Skill Council For Mining Sector

GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

Mine Welder

Electives: U/G Metal/ Opencast/ U/G Coal

Options: U/G Gassy Mines

QP Code: MIN/Q3201

Version: 2.0

NSQF Level: 4

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Qualification Pack

MIN/Q3201: Mine Welder

Brief Job Description

A mine welder is responsible for joining various types of metallic frames, structures, jigs, plates, sheets etc. using heating and melting process created through electrical power and gaseous discharge, maintaining process parameters, conducting quality checks on output product and maintaining a safe and healthy working environment.

Personal Attributes

This job requires quality consciousness, safety orientation, physique to sustain strenuous conditions, ability to use fingers, hands and feet with ease to complete the assigned task (Dexterity).

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. MIN/N3201: Prepare the welding machine, auxiliaries and work pieces for the welding process
2. MIN/N3202: Conduct the welding process and weld the work piece
3. MIN/N3203: Post welding operations activities
4. DGT/VSQ/N0102: Employability Skills (60 Hours)

Electives*(mandatory to select at least one):*

Elective 1: U/G Metal

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

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

Elective 2: Opencast

This unit is about adhering to health, safety and environmental guidelines in the Open Cast Mines during execution of various tasks, operations and maintenance.

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

Elective 3: U/G Coal

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

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

Options*(Not mandatory):*

Option : U/G Gassy Mines

This OS unit is about Special preparation for Welding at U/G Gassy Mines.

1. MIN/N3204: Special preparation for Welding at U/G Mines

Qualification Pack (QP) Parameters

Sector	Mining
Sub-Sector	Engineering Services
Occupation	Mechanical Services
Country	India
NSQF Level	4
Credits	22
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7212.0200
Minimum Educational Qualification & Experience	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. Mine Welder with minimum education as 5th grade pass with 2 years relevant experience)

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	17/11/2025
NSQC Approval Date	17/11/2022
Version	2.0
Reference code on NQR	2022/MIN/SCMS/06982
NQR Version	1

Remarks:

Total Notional Duration: 510 Hours; Additional 30 hours for Optional NOS= Domain Theory Duration: 90 Hours; Additional 10 hours for Optional NOS Theory Duration+ Domain Practical Duration: 180 Hours; Additional 10 hours for Optional NOS Practical Duration+ Domain OJT (Mandatory) Duration: 180 Hours; Additional 10 hours for Optional NOS OJT Duration+ Employability Skills Duration: 60 Hours

MIN/N3201: Prepare the welding machine, auxiliaries and work pieces for the welding process

Description

This OS unit is about recognizing the work requirement and preparing the welding machine, auxiliary apparatus like transformers, gas cylinder, flux wires etc. and metal work pieces (jigs) for the welding process.

Scope

The scope covers the following :

- Recognizing the welding requirements, welding equipment and parameters
- Arrange the material and equipment
- Clean the welding equipment and setup the equipment
- Prepare the surface of the part (work pieces)

Elements and Performance Criteria

Recognizing the welding requirements, welding equipment and parameters

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

PC1. recognize the right welding methodology and process to be adopted for completing the work order

PC2. refer all process manuals/ work instructions/Standard Operating Procedures (SOP) to understand the right welding methodology and process

PC3. discuss with the supervisor for given task/work

PC4. identify the various welding parameters like temperature, pressure, electrode type, electrode distance, process cycle time etc. before starting the welding process, as mentioned in the work Instructions/ SOP manual

PC5. identify the material required and the equipment availability for executing the activity

PC6. compare various type of electrode in terms of electrode material and thickness, filler material and flux which will be required for the selected welding process before the initiation of the welding process

Arrange the material and equipment

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

PC7. arrange the correct type of electrodes as per material wise, dimension wise, filler material wise etc. used for the welding process

PC8. arrange the material and the equipment required for executing the activity

PC9. procure all required material from the store before starting the welding process

Clean the welding equipment and setup the equipment

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

PC10. clean the surface of the electrodes and remove dust and any other impurities from the welding gun

PC11. clean the other welding machine auxiliaries(welding transformer, gas discharge unit, flux wire) before the initiation of the welding process, as mentioned in the work instructions/ Standard Operating Procedures(SOP)

PC12. setup the welding apparatus as per the selected welding process and the internal SOPs/ Work instructions and the setting standard for the machine

Prepare the surface of the part (work pieces)

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

PC13. clean the surface of the metal parts (work pieces) which need to be joint

PC14. prepare the edge for the strongest possible weld using techniques like machining, chipping, grinding, oxy- acetylene cutting and carbon arc cutting

PC15. ensure that the parameters for edge parameters are as per the desired specifications like speed, cost, adaptability etc.

PC16. take the work permission/authorization from mines manager if required

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

KU2. risk and impact of not following defined procedures/work instructions

KU3. the hierarchy for reporting identified problems

KU4. cost of equipment and loss for the company that results from damage of equipment

KU5. implications of delays in the process

KU6. handover and takeover procedures of the mine welder according to company's SOP

KU7. safety guidelines specified by Directorate General of MInes Safety (DGMS) specific to welding works

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 welding processes and associated equipment: GMAW, FCAW, SMAW, GTAW, TIG, etc.

KU20. different cleaning methods for electrodes, metal surfaces etc.

KU21. how to use measuring instruments like vernier calipers, micrometers

KU22. different types of welding joints

KU23. procedure to issue and receive material from the stock

KU24. the impact of various physical parameters like temperature, pressure, electrode distance, electric current, voltage on the properties of final output product like durability, ductility, surface finish etc.

KU25. basic principles of geometric and drawing

KU26. methods of edge preparation and associated equipment

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 and interpret sketches and engineering drawings

GS4. read information documents

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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Recognizing the welding requirements, welding equipment and parameters	**12**	**25**	**-**	**-**
PC1. recognize the right welding methodology and process to be adopted for completing the work order	2	4	-	-
PC2. refer all process manuals/ work instructions/Standard Operating Procedures (SOP) to understand the right welding methodology and process	2	5	-	-
PC3. discuss with the supervisor for given task/work	2	4	-	-
PC4. identify the various welding parameters like temperature, pressure, electrode type, electrode distance, process cycle time etc. before starting the welding process, as mentioned in the work Instructions/ SOP manual	2	4	-	-
PC5. identify the material required and the equipment availability for executing the activity	2	4	-	-
PC6. compare various type of electrode in terms of electrode material and thickness, filler material and flux which will be required for the selected welding process before the initiation of the welding process	2	4	-	-
Arrange the material and equipment	**5**	**13**	**-**	**-**
PC7. arrange the correct type of electrodes as per material wise, dimension wise, filler material wise etc. used for the welding process	2	5	-	-
PC8. arrange the material and the equipment required for executing the activity	1	4	-	-
PC9. procure all required material from the store before starting the welding process	2	4	-	-
Clean the welding equipment and setup the equipment	**5**	**12**	**-**	**-**
PC10. clean the surface of the electrodes and remove dust and any other impurities from the welding gun	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. clean the other welding machine auxiliaries(welding transformer, gas discharge unit, flux wire) before the initiation of the welding process, as mentioned in the work instructions/ Standard Operating Procedures(SOP)	2	4	-	-
PC12. setup the welding apparatus as per the selected welding process and the internal SOPs/ Work instructions and the setting standard for the machine	2	4	-	-
Prepare the surface of the part (work pieces)	**8**	**20**	**-**	**-**
PC13. clean the surface of the metal parts (work pieces) which need to be joint	2	5	-	-
PC14. prepare the edge for the strongest possible weld using techniques like machining, chipping, grinding, oxy- acetylene cutting and carbon arc cutting	2	5	-	-
PC15. ensure that the parameters for edge parameters are as per the desired specifications like speed, cost, adaptability etc.	2	5	-	-
PC16. take the work permission/authorization from mines manager if required	2	5	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N3201
NOS Name	Prepare the welding machine, auxiliaries and work pieces for the welding process
Sector	Mining
Sub-Sector	Engineering Services
Occupation	Mechanical Services
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

MIN/N3202: Conduct the welding process and weld the work piece

Description

This OS is about conducting welding operation as per the methodology selected for welding and the Standard Operating Procedures (SOP) defined by the organization and the outcome of the work order.

Scope

The scope covers the following :

- Install the welding work pieces on the welding apparatus
- Check the operations of the welding machines and auxiliaries and conduct a test process
- Perform the actual welding process
- Monitor process parameters to ensure error free welding process
- Measure both welded pieces and remove welding inconsistency

Elements and Performance Criteria

Install the welding work pieces on the welding apparatus

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

PC1. hold the parts (Jigs) which need to be welded together using a clamp and align them with the electrodes as per the job requirement

PC2. install the work pieces on the welding apparatus keeping in mind the electrodes distance, contact area, pressure, temperature application etc as specified in the welding SOP/ Control plan documents/work Instructions and instructed by the supervisor

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

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

PC3. check for operation of core welding equipment like welding gun, welding transformer, gas cylinders and gas discharge as per setup documentation

PC4. identify shift direction hazard

PC5. conduct destructive and non- destructive test activity to ensure conformance to the SOPs/ work instructions

PC6. inform supervisor to make modifications in the welding parameters as per the test activity outcomes and the prescribed standard for destructive/ non destructive Tests

Perform the actual welding process

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

PC7. adjust the current/ voltage, temperature application as per the welding requirement and the activity test conducted earlier so that the desired heat can be created for the welding process

PC8. check for the positioning of the spot and the welding gun as per the work instructions and the work order

PC9. / hold the filler metal/ Flux material wire and the Welding Gun at the recommended angle and distance mentioned in the setup document, keeping the work pieces stationary to ensure the required melting of base metal

PC10. ensure the flow of filler material/ gas discharge as per the welding standard prescribed in the SOP/ Work Instructions

Monitor process parameters to ensure error free welding process

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

PC11. monitor the welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode distance etc) by observing the readings on the panels/ measuring instruments to prevent any harm to the work pieces due to overheating, burning, over melting, change in applied pressure etc

PC12. note down the observations in the prescribed format

Measure both welded pieces and remove welding inconsistency

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

PC13. measure the final welded piece and compare the dimensions as prescribed in the work order engineering drawing

PC14. ensure that the assistant operators/ helpers remove extra material by using chippers, grinders etc., in case the parts are not as per the given measurements

PC15. ensure hammering of the bulges to give the work pieces the desired shape, in case of any dents or bulges

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

KU2. risk and impact of not following defined procedures/work instructions

KU3. the hierarchy for reporting identified problems

KU4. cost of equipment and loss for the company that results from damage of equipment

KU5. implications of delays in the process

KU6. handover and takeover procedures of the welding work according to company's SOP

KU7. safety guidelines specified by Directorate General of MInes Safety (DGMS) specific to welding operations

KU8. different types of mines and detail of the mine one is working i

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 welding processes and associated equipment

KU20. different types of joints used in welding

KU21. different cleaning methods for electrodes, metal surfaces etc
KU22. the methods of using instruments like Vernier calipers, Micrometers, rulers and other inspection tools
KU23. various national and International welding standard used in mining sector in India
KU24. how to visually represent the final product outcome
KU25. different types of defects in welding and their impact
KU26. potential health and safety hazards and related Safety precautions to be undertaken during the welding process
KU27. basic chemical properties of material used for electrodes, flux, welding gases etc.
KU28. basic electrical laws and working of welding transformers, capacitors etc..
KU29. DC welding machines, checking voltage of machines etc
KU30. welding gauges, different type of gauges 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. read and interpret sketches and engineering drawings
GS5. represent the final product output and hence decide on the key steps to be followed for welding
GS6. discuss task lists, schedules and activities
GS7. effectively communicate, listen and comprehend the information given by various sources about the site
GS8. make decisions pertaining to the concerned area of work
GS9. plan and organize the work order and tasks
GS10. organize all operation and service manuals so that sorting/ accessing information is easy
GS11. detect problems in day to day tasks
GS12. discuss possible solution with the supervisor for problem solving
GS13. make decisions in emergency conditions
GS14. follow instructions and work on areas of improvement identified
GS15. complete the assigned tasks timely
GS16. use reasoning skills to identify and resolve basic problems
GS17. analyze and detect any potential problems which could arise during operation
GS18. respect persons with disabilities
GS19. explain the importance of gender-sensitization at work site
GS20. state basic laws, acts and provisions defined for Persons with Disability (PwD) by the statutory bodies

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Install the welding work pieces on the welding apparatus	**4**	**8**	**-**	**-**
PC1. hold the parts (Jigs) which need to be welded together using a clamp and align them with the electrodes as per the job requirement	2	4	-	-
PC2. install the work pieces on the welding apparatus keeping in mind the electrodes distance, contact area, pressure, temperature application etc as specified in the welding SOP/ Control plan documents/work Instructions and instructed by the supervisor	2	4	-	-
Check the operations of the welding machines and auxiliaries and conduct a test process	**8**	**18**	**-**	**-**
PC3. check for operation of core welding equipment like welding gun, welding transformer, gas cylinders and gas discharge as per setup documentation	2	4	-	-
PC4. identify shift direction hazard	2	5	-	-
PC5. conduct destructive and non- destructive test activity to ensure conformance to the SOPs/ work instructions	2	5	-	-
PC6. inform supervisor to make modifications in the welding parameters as per the test activity outcomes and the prescribed standard for destructive/ non destructive Tests	2	4	-	-
Perform the actual welding process	**8**	**19**	**-**	**-**
PC7. adjust the current/ voltage, temperature application as per the welding requirement and the activity test conducted earlier so that the desired heat can be created for the welding process	2	5	-	-
PC8. check for the positioning of the spot and the welding gun as per the work instructions and the work order	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. / hold the filler metal/ Flux material wire and the Welding Gun at the recommended angle and distance mentioned in the setup document, keeping the work pieces stationary to ensure the required melting of base metal	2	4	-	-
PC10. ensure the flow of filler material/ gas discharge as per the welding standard prescribed in the SOP/ Work Instructions	2	5	-	-
Monitor process parameters to ensure error free welding process	**4**	**10**	**-**	**-**
PC11. monitor the welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode distance etc) by observing the readings on the panels/ measuring instruments to prevent any harm to the work pieces due to overheating, burning, over melting, change in applied pressure etc	2	5	-	-
PC12. note down the observations in the prescribed format	2	5	-	-
Measure both welded pieces and remove welding inconsistency	**6**	**15**	**-**	**-**
PC13. measure the final welded piece and compare the dimensions as prescribed in the work order engineering drawing	2	5	-	-
PC14. ensure that the assistant operators/ helpers remove extra material by using chippers, grinders etc., in case the parts are not as per the given measurements	2	5	-	-
PC15. ensure hammering of the bulges to give the work pieces the desired shape, in case of any dents or bulges	2	5	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N3202
NOS Name	Conduct the welding process and weld the work piece
Sector	Mining
Sub-Sector	Engineering Services
Occupation	Mechanical Services
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

MIN/N3203: Post welding operations activities

Description

This OS unit is about conducting quality checks and inspection of the finished products produced and repair the bad quality items produced.

Scope

The scope covers the following :

- Inspection of finished goods to detect any deviations from the product design
- Maintain records for production and defective pieces
- Unload and store the finished goods
- Ensure cleanliness and 5S is maintained at the workplace
- Conduct regular preventive maintenance of equipment

Elements and Performance Criteria

Inspection of finished goods to detect any deviations from the product design

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

PC1. inspect the output products by comparing the dimensions of the output pieces with the specifications of the finished product using various measuring devices like micrometers, vernier calipers, gauges, rulers, weighing scales and etc.

PC2. compare texture, color, surface properties, hardness and strength with the given specifications described the in work order/ work Instructions

PC3. separate the defective pieces into two categories e.i. repairable and beyond repair by putting tags/ markings on the welded jig/ workpiece surface

PC4. ensure that the pieces which are not meet the specified standard and cannot be repaired are discarded

Maintain records for production and defective pieces

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

PC5. maintain data records for quality defects and pieces which are beyond repair

PC6. prepare all documentation correctly on time

PC7. report completion of job allocated during the shift, problems encountered and further actions that need to be taken

Unload and store the finished goods

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

PC8. ensure that the output pieces is correctly clamped and lifted using suitable equipment like hoist, lifts, crane, etc.

PC9. ensure that there is no damage to the lifted work pieces

PC10. carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.

Ensure cleanliness and 5S is maintained at the workplace

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

PC11. store all equipment in a proper order as indicated in the equipment manual and the designated area

PC12. ensure that the equipment and the work place are regularly cleaned and that there is not accumulation of dust, moisture and waste material

PC13. follow "5-S" practice at work place

Conduct regular preventive maintenance of equipment

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

PC14. check the working of all bearing, rollers, shafts etc. and oil all moving parts of the equipment on a periodic basis

PC15. check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure

PC16. check the equipment calibration periodically and report any errors to the maintenance teams for rectification

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

KU2. risk and impact of not following defined procedures/work instructions

KU3. the hierarchy for reporting identified problems

KU4. cost of equipment and loss for the company that results from damage of equipment

KU5. implications of delays in the process

KU6. handover and takeover procedures of the mine welder according to company's SOP

KU7. safety guidelines specified by Directorate General of MInes Safety (DGMS) specific to mine welding 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. techniques of using measurement instruments like rulers, Vernier callipers, micrometres, weighing scale, gauges and other inspection equipment

KU20. guidelines to identify quality defects in work pieces visual/ test based

KU21. methods used for cutting, shearing, hammering, drilling which can repair pieces with minor defects

KU22. basic level maintenance and cleaning techniques
KU23. various solvents, chemicals, lubricants etc used during the maintenance processes
KU24. procedure for arranging the equipment in the prescribed manner including tagging and numbering of machine parts
KU25. safety precautions to be taken during cleaning and maintenance activities
KU26. basic welding defects and corrective measures
KU27. basic level operations of lifting equipment like hoists, cranes, pulley 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
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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Inspection of finished goods to detect any deviations from the product design	**8**	**20**	**-**	**-**
PC1. inspect the output products by comparing the dimensions of the output pieces with the specifications of the finished product using various measuring devices like micrometers, vernier calipers, gauges, rulers, weighing scales and etc.	2	5	-	-
PC2. compare texture, color, surface properties, hardness and strength with the given specifications described the in work order/ work Instructions	2	5	-	-
PC3. separate the defective pieces into two categories e.i. repairable and beyond repair by putting tags/ markings on the welded jig/ workpiece surface	2	5	-	-
PC4. ensure that the pieces which are not meet the specified standard and cannot be repaired are discarded	2	5	-	-
Maintain records for production and defective pieces	**4**	**6**	**-**	**-**
PC5. maintain data records for quality defects and pieces which are beyond repair	2	2	-	-
PC6. prepare all documentation correctly on time	1	2	-	-
PC7. report completion of job allocated during the shift, problems encountered and further actions that need to be taken	1	2	-	-
Unload and store the finished goods	**6**	**14**	**-**	**-**
PC8. ensure that the output pieces is correctly clamped and lifted using suitable equipment like hoist, lifts, crane, etc.	2	5	-	-
PC9. ensure that there is no damage to the lifted work pieces	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.	2	4	-	-
Ensure cleanliness and 5S is maintained at the workplace	**6**	**12**	**-**	**-**
PC11. store all equipment in a proper order as indicated in the equipment manual and the designated area	2	4	-	-
PC12. ensure that the equipment and the work place are regularly cleaned and that there is not accumulation of dust, moisture and waste material	2	4	-	-
PC13. follow "5-S" practice at work place	2	4	-	-
Conduct regular preventive maintenance of equipment	**6**	**18**	**-**	**-**
PC14. check the working of all bearing, rollers, shafts etc. and oil all moving parts of the equipment on a periodic basis	2	6	-	-
PC15. check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure	2	6	-	-
PC16. check the equipment calibration periodically and report any errors to the maintenance teams for rectification	2	6	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N3203
NOS Name	Post welding operations activities
Sector	Mining
Sub-Sector	Engineering Services
Occupation	Mechanical Services
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

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

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Introduction to Employability Skills

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

PC1. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

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

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

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC5. recognize the significance of 21st Century Skills for employment

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

Basic English Skills

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

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

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

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

Career Development & Goal Setting

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

PC10. understand the difference between job and career

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

Communication Skills

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

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

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

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

Financial and Legal Literacy

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

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

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

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

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

Essential Digital Skills

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

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

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

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

Entrepreneurship

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

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

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

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

Customer Service

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

PC26. identify different types of customers

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

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**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	-	-	-	-
Becoming a Professional in the 21st Century	**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	-	-	-	-
Basic English Skills	**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	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

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	-	-	-	-
Communication Skills	**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	-	-	-	-
Diversity & Inclusion	**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	-	-	-	-
Financial and Legal Literacy	**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	-	-	-	-
Essential Digital Skills	**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	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**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	-	-	-	-
Customer Service	**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	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

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

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

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

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

GS9. complete the assigned tasks timely

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Follow work-site health and safety measures	**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

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	-	-	-
Follow environmental guidelines	**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	-	-

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**

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

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

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Follow work-site health and safety measures

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

PC1. comply with safety, health, and security-related regulations/guidelines at the opencast mine

PC2. follow the safety instructions given by the workman's inspector

PC3. follow adequate safety while working at haul roads, heights, overburden dumps, sump area, stockyard, near moving parts, etc.

PC4. take safety precautions while working on sites (sub-station, workshop etc.), with equipment, and conducting welding and cutting operations

PC5. follow appropriate Safe Operating Procedure (SOP) while dealing with explosives

PC6. respond promptly and appropriately to an accident/ incident or an emergency situation, within limits of the role and responsibility

PC7. provide first aid to an injured person

PC8. operate various types of fire extinguishers to control different types of fire at a worksite when required

PC9. use appropriate PPE as per the requirement

PC10. maintain hand hygiene by washing hands with alcohol based sanitisers/soap

PC11. disinfect the machine/tools before and after work/task

PC12. maintain hygiene at the work site

PC13. report any symptoms of illness to the shift-incharge

Follow Environmental guidelines

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

PC14. identify the environmental impact of related opencast mining operations

PC15. follow the process for collecting, storing and disposing of the hazardous material and waste (like used oil, lubricant, battery, etc.) in compliance with worksite guidelines

PC16. ensure not to mix topsoil with waste in day to day tasks

PC17. ensure that HEMM is washed at the designated location

PC18. ensure the productivity of the machine for material/fuel conservation

PC19. follow the mineral conservation practices specified by the organization in accordance with MCDR-2017 (Mineral Conservation and Development Rules)

PC20. assist supervisor for reducing environmental impact caused due to related mining operations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. about various environmental awareness program related to mining, organized by the various government bodies/company

KU2. safety guidelines specified by Directorate General of Mine Safety (DGMS)

KU3. basic mining terminologies and definitions

KU4. means of access and egress from the mines, location of workshop, haul roads and working face including dump yards

KU5. duties of workers under The Mines act-1952

KU6. working hours and accident compensation as per The Mines act-1952

KU7. about precautions to be taken when handling heavy equipment

KU8. various problems/incidents likely to occur

KU9. hierarchy of the reporting

KU10. machine operation, condition of the machine and worksite

KU11. proper documents specific to the machine

KU12. role of workmen inspector, safety committee and internal safety organization

KU13. the process of top soil removal and management

KU14. mine sump and pumping system of the mines

KU15. about mine safety standard including light illumination level, noise levels, dust level, pollutants, etc at the work-site

KU16. common sources of pollution in the mines and ways to minimize it

KU17. safety equipment like safety shoes, safety belt, tight fit clothing, hand gloves, safety goggles, gas detector, safety lamp, self-contained breathing apparatus, gum boots, ear plugs, face mask, etc.

KU18. shot-firing / blasting related safety regulations including taking shelter during blasting

KU19. emergency response /disaster management plan prepared by the organization

KU20. signages, mining area-specific signs, and other safety and emergency signals

KU21. the outcome of violation of safety procedures

KU22. basic personal and workplace hygiene

KU23. importance of sensitization towards different genders and PWD (Persons with Disabilities)

Generic Skills (GS)

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

GS1. fill up documentation applicable to one's role

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

Assessment Criteria

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

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

National Occupational Standards (NOS) Parameters

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

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)

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:

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

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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Follow work-site health and safety measures	**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

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	-	-

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
Follow environmental guidelines	**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

Qualification Pack

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

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

MIN/N3204: Special preparation for Welding at U/G Mines

Description

This OS unit is about Special preparation for Welding at U/G Gassy Mines.

Scope

The scope covers the following :

- Special preparation for first & second degree gassy mines
- Special preparation for Third degree gassy mines

Elements and Performance Criteria

Special preparation for first & second degree gassy mines

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

PC1. permission taken in writing from manager before going welding works at U/G mines

PC2. carried out the welding work as per the SOP

PC3. pre-inspection of site relating to safety aspects/arrangement i.e. presence of methane, availability of firefighting equipment, site/plan preferences where welding is to be carried out.

PC4. precaution taken during welding and cutting operation at U/G mines

PC5. carry out post inspection of site relating to safety

PC6. ensure that the pieces which are not as per requirement and not meeting the specified standard and cannot be repaired are discarded

Special preparation for third degree gassy mines

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

PC7. ensure prior permission from regional inspector of mines before conducting any welding works in U/G mines

PC8. perform welding and cutting with close supervision of authorized supervisor

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. CMR and MMR regulation related to welding and cutting work

KU4. the hierarchy for reporting identified problems

KU5. cost of equipment and loss for the company that results from damage of equipment

KU6. implications of delays in the process

KU7. importance of first aid and hygiene

KU8. code of practice in specific areas of the mine

KU9. standing orders in force at the mine

KU10. duties of workmen under the Mines Act-1952
KU11. provision of compensation and working hours, leaves, etc. as per Mines Act-1952
KU12. about shot-firing / blasting related safety regulations including taking shelter during blasting
KU13. techniques of using measurement instruments like rulers, Vernier callipers, micrometres, weighing scale, gauges and other inspection equipment
KU14. guidelines to identify quality defects in work pieces -visual/ test based
KU15. methods used for cutting, shearing, hammering, drilling which can repair pieces with minor defects
KU16. basic level maintenance and cleaning techniques
KU17. various solvents, chemicals, lubricants etc used during the maintenance processes
KU18. procedure for arranging the equipment in the prescribed manner including tagging and numbering of machine parts
KU19. safety precautions to be taken during cleaning and maintenance activities
KU20. basic welding defects and corrective measures
KU21. basic level operations of lifting equipment like hoists, cranes, pulley 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. explain the importance of gender-sensitization at work site

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Special preparation for first & second degree gassy mines	**24**	**53**	**-**	**-**
PC1. permission taken in writing from manager before going welding works at U/G mines	4	9	-	-
PC2. carried out the welding work as per the SOP	4	9	-	-
PC3. pre-inspection of site relating to safety aspects/arrangement i.e. presence of methane, availability of firefighting equipment, site/plan preferences where welding is to be carried out.	4	9	-	-
PC4. precaution taken during welding and cutting operation at U/G mines	4	9	-	-
PC5. carry out post inspection of site relating to safety	4	8	-	-
PC6. ensure that the pieces which are not as per requirement and not meeting the specified standard and cannot be repaired are discarded	4	9	-	-
Special preparation for third degree gassy mines	**6**	**17**	**-**	**-**
PC7. ensure prior permission from regional inspector of mines before conducting any welding works in U/G mines	3	9	-	-
PC8. perform welding and cutting with close supervision of authorized supervisor	3	8	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MIN/N3204
NOS Name	Special preparation for Welding at U/G Mines
Sector	Mining
Sub-Sector	Engineering Services
Occupation	Mechanical Services
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

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.

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/N3201.Prepare the welding machine, auxiliaries and work pieces for the welding process	30	70	-	-	100	20
MIN/N3202.Conduct the welding process and weld the work piece	30	70	-	-	100	30
MIN/N3203.Post welding operations activities	30	70	-	-	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	**110**	**240**	**-**	**-**	**350**	**80**

Elective: 1 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	0	20	100	20
Total	**30**	**50**	**-**	**20**	**100**	**20**

Elective: 2 Opencast

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N1703.Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule)	30	50	0	20	100	20
Total	**30**	**50**	**-**	**20**	**100**	**20**

Elective: 3 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	20
Total	**30**	**50**	**-**	**20**	**100**	**20**

Optional: 1 U/G Gassy Mines

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MIN/N3204.Special preparation for Welding at U/G Mines	30	70	-	-	100	20
Total	**30**	**70**	**-**	**-**	**100**	**20**

Acronyms

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

Glossary

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

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