems/incidents likely to occur
- KU14.** role of Internal Safety Organization, safety committee, workman's inspector and DGMS



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- 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.** various types of fire extinguishers
- KU18.** 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.
- KU19.** shot-firing / blasting related safety regulations including taking shelter during blasting
- KU20.** emergency response /disaster management plan prepared by the organization as per DGMS guideline
- KU21.** mining area-specific signs, and other safety and emergency signals
- KU22.** the outcome of violation of safety procedures
- KU23.** Take-5 (Personal Risk Assessment) training (DGMS Tech. circulars 2/2014)
- KU24.** rules and regulations for safety and security while handling hazardous materials
- KU25.** safety appliances and rescue equipment
- KU26.** importance and use of various communication system used in UG mines
- KU27.** importance of positive isolation at working site
- KU28.** safety and occupational health policy of organisation
- KU29.** six directional hazard identification process
- KU30.** basic personal and workplace hygiene
- KU31.** importance of FAB (Fresh Air Base)
- KU32.** basic provisions in Mines Creche Rules, 1966 (MCR) for females employed in the mines
- KU33.** the role and responsibilities of rescue room and rescue station and how to contact them in case of emergency
- KU34.** importance of taking shelter at the miner's station during blasting operation
- KU35.** importance of sensitization towards different genders and persons with disabilities (PWD)
- KU36.** importance of following infection control policies, '5-S' practices, and waste management
- KU37.** importance of water/material/energy conservation and management
- KU38.** importance of SMP and EMP, prepared by the organization, as per DGMS guideline

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 basic English language
- GS4.** read and interpret manuals, health, and safety instructions, memos, etc.
- GS5.** use the digital information from machine
- GS6.** use basic applications of a computer
- GS7.** plan and organize the work order and tasks
- GS8.** use reasoning skills to identify and resolve fundamental problems



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Qualification Pack

GS9. 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>	24	42	-	17
PC1. undertake "The Take-5 (Personal Risk Assessment)" before commencement of any work	-	2	-	2
PC2. comply with safety, health and security-related regulations/guidelines at the mine e.g. follow Standard Operating Procedure (SOP) for material handling in underground (U/G) mine	1	3	-	-
PC3. operate various types of fire extinguishers to control different types of fire at a worksite when required	1	4	-	1
PC4. check that roof supporting is as per Systematic Support Plan (SSP) and approved Systematic Support Rules (SSR) while undertaking work in an area	1	1	-	-
PC5. take precaution against occupational health hazards (like dust, water, mine gases etc.) due to U/G working environment	1	2	-	1
PC6. use self-rescue apparatus, appropriately when required	-	4	-	1
PC7. follow appropriate emergency response procedure during emergency such as fire, water inrush, fall of ground etc.	1	2	-	1
PC8. follow precautions against U/G electrical appliances	2	2	-	2
PC9. follow appropriate Standard Operating Procedure while working near any isolated and sealed off area of the mine	2	2	-	1
PC10. follow appropriate safety practices while traveling on U/G haul roads, incase of post blast fumes and misfire	2	4	-	-
PC11. follow the manufacturer's instructions for care and safe operation of mine machinery and equipment	1	2	-	1

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. identify the working ventilation district from line diagram of ventilation circuit to direct air to the working face	1	1	-	-
PC13. follow Safety Management Plan (SMP) and Emergency Management Plan (EMP)	1	-	-	-
PC14. follow gas detecting alarm signal on leakage of inflammable gases and laid out procedure to ensure safety	1	2	-	1
PC15. follow process for reporting any unsafe act/condition in work area to the concerned person	-	2	-	1
PC16. use underground mine communication system	-	1	-	-
PC17. ensure positive isolation near the work place if applicable	1	1	-	1
PC18. use appropriate PPE as per the requirement	2	4	-	2
PC19. maintain hand hygiene by washing hands with alcohol based sanitisers/soap	1	1	-	1
PC20. disinfect the machine/tools before and after work/task	1	1	-	-
PC21. maintain hygiene at the work site	1	1	-	1
PC22. report any symptoms of illness to the shift-incharge	1	-	-	-
PC23. identify six directional hazards at workplace and take decisions accordingly	2	-	-	-
<i>Follow environmental guidelines</i>	6	8	-	3
PC24. identify the environmental impact of mining related operations and follow steps to reduce those impact	1	2	-	-
PC25. follow the mineral conservation practices in U/G mining operations to achieve optimum ore or mineral recovery	-	1	-	-
PC26. ensure that the stowing practices produce minimum disturbance to the surface	1	1	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. ensure that the subgrade ore is carried out to surface and stacked separately at the earmarked place	1	-	-	1
PC28. ensure the productivity of the machine for material/fuel conservation	1	1	-	-
PC29. 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	1	-	1
PC30. follow the "5-S" practice at work site like cleaning oil from ground (to avoid soil from getting damaged), etc.	1	2	-	1
NOS Total	30	50	-	20



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National Occupational Standards (NOS) Parameters

NOS Code	MIN/N1702
NOS Name	Follow Health, Safety and Environmental guidelines for Underground Metalliferous Mines (UMM) (Including Mine Vocational Training Rule and Mine Rescue Rule)
Sector	Mining
Sub-Sector	Mining Operation
Occupation	HSE Functions, Mine Surveying, Drilling/Cutting, Shot firing/Blasting, Loading and Hauling - Underground, Specialized Operations, Electrical Services, Mechanical Services
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

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.



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Qualification Pack

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1601. Recognize processes and equipment requirement for roof bolting	30	50	0	20	100	30
MIN/N1602. Conduct roof bolting process	30	50	0	20	100	30
DGT/VSQ/N0102. Employability Skills (60 Hours)	20	30	0	0	50	10
Total	80	130	0	0	250	70

Elective: 1 U/G Coal

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1704. Follow Health, Safety, and Environmental guidelines for underground coal mines (Including Mine Vocational Training Rule and Mine Rescue Rule)	30	50	-	20	100	30
Total	30	50	-	20	100	30



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Elective: 2 U/G Metal

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1702.Follow Health, Safety and Environmental guidelines for Underground Metalliferous Mines (UMM) (Including Mine Vocational Training Rule and Mine Rescue Rule)	30	50	-	20	100	30
Total	30	50	-	20	100	30



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Qualification Pack

Acronyms

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

Qualification Pack

Glossary

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



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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.