





QUALIFICATION PACK - OCCUPATIONAL STANDARD FOR MINING INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standard that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Contents

- 1. Introduction and Contacts.....Page.1
- 2. Qualifications Pack.....Page.2
- 3. Glossary of Key TermsPage.3
- 4. <u>OS Units......Page.5</u>

Introduction

Qualifications Pack-Sampler

SECTOR: MINING

SUB-SECTOR: Underground and Open Cast Mines

OCCUPATION: Ore Processing

REFERENCE ID: MIN/Q 0418

ALIGNED TO: NCO-2004/7111.68

A Sampler ensures obtaining the ore samples at mine and analysing the same

Brief Job Description: Sampler takes onsite samples, either in open-cast or underground workings of the mine. He visits the different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning.

Personal Attributes: Ability to plan and prioritize, quality consciousness, safety orientation, Physique to sustain strenuous conditions, Dexterity, Ability to use fingers, hands and feet with ease to complete the assigned task (Dexterity), high precision and sensitivity to problem solving and sensitivity towards safety for self and equipment, Reading, writing and communication skills



SCMS

Qualifications Pack For Sampler





Qualification Pack Code		MIN/Q 0418	
Job Role	Sampler	Sampler	
Credits(NSQF)	TBD	TBD Version number 1.0	
Industry	Mining	Drafted on	15/12/2014
Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015
Occupation	Ore Processing	Next review date	24/03/2017
NSQC Clearance on		18/06/2015	

Job Role	Sampler
Role Description	Sampler takes onsite samples, either in open-cast or underground workings of the mine. He visits the different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning
NSQF level	3
Minimum Educational Qualification	Preferable Class X
Maximum Educational Qualification	NA
Training (Suggested but not mandatory)	Sampling techniques and machinerySafetyQuality Management
Minimum Job Entry Age	18 Years
Experience	N.A.
Applicable National Occupational Standards	Compulsory: Click on the hyperlink to read/download the required NOS 1. MIN/ N0451 (Prepare for & obtain representative sample) 2. MIN/ N0452 (Testing of sample obtained from the mine and provide the results to the management) 3. MIN / N 0901 (Health and Safety) Optional: Not Applicable
Performance Criteria	As described in the relevant OS units



Qualifications Pack For Sampler





Keywords /Terms	Description
Sector is a conglomeration of different business operations having sir businesses and interests. It may also be defined as a distinct subset of 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.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standard of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standard are applicable both in the Indian and global contexts.
Performance	Performance Criteria are statements that together specify the standard of
Criteria	performance required when carrying out a task.
NOS	NOS are Occupational Standard which apply uniquely in the Indian context.
Qualification Pack Code	Qualification Pack Code is a unique reference code that identifies a qualification pack.
Qualification Pack	Qualification Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualification Pack is assigned a unique qualification 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.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical	Technical Knowledge is the specific knowledge needed to accomplish specific
Knowledge	designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working 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.







Qualifications Pack For Sampler

Acronyms	
4	

Keywords /Terms	Description
SCMS	Skill council for Mining Sector
NOS	National Occupational Standard
NSQF	National Skill Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standard
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skill Council









Prepare for & obtain representative sample

National Occupational Standard



Overview

This OS unit is about preparing for routine sampling activities using prescribed standard operating procedures involving the taking of basic samples



National Occupational Standard





MIN/ N0451

Prepare for & obtain representative sample

Unit Code	MIN/ N0451		
Unit Title (Task)	Prepare and obtain representative sample		
Description	This OS unit is about preparing for routine sampling activities using prescribed		
	standard operating procedures involving the taking of basic samples. Such samples		
	require limited judgment and involve following standard operating procedures		
Scope	This unit/task covers the following:		
	Prepare for simple sampling		
	 Obtain representative sample 		
	Maintain sample integrity		
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Performance Criteria(PC) w.r.t. the Scope		
Element	Performance Criteria		
Prepare for simple	PC1. Ensure that the conditions for sampling are in accordance with laid down		
sampling	procedures		
	PC2. Check that equipment and materials selected conform to instructions		
	PC3. Check that the equipment is in calibration		
	PC4. Ensure that the required resources are available and appropriate		
Obtain	PC5. Take onsite samples, either in open-cast or underground workings of the		
representative	mine. They visit different sections of the mine on a daily basis to take ore		
sample	samples. This is a specialized task, since the information obtained from the		
	ore is vital for planning.		
	PC6. Record the conditions under which the sample is taken		
	PC7. Identify and correctly label the sample		
	PC8. Record any deviations from set procedure or anticipated results and take the		
	appropriate action		
	PC9. Clean the sampling equipment and materials to be re-used appropriately		
	PC10. Dispose of other equipment and materials according to standard operating		
	procedures and approved codes of practice		
	PC11. Ensure that the sample taken meets sample plan procedure		
Maintain sample	PC12. Record all information about the sample accurately using appropriate		
integrity	documentation to permit traceability		
	PC13. Maintain the condition of the sample according to instructions		









PC14. Protect the sample from external sources of contamination PC15. Take the appropriate action in the event of abnormal occurrences affecting sample condition Knowledge and Understanding (K) The user/individual on the job needs to know and understand: (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS)) KA2. Standing orders in force at the mine. Safety in the vicinity of machinery (DGMS) KA3. Shot-firing and Safety regulations. How and where to take shelter KA4. Stunding orders in force at the mine. Safety in the vicinity of machinery (DGMS) KA5. Shot-firing and Safety regulations. How and where to take shelter KA6. Duttes of workmen (KA7. Provision of wages, working hours and accident compensation as per Mines act KA8. Knowledge of mining safety procedures KA9. Impact of violation of safely procedures KA9. Impact of violation of safely procedures (Knowledge of the company / organization and its processes) C. Technical Knowledge The user/individual on the job needs to know and understand: KC1. Control conditions and why it is important to maintain conditions KC2. Basic understanding of sampling plan KC3. Interpreting and using a sampling plan KC4. Methods to use for labelling samples KC5. Methods to use for handling, storing and disposing of materials KC6. Ensuring traceability of samples, and why this is important KC7. Maintain the condition of sampling of sampling) KC7. Maintain the conditions of sampling of sampling in transit and in storage	_ [MIN	V/ N0451	Prepare for & obtain representative sample		
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MIN/ N0451	Prepare for & obtain representative sample		
Skills (S) [Optional]			
A. Core Skills/	Core Skills		
Generic Skills	SA1. Able to practical and manual activities - able to cope with the physical		
	demands of the job - be physically and mentally fit		
	SA2. Willing to adhere to safety requirements		
	SA3. Able to pass a medical examination- have no medical impairment such as		
	colour blindness, deafness or epilepsy		
	SA4. Basic skills in mathematics and science		
	SA5. Be at least 18 years of age		
	Writing Skills		
	The user/ individual on the job needs to know and understand how to:		
	SA6. Note down observations (if any) related to sampling and share the same with		
	the supervisor		
	SA7. Write drawings to internal customers on the requirement of apparatus, hand		
	tools etc		
	Reading Skills		
The user/individual on the job needs to know and understand how to:			
	SA8. Read and interpret symbols and measurements instruments		
	SA9. Read equipment manuals and process documents to understand the		
	equipment and processes better		
	SA10. Read internal information drawings send by internal customers (other		
	functions within the organization)		
	Oral Communication (Listening and Speaking skills)		
	The user/individual on the job needs to know and understand how to:		
	SA11. Discuss task lists, schedules, and work-loads with co-workers		
	SA12. Effectively communicate with the team members		
	SA13. Question internal customers/ supervisor appropriately in order to understand		
	the nature of the problem and make a diagnosis		
	SA14. Attentively listen with full attention and comprehend the information given by		
	the speaker		
B. Professional Skills	Core Professional Skills		
	SB1. Concentration skills		









MIN/ N0451 Prepare for & obtain representative sample

- SB2. Critical thinking
- SB3. Ensuring that machines function properly by viewing various indicators
- SB4. Excellent attention to detail
- SB5. Properly handling machinery and systems

Plan and Organize

The user/individual on the job needs to know and understand how to:

- SB6. Plan and organize the work order and jobs received from the internal customers
- SB7. Organize all process/ equipment manuals so that sorting out information is fast
- SB8. Support the supervisor in scheduling tasks for helper grade

Judgment and Critical Thinking

The user/individual on the job needs to know and understand how to:

- SB9. Use common sense and make judgments during day to day basis
- SB10. Use reasoning skills to identify and resolve basic problems
- SB11. Use intuition to detect any potential problems which could arise during operations

Desire to learn and take initiatives

The user/individual on the job needs to know and understand how to:

- SB12. Follow instructions and work on areas of improvement identified
- SB13. Complete the assigned tasks with minimum supervision
- SB14. Complete the job defined by the supervisor within the timelines and quality norms

Problem Solving and Decision making

The user/individual on the job needs to know and understand how to:

- SB15. Detect problems in day to day tasks
- SB16. Support supervisor in using specific problem solving techniques and detailing out the problems
- SB17. Discuss possible solution with the supervisor for problem solving
- SB18. Make decisions in emergency conditions in case the supervisor is not available (as per the authority matrix defined by the organization)





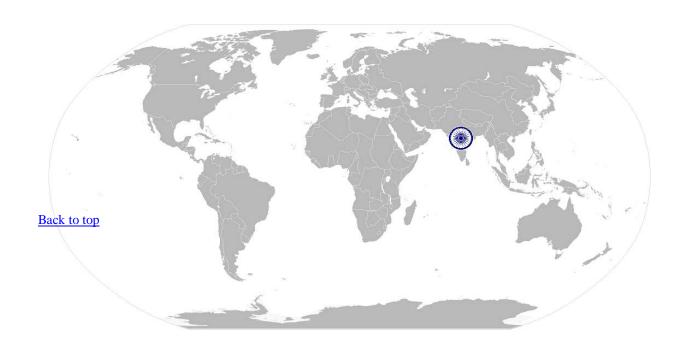




Prepare for & obtain representative sample

NOS Version Control

NOS Code	MIN/ N0451		
Credits(NSQF)	TBD	Version number	1.0
Industry	Mining	Drafted on	15/12/2014
Industry Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015
Occupation	Ore Processing	Next review date	24/03/2017

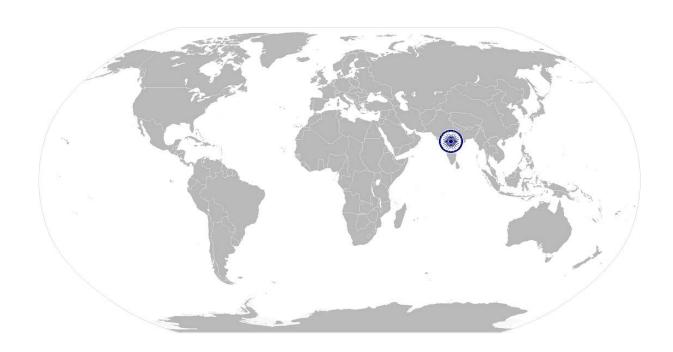








National Occupational Standard



Overview

Testing of sample obtained from the mine and provide the results to the management.









Unit Code MIN/ N0452			
Unit Title (Task)	Testing of sample obtained from the mine and provide the results to the management		
Description	This OS unit is about Testing of sample obtained from the mine and provide the		
	results to the management as per the required specifications and industry standard		
Scope	This unit/task covers the following:		
	Testing of sample obtained from the mine and provide the results to the		
	management.		
Performance Criteria (F	PC) w.r.t. the Scope		
Element	Performance Criteria		
Testing of sample	PC1. Follow proper methods of spot sampling to identify the ore concentration at a		
obtained from the	particular point or strip sampling at regular interval as per the requirement or		
mine and provide the	as directed by sampling in charge		
results to the	PC2. Prepare the representative sample by coning and quartering process, or		
management	through core cutting in metaliferrous mines by working with exploration driller		
	under the guidance of sampling in-charge (supervisor level person)		
	PC3. Pack the representative sample packets in sample bags, and tagging to		
	facilitate analysis at laboratories		
	PC4. Work in laboratories and determine, by means of chemical processes or other		
	analytical methods, the quantity and quality of elements, both organic and		
	inorganic compounds, and intermediate products in ores. They also process		
	materials and analyze base metals, non-metallic materials, concentrates,		
	effluents and air samples.		
	PC5. Use chemical processes such as fire or dry assay procedures and wet chemical		
	methods.		
	PC6. Collect and prepare the representative samples using appropriate methods.		
Knowledge and Understanding (K)			
A. Regulatory	The user/individual on the job needs to know and understand:		
context	KA1. Different types of mines and detail of the mine he is working in		
(knowledge of	KA2. Mine Organisation, time keeping, need for discipline and punctuality		
safety	KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and		
guidelines	Hygiene		
specified by	KA4. Standing orders in force at the mine. Safety in the vicinity of machinery		











	of sample obtained from the mine and provide the results to the management
Director General	KA5. Shot-firing and Safety regulations. How and where to take shelter
of Mine Safety	KA6. Duties of workmen
(DGMS))	KA7. Provision of wages, working hours and accident compensation as per
	Mines act
	KA8. Knowledge of mining safety procedures
	KA9. Impact of violation of safely procedures
B. Organizational	The user/individual on the job needs to know and understand:
Context	KB1. Relevant standard and procedures followed in the company
(Knowledge of	KB2. Different types of sampling requirements at the mine
the company /	KB3. Processes like Procurement, Store management, inventory management,
organization	quality management and key contact points for query resolution
and its	
processes)	
0.7.1.1	
C. Technical	The user/individual on the job needs to know and understand:
Knowledge	KC1. Methods of sampling (spot sampling or strip sampling)
	KC2. Technique coning and quartering process or through core cutting
	KC3. In-depth understanding of physical and chemical analysis, and relevant
	properties of the ore/mineral
	KC4. Recent development in analytical procedures in laboratory analysis and
	sampling
	KC5. Principles and procedures of scientific processes in lab management
	KC6. Knowledge and understanding of instruments used in laboratory
	KC7. Depth and type of cuts used for sampling
	KC8. Use of tools and process used in sampling (Base plate, spatula, brush, sample
	bags etc.)
Skills (S) [Optional]	
A. Core Skills/ Writing Skills	
Generic Skills	The user/ individual on the job needs to know and understand how to:
	SA1. Note down observations (if any) related to sampling and share the same with
	the supervisor
	SA2. Write drawings to internal customers on the requirement of apparatus, hand
	tools etc.









SA3. Write log book in terms of output quantity, set up parameters, machine setting parameters and loss details etc. SA4. Note measurements, equipment panel readings for various process parameters in the required reporting formats Reading Skills The user/individual on the job needs to know and understand how to: SA5. Read equipment manuals and process documents to understand the equipment and processes better SA6. Read instructions especially safety instructions especially symbols while using the equipment SA7. Read internal drawings send by internal customers (other functions within the organization) Oral Communication (Listening and Speaking skills) The user/individual on the job needs to know and understand how to: SA8. Discuss task lists, schedules, and work cloads with co-workers SA9. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis for the user/individual on the job needs to know and understand how to: SB1. Plan and Organize The user/individual on the job needs to know and understand how to: SB2. Plan and organize the design documents received from internal customers SB3. Organize all process/ equipment manuals so that sorting out information is fast SB4. Organize apparatus etc in an orderly manner at proper designated areas Analytical Thinking The user/individual on the job needs to know and understand how to: SB5. Finalize the optimum levels of physical parameters so that the output meets the prescribed standard Problem solving The user/individual on the job needs to know and understand how to: SB6. Think through the problem, evaluate the possible solution and suggest the	MIN/ N0452 Testing	of sample obtained from the mine and provide the results to the management		
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SB6. Think through the problem, evaluate the possible solution and suggest the		The user/individual on the job needs to know and understand how to:		
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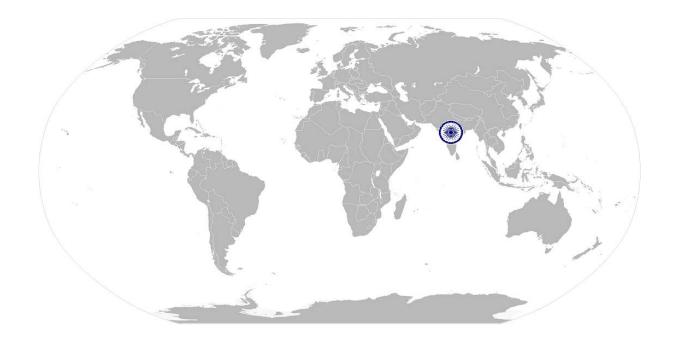






best possible solution to the problem

SB7. Identify immediate or temporary solutions to resolve delays











NOS Version Control

NOS Code	MIN/ N0452			
Credits(NSQF)	TBD	Version number	1.0	
Industry	Mining	Drafted on	15/12/2014	
Industry Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015	
Occupation	Ore Processing	Next review date	24/03/2017	



Back to top



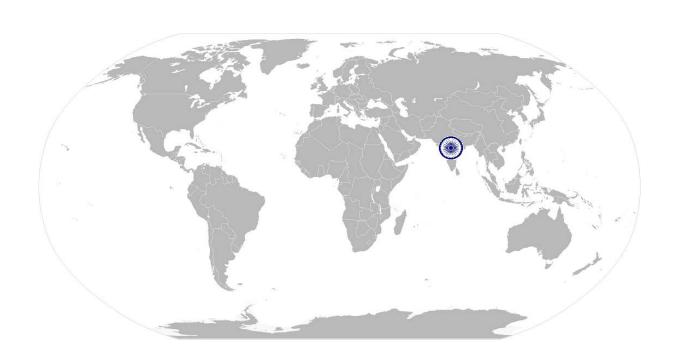






Health and Safety

National Occupational Standard



Overview

This unit is about health and safety measures critical in mines









Health and Safety

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Unit Code	MIN/N 0901
Unit Title (Task)	Health and Safety
Description	This unit is about health and safety measures critical in mines
Scope	This OS unit/task covers the following:
	Health and safety measures critical in mines
Performance Criteria (I	PC) w.r.t. the Scope
Element	Performance Criteria
Safety, Security and	To be competent, the user/individual on the job must be able to:
Administrative	PC1. Comply with occupational health and safety regulations adopted by the
	employer.
	PC2. Follow mining operations procedures with respect to materials handling
	and accidents
	PC3. Follow the correct safety steps in case of accident or major failure
	PC4. Comply with safety regulations and procedures in case of fire hazard.
	PC5. Operate various grades of fire extinguishers.
	PC6. Work responsibly and as safe and careful as possible so as not to put the
	health and safety of self or others at risk, including members of the public
	PC7. Perform storage and transport of hazardous materials compliant with
	safety guidelines prescribed by DGMS.
	PC8. Deal with misfires as per statutory requirement
	PC9. Identify characteristics of post-blast fumes and take necessary
	precautions.
	PC10. Wears safety gear such as hard hat, respiratory protection, eye
	protection, ear protection
	PC11. Follow the manufacturer's instructions for care and safe operation of
	·
	the equipment.
	1









MIN/ N 0901	Health and Safety				
Knowledge and Under	standing (K)				
A. Regulatory	The user/individual on the job needs to know and understand:				
context (knowledge	KA1. Benching in quarries, Dressing of overhangs, undercuts, Fencing				
of safety guidelines	KA2. First aid and Hygiene				
specified by Director	KA3. Code of traffic in specific areas of mine. Significance of fences				
General of Mine	KA4. Standing orders in force at the mine. Safety in the vicinity of machinery				
Safety (DGMS))	KA5. Shot-firing and Safety regulations. How and where to take shelter				
	KA6. Knowledge of mining safety procedures				
	KA7. Impact of violation of safety procedures				
	KA8. Locally prepared Emergency Preparedness / Disaster Management Plan.				
	KA9. Environmental impact of mining				
	KA10. Sources of dust, noise and vibration and measures to minimise				
	KA11. Hazardous material safety and security rules and regulations as prescribed				
	by DGMS				
	KA12. Code of practice for safe handling and transport of dangerous material				

and heavy equipment.





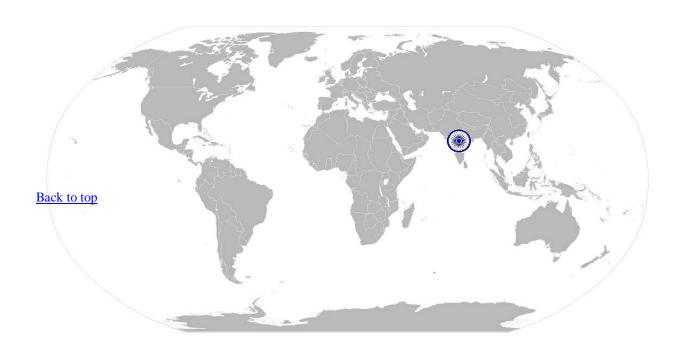




Health and Safety

NOS Version Control

NOS Code	MIN/N 0901			
Credits (NSQF)	TBD	Version number	1.0	
Sector	Mining	Drafted on	15/12/2014	
Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015	
Occupation	Ore Processing	Next review date	24/03/2017	









CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Sampler

Qualification Pack MIN/Q 0418

Sector Skill Council: Skill Council For Mining Sector

Guidelines for Assessment

Guidelines for Assessment

- 1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
- 2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
- 3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
- 4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
- 5. To pass the Qualification Pack, every trainee should score a minimum of 50% in every NOS
- 6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

			Marks Allocation		llocation
Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Theory	Skills Practical
1. MIN/ N0451 (Prepare for & obtain representative sample)	PC1. Ensure that the conditions for sampling are in accordance with laid down procedures	35	3	2	1
	PC2. Check that equipment and materials selected conform to instructions		2	1	1
	PC3. Check that the equipment is in calibration		2	1	1
	PC4. Ensure that the required resources are available and appropriate		2	1	1
	PC5. Take onsite samples, either in open-cast or underground workings of the mine. They visit different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning.		2	1	1







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	PC6. Record the conditions under which the sample is taken		2	1	1
	PC7. Identify and correctly label the sample		2	1	1
	PC8. Record any deviations from set procedure or anticipated results and take the appropriate action		3	2	1
	PC9. Clean the sampling equipment and materials to be re-used appropriately		3	2	1
	PC10. Dispose of other equipment and materials according to standard operating procedures and approved codes of practice		3	2	1
	PC11. Ensure that the sample taken meets sample plan procedure.		2	1	1
	PC12. Record all information about the sample accurately using appropriate documentation to permit traceability.		3	2	1
	PC13. Maintain the condition of the sample according to instructions.		2	1	1
	PC14. Protect the sample from external sources of contamination.		2	1	1
	PC15. Take the appropriate action in the event of abnormal occurrences affecting sample condition.		2	1	1
		Total	35	22	13
2. MIN/ N0452 (Testing of sample obtained from the mine and provide the results to the management)	PC1. Follow proper methods of spot sampling to identify the ore concentration at a particular point or strip sampling at regular interval as per the requirement or as directed by sampling in charge	35	6	3	3
	PC2. Prepare the representative sample by coning and quartering process, or through core cutting in metaliferrous mines by working with exploration driller under the guidance of sampling incharge (supervisor level person)		6	3	3





	PC3. Pack the representative sample packets in sample bags, and tagging to facilitate analysis at laboratories		6	3	3
	PC4. Work in laboratories and determine, by means of chemical processes or other analytical methods, the quantity and quality of elements, both organic and inorganic compounds, and intermediate products in ores. They also process materials and analyze base metals, non-metallic materials, concentrates, effluents and air samples.		6	3	3
	PC5. Use chemical processes such as fire or dry assay procedures and wet chemical methods.		6	3	3
	PC6. Collect and prepare the representative samples using appropriate methods.		5	3	2
		Total	35	18	17
3. MIN / N 0901 (Health and Safety)	PC1. Comply with occupational health and safety regulations adopted by the employer.	30	3	2	1
	PC2. Follow mining operations procedures with respect to materials handling and accidents		3	2	1
	PC3. Follow the correct safety steps in case of accident or major failure		2	1.5	0.5
	PC4. Comply with safety regulations and procedures in case of fire hazard.		2	1	1
	PC5. Operate various grades of fire extinguishers.		3	2	1
	PC6. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public		3	2	1
	PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		3	2	1







PC8. Deal with misfires as per statutory requirement		3	2	1
PC9. Identify characteristics of post-blast fumes and take necessary precautions.		3	2	1
PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection		3	2	1
PC11. Follow the manufacturer's instructions for care and safe operation of the equipment.		2	1.5	0.5
	Total	30	20	10