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Mine Ventilation Engineer

COMPETENCE PORTFOLIO

INSTRUCTIONS TO CANDIDATES



The document is divided into various sections and the candidate must complete every section.

Knowledge Section

The candidate is expected to develop a portfolio that demonstrates the knowledge that has been gained.

All the information contained within the knowledge section must be their own work.

The candidate may use manufactures and operational material or other open source material, but must provide a reference.

The candidate may use pictures, photographs etc. to illustrate any knowledge elements.

Practical Elements

The candidate uses this section to demonstrate that they can apply the knowledge in a training and operational environment.

The candidate may use photographs, video etc. to form a record for future assessment.

The candidate may also get instructors and workmates to write statements of how the practical elements were demonstrated.

The candidate must provide a reference to any material that they wish to use as evidence, and include within their portfolio.

Number of Occasions

YEAR 1	RESCUE WORKERS APPRENTICESHIP STANDARD																
SECTION 2	RISK ASSESSMENT AND NEAR MISS REPORTING										NAME						
Development Area			Knowl. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
						1	2	3	4	5			1	2	3	4	5

The number of knowledge examples is listed here

The number of practical examples is listed here

The number completed is tracked here

References are included and listed here

The sheets contained within this document form a record of progress, and a point for referencing.

The candidate must maintain these sheets to demonstrate progress, and these will be periodically reviewed by the assessor.

		L3 MINE VENTILATION ENGINEER																
SECTION 1		COMMON INDUCTION MODULES										NAME						
Development Area		Knowl. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References						
					1	2	3	4	5			1	2	3	4	5		
MPVG01 (Safe in the Underground Environment)																		
1.1	Include the certificates from the knowledge section.	1																
1.2	Include the underground assessment.			1														
MPVG02 (Conform to Efficient Work Process)																		
1.3	Include the certificates from the knowledge section.	1																
1.4	Include the underground assessment.			1														
Total Units		2	0	2	0													
Signed - Candidate		Signed - Assessor			Comments													

		L3 MINE VENTILATION ENGINEER												 MR TRAINING & RESCUE Safe in our hands			
SECTION 2		GENERAL LEGISLATION												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
The Mines Regulations 2014																	
2.1	Understands the requirements of Regulation 14, and how their organisation complies with the principles of this regulation.	MPQVG03	K3	1										Portfolio 2.1			
2.2	Outline how your organisation deals with the requirements of Regulation 21, when it comes to assessing the presence of explosive atmospheres.	MPQVG03	K3	1										Portfolio 2.2			
2.3	Identify how your organisation classifies and identifies the areas below ground.	MPQVG03	K3	1										Portfolio 2.3			
2.4	If applicable outline how your organisation deals with the requirements of Regulation 26, and the need to control ignition sources where the flammable gas may exceed 25% by volume of the lower explosive limits	MPQVG03	K3	1										Portfolio 2.4			
2.5	Outline how a mine is defined under Regulation 3.	PROMM18	K2	1										Portfolio 2.5			
2.6	Define how the Regulations are applied to mines under Regulation 4.	PROMM18	K2	1										Portfolio 2.6			
2.7	Outline the duties that the owner of a mine has under the Mines Regulations 2014.	PROMM18/MPQVG13	K3/ K4	1										Portfolio 2.7			
2.8	Outline the duties that the mine operator has under the Mines Regulations 2014.	PROMM18/MPQVG13	K3/ K4	1										Portfolio 2.8			
2.9	Outline the requirements of Regulation 10, and the creation of a management structure. Define how your own organisation complies with this requirement.	PROMM18/MPQVG13	K3/ K4	1										Portfolio 2.9			
2.10	Outline what Part 3 of the Mines Regulations 2014 identify as the major mining hazards.	PROMM18	K17	1										Portfolio 2.10			
2.11	Outline the requirements of Regulation 11 in relation to the appointment of a person(s) to carry out a role or task at a mine.	PROMM18	K5	1										Portfolio 2.11			
2.12	Outline the requirements of Regulation 12 in relation to the provision of information, rules, and schemes.	PROMM18	K9	1										Portfolio 2.12			
2.13	Define the requirements of the regulations when it comes to the control of respirable dust.	PROMM18	K1	1										Portfolio 2.13			
2.14	Outline the requirements of the Mines Regulations to ensure that equipment is installed, commissioned and periodically inspected, examined and maintained.	PROMM18	K11	1										Portfolio 2.14			
2.15	Outline the requirements of the Mines Regulations when it comes to having arrangements for self escape and mines rescue in place.	PROMM18	K12	1										Portfolio 2.15			
Health and Safety at Work Act																	
2.16	Outline what the Act says in relation to persons taking personal responsibility for safety.	PROMM18	K5	1										Portfolio 2.16			
2.17	Outline the basic duties of the employer.	PROMM18	K5	1										Portfolio 2.17			
Total Units				17	0	0	0										

Signed - Candidate

Signed - Assessor

Comments

		L3 MINE VENTILATION ENGINEER																	
SECTION 2		GENERAL LEGISLATION (2)												NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References					
							1	2	3	4	5			1	2	3	4		
Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002																			
2.18	Understands how the DSEAR regulations are applied to underground mining operations and the types of assessment that may be required.	PROMM18	K1	1										Portfolio 2.18					
2.19	The types of mine environment that the DSEAR regulations would be applicable to.	PROMM18	K1	1										Portfolio 2.19					
Control of Substances Hazardous to Health Regulations 2002																			
2.20	Briefly outline the regulations in relation to providing information on substances being used within mines.	PROMM18	K1	1										Portfolio 2.19					
2.21	Briefly outline the type of information that would be found on a data sheet.	PROMM18	K1	1										Portfolio 2.20					
2.22	Summarise the requirements of COSHH when it comes to controlling the limits for respirable silica.	PROMM18	K1	1										Portfolio 2.21					
The Management of Health and Safety at Work Regulations 1999																			
2.23	Provide a brief overview of what is required by the regulations in relation to the production of risk assessments.	PROMM18/MPQVG13	K9/ K8	1										Portfolio 2.22					
2.24	Outline the hierarchy of controls that are listed in the regulations and how this hierarchy should be applied when completing a risk assessment.	PROMM18/MPQVG13	K9/ K8	1										Portfolio 2.23					
2.25	Provide a description of how the information from a risk assessment is utilised to develop safe systems of work, and how these influence the adequacy of information, instruction, and training.	PROMM18/MPQVG13	K9/ K8	1										Portfolio 2.24					
Personal Protective Equipment Regulations																			
2.26	Briefly outline the minimum requirements for the carrying and use of PPE in your mine.	PROMM18	K13	1										Portfolio 2.25					
2.27	Outline your organisations requirements when it comes to the supply and use of RPE.	PROMM18	K13	1										Portfolio 2.26					
Total Units				10	0	0	0												
Signed - Candidate				Signed - Assessor				Comments											

		L3 MINE VENTILATION ENGINEER																
SECTION 3		VENTILATION SPECIFIC LEGISLATION													NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Mines Regulations 2014																		
3.1	Outline the key requirements of Regulation 43.	MPQVG03/ MPQVG04/ MPQVG13	K3/ K15/ K7	1										Portfolio 3.1				
3.2	Outline the procedures that your organisation uses to ensure that there is suitable ventilation in to the mine.	MPQVG03/ MPQVG04/ MPQVG13	K3/ K15/ K7	1										Portfolio 3.2				
3.3	Outline how your organisation monitors the ventilation system for the mine.	MPQVG03/ MPQVG13	K3/ K7	1										Portfolio 3.3				
3.4	Outline how the information relating to ventilation and ventilation systems is recorded on to plans (use examples of plans to illustrate the response).	MPQVG03/ MPQVG13	K3/ K7	1										Portfolio 3.4				
3.5	Define the types of measurements that are taken to ensure that the oxygen levels in the mine remain above the statutory limits.	MPQVG03/ MPQVG04/ MPQVG13	K3/ K15/ K7	1										Portfolio 3.5				
3.6	Outline the requirements of the regulations when it comes to heat and humidity, and any levels set by the organisation and how those levels are monitored.	MPQVG03/ MPQVG04/ MPQVG13	K3/ K15/ K7	1										Portfolio 3.6				
Control of Substances Hazardous to Health Regulation (and associated ACOPs and Guidance)																		
3.7	From the COSHH regulations outline the occupational limits when considering respirable silica.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.7				
3.8	Define how your organisation monitors exposure to respirable crystalline silica.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.8				
3.9	Outline the hierarchy of actions that are required by the regulation (and your organisation) should the occupational exposure levels be exceeded.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.9				
3.10	Outline what EH40 says in relation to various gasses that may be found to be present in the underground environment.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.10				
3.11	Describe the organisational procedures in place for monitoring the levels of flammable, poisonous, noxious gasses.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.11				
3.12	Outline the alarm/ action levels for poisonous/ noxious or flammable gasses, and the actions that must be taken if the defined levels are exceeded.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.12				
3.13	Outline the requirements for the control of diesel exhaust emissions in the workplace under HSG187.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.13				
3.14	Outline how your organisation monitors exposure to diesel exhaust emissions.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.14				
3.15	Outline the controls that your organisation has in place to limit exposure to diesel exhaust emissions.	MPQVG03/ MPQVG13	K3/ K7/ K15	1										Portfolio 3.15				
Total Units				15	0	0	0											

Signed - Candidate

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Comments

Signed - Candidate

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Signed - Assessor

Comments

	L3 MINE VENTILATION ENGINEER																	
SECTION 3	VENTILATION SPECIFIC LEGISLATION (2)													NAME				
Development Area			Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
								1	2	3	4	5			1	2	3	4
Reporting of Injuries, Disease, and Dangerous Occurrence Regulations (RIDDOR)																		
3.16	Outline the requirements of RIDDOR when it comes to the stoppage of a main or booster fan.		MPQVG04	K15	1											Portfolio 3.16		
Total Units					1	0	0	0										
Signed - Candidate			Signed - Assessor			Comments												

		L3 MINE VENTILATION ENGINEER																
SECTION 4		HAZARD AND RISK (1)											NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
General Definitions																		
4.1	Define what is meant by the term hazard.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.1				
4.2	Define what is meant by the term risk.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.2				
4.3	Define what is meant by the term accident.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.3				
4.4	Define what is meant by the term danger.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.4				
4.5	Define what is meant by the term accident rate.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.5				
4.6	Define what is meant by the term frequency.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.6				
4.7	Define what is meant by the term severity.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.7				
4.8	Define what is meant by the term environmental aspect.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.8				
4.9	Define what is meant by the term environmental incident.	PROMM18/MPQVG13	K11/ K9	1										Portfolio 4.9				
Major Mining Hazards																		
4.10	Identify the types of major hazards that may exist within the range of underground mining operations.	PROMM18/MPQVG13	K17/ K24/ K16	1										Portfolio 4.10				
4.11	Identify how the type of mining operations might introduce major mining hazards or exaggerate the hazards that are already present.	PROMM18/MPQVG13	K17/ K24/ K16	1										Portfolio 4.11				
4.12	Identify the types of major mining hazards that are typically present at the mine in which you work.	PROMM18/MPQVG13	K17/ K24/ K16	1										Portfolio 4.12				
4.13	Describe how the mining operation/ mining methods used at the mine at which you work may influence the development of major mining hazards.	PROMM18/MPQVG13	K17/ K24/ K16	1										Portfolio 4.13				
Total Units				13	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 4		HAZARD AND RISK (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Potential Injuries Associated with Electrical Shock																		
4.14	Outline the potential injuries that are associated with electrical shock.	PROMM18	K10	1										Portfolio 4.14				
Geological Features that May Affect the Safe Operation																		
4.15	Identify the potential types of geological features that may be present in the mine at which you normally work.	PROMM18	K19	1										Portfolio 4.15				
4.16	Describe how the mine identifies the presence of such features to limit the safety and operational impacts.	PROMM18	K19	1										Portfolio 4.16				
4.17	Identify the organisational procedures at your mine to monitor the stability of ground conditions.	PROMM18	K20	1										Portfolio 4.17				
4.18	Identify various methods used by different mine operators which are used to detect deterioration in ground conditions.	PROMM18	K20	1										Portfolio 4.18				
4.19	Within your own organisation, identify any limits in relation to geological changes, and the actions to be taken as these limits are approached/ exceeded.	PROMM18	K20	1										Portfolio 4.19				
4.20	Describe the implications of failing to correctly identify and react to changing geological conditions.	PROMM18	K20	1										Portfolio 4.20				
Conditions that may Lead to a Hazardous or Unsafe Condition																		
4.21	Where major hazards are identified, identify the procedures within your organisation to ensure that the escalation potential is reduced to as low as possible.	PROMM18	K24	1										Portfolio 4.21				
Total Units				8	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																	
SECTION 5		MINE EMERGENCY RESPONSE												NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References					
							1	2	3	4	5			1	2	3	4		
Duties/ Powers and Responsibilities																			
5.1	Within your organisation outline the role of the Ventilation Measurer under your emergency response plans.	MPQVG13	K10	1											Portfolio 5.1				
5.2	Within your organisation outline the role of the Ventilation Engineer under your emergency response plans.	MPQVG13	K10	1											Portfolio 5.2				
Emergency Arrangements																			
5.3	Describe the arrangements that are in place within your organisation for self escape.	MPQVG13	K12	1											Portfolio 5.3				
5.4	Describe the arrangements that are in place within your organisation should an underground rescue be required.	MPQVG13	K12	1											Portfolio 5.4				
5.5	Outline how your organisation would initiate a mines rescue emergency.	MPQVG13	K12	1											Portfolio 5.5				
5.6	Define the process for reviewing and updating any emergency response plans.	MPQVG13	K12	1											Portfolio 5.6				
5.7	Define how your organisation test the effectiveness of the emergency response plans.	MPQVG13	K12	1											Portfolio 5.7				
Control of Emergency Situations																			
5.8	Outline the procedures that are in place for managing an emergency situation.	MPQVG13	K12	1											Portfolio 5.8				
5.9	Define the various roles and their responsibilities within the emergency response arrangements.	MPQVG13	K12	1											Portfolio 5.9				
Total Units				9	0	0	0												
Signed - Candidate				Signed - Assessor				Comments											

		L3 MINE VENTILATION ENGINEER																
SECTION 5		MINE EMERGENCY RESPONSE (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Types of Emergencies																		
5.10	Using your emergency response plans, outline the types of emergency situation that have been considered within your organisation.	MPQVG13	K26	1											Portfolio 5.10			
Other Arrangements																		
5.11	Outline what type of arrangements your organisation has to deal with first aid emergencies and situations (on site and within the mine environment).	MPQVG13	K32	1											Portfolio 5.11			
5.12	What arrangements does your organisation have on site and underground to ensure that the general welfare requirements of the team are met.	MPQVG13	K32	1											Portfolio 5.12			
5.13	Briefly outline what your organisation does to take care of the mental wellbeing of its team.	MPQVG13	K32	1											Portfolio 5.13			
Requirements for Ventilation in Emergencies																		
5.14	Outline emergency situations where it may be beneficial to reduce the mine ventilation.	MPQVG13	K69	1											Portfolio 5.14			
5.15	Outline emergency situations where it may be beneficial to increase the mine ventilation.	MPQVG13	K69	1											Portfolio 5.15			
5.16	Within you organisation who has the authority to authorise changes to a ventilation during an emergency situation.	MPQVG13	K69	1											Portfolio 5.16			
5.17	Describe why in an emergency situation ventilation changes are not made without the request being reviewed and authorised.	MPQVG13	K69	1											Portfolio 5.17			
Practical Requirements																		
P5.1	Take part and support a mock rescue at your place of work.	New Section																
Total Units				8	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER												M R S TRAINING & RESCUE Safe in our hands				
SECTION 6		MEASURING MINE VENTILATION												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Ventilation Descriptions																		
6.1	What is meant by the term quantity.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.1			
6.2	What is meant by the term flow.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.2			
6.3	What is meant by the term pressure.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.3			
6.4	What is meant by the term resistance.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.4			
6.5	What is meant by the term volume.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.5			
6.6	What is meant by the term cross sectional area.	PROMM18/MPQVG13	K30/ K29	1											Portfolio 6.6			
6.7	What is meant by the term velocity.	PROMM18	K30	1											Portfolio 6.7			
Ventilation Units																		
6.8	Identify the metric units used to define the quantity of air flowing in a roadway.	PROMM18	K30	1											Portfolio 6.8			
6.9	Identify the units to describe the pressure drop in a mine roadway or ventilation duct.	PROMM18	K30	1											Portfolio 6.9			
6.10	Identify the units that are used to describe the resistance of a mine roadway or ventilation duct.	PROMM18	K30	1											Portfolio 6.10			
6.11	Identify the metric units for the measurement of cross sectional area.	PROMM18	K30	1											Portfolio 6.11			
6.12	Identify the metric units used to describe air velocity.	PROMM18	K30	1											Portfolio 6.12			
Total Units				12	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 6		MEASURING MINE VENTILATION (2)												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Purpose of Mine Ventilation																	
6.13	Describe why mines install ventilation systems.	MPQVG03	K3	1										Portfolio 6.13			
6.14	Outline the types of hazards that a mine ventilation system are designed to control.	MPQVG03	K3	1										Portfolio 6.14			
6.15	Outline the various types of mine ventilation systems that are in use at your mine.	MPQVG03	K3	1										Portfolio 6.15			
6.16	Outline the reasons for carrying out ventilation measurements and ventilation surveys.	MPQVG03	K3	1										Portfolio 6.16			
Problems Impacting Mine Ventilation																	
6.17	Outline the types of issues that may impact/ disrupt the main mine ventilation systems.	MPQVG03/ MPQVG04	K8/ K6	1										Portfolio 6.17			
6.18	Outline the types of issues that may impact/ disrupt auxiliary ventilation systems.	MPQVG03	K8	1										Portfolio 6.18			
Taking Ventilation Measurements																	
6.19	Define the methods used at your mine to check airflow readings.	MPQVG03/ MPQVG04/ MPQVG13	K9/ K12/ K60	1										Portfolio 6.19			
6.20	Outline alternative methods that may be used to check airflow readings in a mine.	MPQVG03	K9	1										Portfolio 6.20			
6.21	Describe the types of instruments that are used to take airflow readings, and how calibration is checked prior to use.	MPQVG03/ MPQVG04/ MPQVG13	K9/ K11/ K67	1										Portfolio 6.21			
6.22	Outline the method for taking air samples at your mine.	MPQVG03	K9	1										Portfolio 6.22			
6.23	Outline how general body environmental readings are taken at your mine.	MPQVG03	K9	1										Portfolio 6.23			
6.24	Describe the process for calibrating and checking the instruments that are used to take general body mine environmental readings.	MPQVG03	K9	1										Portfolio 6.24			
Total Units				12	0	0	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER															
SECTION 6		MEASURING MINE VENTILATION (3)												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Taking Ventilation Measurements (continued)																	
6.25	Define how barometric pressure readings are taken and recorded at your mine.	MPQVG03/ PROMM18	K9/ K21	1										Portfolio 6.25			
6.26	Outline the process used at your mine for determining pressure drops (roadway resistance).	MPQVG03/ MPQVG04	K9/ K12	1										Portfolio 6.26			
6.27	Describe the instruments that are used as part of a pressure survey, and how these are checked for calibration prior to use.	MPQVG03	K9	1										Portfolio 6.27			
6.28	Describe how pressure drops in ventilation dusting are measured.	MPQVG03	K9	1										Portfolio 6.28			
6.29	Describe how air velocity readings can be converted to give a quantity reading.	MPQVG04	K12	1										Portfolio 6.29			
6.30	Describe the impact of varying temperatures on the surface, and how this can change the ventilation system in the mine.	PROMM18	K21	1										Portfolio 6.30			
Dealing with Faulty Equipment																	
6.31	Outline the organisational procedure for dealing with measuring equipment that is out of calibration or has become faulty.	MPQVG03/ MPQVG13	K10/ K67	1										Portfolio 6.31			
Sampling Points and Mine Layout																	
6.32	Describe the layout of your mine and how that layout impacts the route that the ventilation takes.	MPQVG03	K11	1										Portfolio 6.32			
6.33	Briefly describe how you could improve the ventilation in the mine and the changes that would be required to the mine layout to achieve those improvements.	MPQVG03	K11	1										Portfolio 6.33			
6.34	Considering the layout of your mine, outline the criteria that is considered for positioning sampling points to ensure that the critical points are all sampled.	MPQVG03/ MPQVG04/ MPQVG13	K9/ K12/ K60	1										Portfolio 6.34			
6.35	Outline how the sample points are identified at your mine.	MPQVG03	K11	1										Portfolio 6.35			
6.36	Outline how information taken at each of those sample points is recoded.	MPQVG03/ MPQVG04/ MPQVG13	K9/ K12/ K60	1										Portfolio 6.36			
6.37	Look at other mine layouts and applying your organistions criteria, outline the critical sample points (you may use plans and drawings to illustrate the answers).	MPQVG03	K11	1										Portfolio 6.37			
Total Units				13	0	0	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 6		MEASURING MINE VENTILATION (4)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Completing Mine Ventilation Calculations																		
6.38	For the measurement and calculation of pressure define/ provide the relationship between pressure and head of fluid.	MPQVG03	K13	1										Portfolio 6.38				
6.39	For the measurement and calculation of pressure define/ provide the relationships between static pressure/ velocity pressure and total pressure, and how these would be determined within a roadway and ventilation duct.	MPQVG03/MPQVG04/MPQVG13	K9/ K12/ K60	1										Portfolio 6.39				
6.40	For the measurement and calculation of pressure define/ provide the means to calculate the pressure required to impart velocity to air.	MPQVG03	K13	1										Portfolio 6.40				
6.41	For the measurement and calculation of pressure define how changes in the cross sectional area of a roadway may vary the pressure.	MPQVG03	K13	1										Portfolio 6.41				
6.42	Define Atkinsons equations, and where it would be used.	MPQVG03	K13	1										Portfolio 6.42				
6.43	For measurement and calculation of mine airflows, define the units used for airway quantity flow.	MPQVG03	K13	1										Portfolio 6.43				
6.44	For measurement and calculation of mine airflows, describe how airflows at splits are measured/ calculated.	MPQVG03	K13	1										Portfolio 6.44				
6.45	Describe how regulators are used to influence the airflows at various splits in the mine.	MPQVG03	K13	1										Portfolio 6.45				
6.46	Outline how you would calculate the resistance of a single roadway.	MPQVG03	K13	1										Portfolio 6.46				
6.47	Outline how you would calculate the resistance of multiple roadways that form the mine ventilation network.	MPQVG03	K13	1										Portfolio 6.47				
6.48	Outline how you would determine the density of humid air, and the impact that humid air has on mine ventilation.	MPQVG03	K13	1										Portfolio 6.48				
6.49	Outline what is meant by the term relative humidity.	MPQVG03	K13	1										Portfolio 6.49				
6.50	Describe what is meant by the term apparent specific humidity (also called moisture content).	MPQVG03/MPQVG13	K13/ K60	1										Portfolio 6.50				
6.51	Describe how you would calculate the resistance of a mine roadway given that you have the pressure and quantity readings.	MPQVG03/MPQVG13	K13/ K60	1										Portfolio 6.51				
6.52	Describe how you would take barometric pressure readings in a traverse barometric survey.	MPQVG03/MPQVG13	K13/ K60	1										Portfolio 6.52				
6.53	Outline the importance of taking ventilation pressure readings on a periodic basis and what the surveys would indicate.	MPQVG04	K17	1										Portfolio 6.53				
6.54	Describe why it is important to consider trends rather than an individual measurement when carrying out mine ventilation analysis.	MPQVG04	K18	1										Portfolio 6.54				
Total Units				17	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 6		MEASURING MINE VENTILATION (5)											NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Practical Elements																	
P6.1	Select appropriate equipment to carry out ventilation measurements.	MPQVG03	P1			4											
P6.2	Check the operation of the sampling equipment that has been selected.	MPQVG03	P2			4											
P6.3	Complete a pressure/ quantity survey in a section of the mine.	MPQVG03	P3			3											
P6.4	Complete a pressure survey along a section of ventilation ducting being used on a force ventilation fan.	MPQVG03	P3			3											
P6.5	Complete a pressure survey along a section of ventilation ducting being used as part of an exhaust ventilation system.	MPQVG03	P3			3											
P6.6	Using the information collected, calculate the pressure drops across various sections of roadway.	MPQVG03	P4			3											
P6.7	Using the information collected, calculate the resistance of the mine roadways.	MPQVG03	P4			3											
P6.8	Evaluate the effect on the ventilation quantities at various points around the mine if the ventilation pressure was increased.	MPQVG03	P4			3											
P6.9	Evaluate the effect on the pressure and ventilation quantities if the resistance of the mine were to be reduced, you should consider and calculate a means by which this could be achieved.	MPQVG03	P4			3											
P6.10	Calculate the effect on the ventilation quantity at the face of a development roadway if the pressure delivered by the force ventilation fan were to be increased.	MPQVG03	P4			3											
P6.11	Using a fan curve, evaluate the performance of the fan giving the information recorded in P6.4 and 6.5 are used.	MPQVG03	P4			3											
P6.12	Create a report based on the readings and calculations that have been taken, use the calculations to evaluate the effectiveness of any recommendations.	MPQVG03	P4			4											
Total Units				0	0	39	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 7		RECORDING RESULTS											NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Acceptable Range of Results																		
7.1	For your organisation define the acceptable tolerances when carrying out a pressure survey.	MPQVG03/MPQVG04	K14/ K20	1										Portfolio 7.1				
7.2	For your organisation define the acceptable tolerances when carrying out a airflow survey.	MPQVG03/MPQVG04	K14/ K20	1										Portfolio 7.2				
7.3	For your organisation define the acceptable tolerances when carrying out a resistance survey.	MPQVG03/MPQVG04	K14/ K20	1										Portfolio 7.3				
7.4	Outline the importance of accuracy when carrying out ventilation readings or calculations.	MPQVG03/MPQVG04	K14/ K20	1										Portfolio 7.4				
7.5	Define the implications if the measurements and calculations are inaccurate.	MPQVG03/MPQVG04	K15/ K21	1										Portfolio 7.5				
How to Record and Report Results																		
7.6	Outline how your organisation records the results of any ventilation measurements or calculations.	MPQVG03/MPQVG04/PROMM18	K16/ K23/ K14	1										Portfolio 7.6				
7.7	Outline where the information is stored, and for how long.	MPQVG03/MPQVG04/PROMM18	K16/ K23/ K14	1										Portfolio 7.7				
7.8	For your organisation outline the frequency of sampling that takes place.	MPQVG03/MPQVG04/PROMM18	K16/ K23/ K14	1										Portfolio 7.8				
7.9	For your organisation outline, what may cause the frequency of sampling to be varied.	MPQVG03/MPQVG04/PROMM18	K16/ K23/ K14	1										Portfolio 7.9				
Actions if the Results are Outside the Acceptable Range																		
7.10	Outline the actions that would be required by your organistions should the results of any sampling or testing fall outside of the acceptable range.	MPQVG03/MPQVG04/MPQVG13	K17/ K22/ K61	1										Portfolio 7.10				
7.11	Describe the escalation procedures that would be used to bring matters relating to ineffective ventilation to those with operational responsibilities.	PROMM18	K37	1										Portfolio 7.11				
Total Units				11	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

	L3 MINE VENTILATION ENGINEER																	
SECTION 7	RECORDING RESULTS (2)													NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Creation of a Sampling Plan																		
7.12	Describe the critical points that need to be sampled within your operation, and why they are critical to ensuring a suitable ventilation system is being maintained.	MPQVG04	K16	1										Portfolio 7.12				
7.13	Outline some of the things that would be identified as part of a sampling plan (you should consider location, frequency, various types of tests).	MPQVG04	K16	1										Portfolio 7.13				
7.14	Describe how the information required in the sampling plan would be recorded and presented.	MPQVG04	K16	1										Portfolio 7.14				
Understanding and Defining Safe Operational Limits																		
7.15	Outline the minimum organisational standard for the quantities of oxygen.	MPQVG13	K28	1										Portfolio 7.15				
7.16	Outline the maximum organisational/ operational limits for explosive gasses.	MPQVG13	K28	1										Portfolio 7.16				
7.17	Outline the maximum organisational/ operational limits for noxious/ toxic/ poisonous gasses.	MPQVG13	K28	1										Portfolio 7.17				
7.18	Outline the maximum levels of respirable silica dust under your organisations operating procedures.	MPQVG13	K28	1										Portfolio 7.18				
7.19	Outline the maximum levels of inhalable dust under your organisation's operating procedures.	MPQVG13	K28	1										Portfolio 7.19				
7.20	Outline the maximum levels of diesel exhaust emissions under your organisation's operating procedures.	MPQVG13	K28	1										Portfolio 7.20				
7.21	Where your organisation exceeds the safe operational limits defined, outline the process that must be followed in order to correct the current situation and improve the controls to avoid repeat issues.	MPQVG13	K28	1										Portfolio 7.21				
Recording Information (Remotely)																		
7.22	Outline how information from a fixed monitoring system is recorded remotely.	New Section (Environmental Monitoring)	K7	1										Portfolio 7.22				
7.23	Outline how the information and trends recorded remotely may be useful to the mine.	New Section (Environmental Monitoring)	K7	1										Portfolio 7.23				
Total Units				12	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 7		RECORDING RESULTS (3)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Practical Elements																		
P7.1	Create a suitable sampling plan that covers at least one area of the mine.	MPQVG03	P5			4												
P7.2	Record the results from the sampling plan in to your organisation's documents.	MPQVG03/ MPQG04	P5/ P8			4												
Total Units				0	0	8	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																	
SECTION 8		MINE GASSES												NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References					
							1	2	3	4	5			1	2	3	4		
Mine Gasses (General)																			
8.1	Define the constituents of 'normal' air at the surface of the mine.	MPQVG03	K4	1											Portfolio 8.1				
8.2	Outline the types of mine gasses and their percentages by volume under normal circumstances at your mine.	MPQVG03/ MPQVG04	K4/ K5/ K7/ K1	1											Portfolio 8.2				
8.3	Describe the typical gasses (and damp) that can be found underground in mines.	MPQVG03	K5/ K7	1											Portfolio 8.3				
8.4	Outline how atmospheric pressure (barometric pressure) may affect the gasses that are present within the mine.	MPQVG03	K5/ K7	1											Portfolio 8.4				
Mine Gasses (Risks)																			
8.5	For the gasses that are normally present (or may become present) within the mine environment, outline the physiological effects on people.	MPQVG03/ MPQVG0 / PROMM18	K6/ K7/ K3/ K22	1											Portfolio 8.5				
8.6	Outline any limits that your organisation places on operations when various levels of gas are present.	MPQVG03/ MPQVG04/ PROMM18	K5/ K7/ K4/ K22	1											Portfolio 8.6				
8.7	For the gasses that are normally present (or may become present) within the mine environment, outline other hazards that they could introduce.	MPQVG03/ MPQVG04/ PROMM18	K6/ K7/ K4/ K22	1											Portfolio 8.7				
The Gas Laws																			
8.8	Define the principles of Boyles Law and how this is applied to mine ventilation.	MPQVG04/ MPQVG13	K2/ K56	1											Portfolio 8.8				
8.9	Define the principles of Charles Law and how this is applied to mine ventilation.	MPQVG04/ MPQVG13	K2/ K56	1											Portfolio 8.9				
8.10	Define the principles of the combined gas law and how it applies to mine ventilation.	MPQVG04/ MPQVG13	K2/ K56	1											Portfolio 8.10				
8.11	Outline the principle of Bernoulli's theorem and how it applies to mine ventilation.	MPQVG04/ MPQVG13	K2/ K56	1											Portfolio 8.11				
				1											Portfolio 4.18				
Total Units				12	0	0	0												
Signed - Candidate				Signed - Assessor				Comments											

		L3 MINE VENTILATION ENGINEER												M R S TRAINING & RESCUE Safe in our hands				
SECTION 8		MINE GASSES (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Fixed Environmental Monitoring																		
8.12	Identify the types of fixed gas monitoring systems that are used in your mine.	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.12				
8.13	Identify how fixed gas monitoring systems are positioned in your mine.	MPQVG03/ MPQVG04/ PROMM18/ New	K5/ K11/ K12/ K25/ K2	1										Portfolio 8.13				
8.14	Identify the limitations of the fixed monitoring systems that are installed at your mine (upper and lower levels of detection).	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.14				
8.15	Outline the trigger points for warning and alarm levels at your mine, and the actions that would be taken on a warning and alarm.	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.15				
8.16	Outline how these fixed monitors are tested and calibrated, and the frequency of testing at your mine.	MPQVG03/ MPQVG04/ PROMM18/ New	K5/ K11/ K12/ K25/ K3	1										Portfolio 8.16				
8.17	Identify where the fixed monitoring systems alarm to within your organisation.	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.17				
8.18	Identify the situations where fixed monitoring systems are used in your organisation to provide automated safety interlocks, what are the trigger points that have been set?	MPQVG03/ MPQVG04/ PROMM18/ New Section	K5/ K11/ K12/ K25/ K5	1										Portfolio 8.18				
8.19	Describe how the information is recorded and how it can be used to generate trends.	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.19				
8.20	Identify the advantages of having fixed monitoring systems installed.	New Section (Environmental Monitoring)	K1	1										Portfolio 8.20				
8.21	Outline any limitations of the fixed monitoring systems installed within your organisation (give thoughts to limits, location, operations).	New Section (Environmental Monitoring)	K1	1										Portfolio 8.21				
8.22	Define your organisation's standard requirements for determining the location of fixed monitoring systems/ instruments.	New Section (Environmental Monitoring)	K2	1										Portfolio 8.22				
8.23	Outline how your organisation manages changes to the fixed monitoring system as the mine layout changes.	New Section (Environmental Monitoring)	K2	1										Portfolio 8.23				
Handheld/ Personal Gas Monitoring																		
8.24	Identify the types of hand held/ personal gas monitoring systems that are used in your mine.	MPQVG03/ MPQVG04/ PROMM18/ New	K5/ K11/ K12/ K25/ K8	1										Portfolio 8.24				
8.25	Identify the requirements in your organistions to have handheld/ personal gas monitors available to support operations.	MPQVG03/ MPQVG04/ PROMM18/ New	K5/ K11/ K12/ K25/ K8	1										Portfolio 8.25				
8.26	Identify the limitations of the handheld/ personal monitoring systems that are used at your mine (upper and lower levels of detection).	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.26				
8.27	Outline the trigger points for warning and alarm levels at your mine, and the actions that would be taken on a warning and alarm.	MPQVG03/ MPQVG04/ PROMM18	K5/ K11/ K12/ K25	1										Portfolio 8.27				
Total Units				16	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																	
SECTION 8		MINE GASSES (3)												NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References					
							1	2	3	4	5			1	2	3	4		
Failure of an Environmental Monitoring System																			
8.28	Identify the actions to be taken should a fixed environmental monitoring system fail, and information is no longer available locally or where applicable to the surface (or other remote monitoring position).	MPQG04/ New Section	K14/ K6	1											Portfolio 8.28				
8.29	Identify the organisational procedures should a personal gas monitor fail, and information and alarms are no longer available.	MPQG04	K14	1											Portfolio 8.29				
8.30	Outline any restrictions that are placed on the operation in the event of an environmental monitor failure.	New Section (Environmental Monitoring)	K6	1											Portfolio 8.30				
8.31	Describe any situations in which it would be permissible within your organisation to override a faulty monitor, and allow operations to continue. What additional controls would have to be implemented.	New Section (Environmental Monitoring)	K6	1											Portfolio 8.31				
The Incidence and Effects of Sensor Cross Sensitivity																			
8.32	Identify substances that may be imparted in to the mine that might affect the sensors in fixed and handheld instruments.	MPQVG13/ New Section	K68/ K1	1											Portfolio 8.32				
8.33	Outline naturally occurring features that may provide cross sensitivity and false reading on fixed and handheld instruments.	MPQVG13/ New Section	K68/ K1	1											Portfolio 8.33				
8.34	Define other gasses that may be present in the mine environment, that may give an issue with the reading from a fixed or handheld instrument.	MPQVG13	K68/ K1	1											Portfolio 8.34				
Practical Elements																			
P8.1	Position the equipment and take general body gas samples.	MPQVG03	P1			4													
P8.2	Check that the equipment selected is functioning and correctly calibrated.	MPQVG03	P2			4													
P8.3	Take general body gas samples using suitable handheld or other monitoring devices.	MPQVG03	P3			4													
P8.4	Use quantity readings to calculate approximate quantities of gas being released.	MPQVG03	P3			4													
P8.5	Create a suitable sampling plan.	MPQVG03	P5			4													
P8.6	Record the results.	MPQVG03	P5			4													
Total Units				7	0	24	0												
Signed - Candidate				Signed - Assessor				Comments											

		L3 MINE VENTILATION ENGINEER																
SECTION 9		MINE DUSTS AND AIRBORNE HAZARDS												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Hazardous Dusts																		
9.1	Describe what is meant by inhalable dust.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.1				
9.2	Describe what is meant by respirable dust.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.2				
9.3	Describe what is meant by flammable dust.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.3				
9.4	Identify the main causes for the development of respirable and inhalable dusts within a mine.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.4				
9.5	Outline your organisation's procedures for monitoring exposure to inhalable and respirable dust.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.5				
9.6	Define your organisation's operational limits for exposure to respirable or inhalable dust.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.6				
9.7	Outline the procedures that must be followed if monitoring indicates that the limits are being approached/ exceeded.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.7				
9.8	Where mines have potential issues with flammable/ explosive dusts, identify the areas where this might accumulate.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.8				
9.9	Where there is a potential for the buildup of flammable/ explosive dusts, outline the precautions that can be taken to reduce the potential for ignition.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.9				
9.10	Where there is a potential for the buildup of flammable/ explosive dusts, outline the precautions that can be taken to reduce the spread following an ignition.	PROMM18/MPQVG03	K23/ K22	1										Portfolio 9.10				
Maintaining a Dust Free Environment																		
9.11	Describe some of the systems that are utilised to prevent the generation of hazardous dusts at source.	PROMM18	K29	1										Portfolio 9.11				
9.12	Describe some of the systems and techniques that are used to minimise the generation of hazardous dusts as part of the mineral transfer/ transport systems.	PROMM18	K29	1										Portfolio 9.12				
9.13	Outline the process that is used to monitor the effectiveness of dusts suppression/ dust collection systems.	PROMM18	K29	1										Portfolio 9.13				
Total Units				13	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 9		MINE DUSTS AND AIRBORNE HAZARDS (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Practical Elements																		
Airborne/ Respirable Dust																		
P9.1	Create a sampling plan for an underground mining operation.	MPQVG03	P5			2												
P9.2	Check the operation and calibration of equipment for carrying out the required testing.	MPQVG03	P2			4												
P9.3	Produce a report that highlights any issues identified by the sampling.	MPQVG03	P5			4												
Diesel Exhaust Emissions																		
P9.4	Create a sampling plan for an underground mining operation.	MPQVG03	P5			2												
P9.5	Check the operation and calibration of equipment for carrying out the required testing.	MPQVG03	P2			4												
P9.6	Produce a report that highlights any issues identified by the sampling.	MPQVG03	P5			4												
Total Units				0	0	20	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 10		HEAT AND HUMIDITY												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Establishing and Calculating Effective Temperature																		
10.1	Describe what is meant by adiabatic compression, and the impact that this has on the mine environment.	MPQVG04	K19	1										Portfolio 10.1				
10.2	Explain what is meant by geothermal gradient, and the impact that this has on the mine environment.	MPQVG04	K19	1										Portfolio 10.2				
10.3	Explain what is meant by humidity and relative humidity of air.	MPQVG04	K19	1										Portfolio 10.3				
10.4	Explain what a hygrometer is used for and how this can be used to calculate relative humidity in a mine.	MPQVG04	K19	1										Portfolio 10.4				
10.5	Show how the wet and dry-bulb temperatures, along with air velocity can be used to determine the effective temperature.	MPQVG04	K19	1										Portfolio 10.5				
Laws of Thermodynamics																		
10.6	Define the first law of thermodynamics (conservation of energy).	MPQVG13	K57	1										Portfolio 10.6				
10.7	Define the second law of thermodynamics (the increase in entropy).	MPQVG13	K57	1										Portfolio 10.7				
10.8	Define the third law of thermodynamics (entropy approaching a steady state).	MPQVG13	K57	1										Portfolio 10.8				
10.9	For each of the laws, outline the basic principles of how it applies to mine ventilation in general and heat and humidity specifically.	MPQVG13	K57	1										Portfolio 10.9				
Practical Elements																		
P10.1	Create a sampling plan for an underground mining operation.	MPQVG03	P5			2												
P10.2	Check the operation and calibration of equipment for carrying out the required testing.	MPQVG03	P2			4												
P10.3	Produce a report that highlights any issues identified by the sampling.	MPQVG03	P5			4												
Total Units				9	0	10	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 11		DESIGN OF VENTILATION SYSTEMS (1)												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Types and Features of Main Ventilating Fans																	
11.1	Outline the requirements of the main ventilation fans or system at a mine.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.1			
11.2	Identify the advantages and disadvantages of using a system that forces air in to a mine.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.2			
11.3	Identify the advantages and disadvantages of using a system that exhausts (draws) air from a mine.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.3			
11.4	For the main ventilation fans at your mine identify the limitations of the fan, and how these limitations impact the ventilation systems in the mine.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.4			
11.5	Identify the typical types of fan and the characteristics of the fan used for main ventilating fans.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.5			
Fans Other than Auxiliary Fans																	
11.6	Identify the types of situation in which a fan other than an auxiliary ventilation fan may be used underground.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.6			
11.7	What are the limitations on use of fans other than auxiliary fans being installed underground.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.7			
11.8	Identify the advantages and disadvantages of using a fan other than an auxiliary fan for supplementing the main ventilation arrangements.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.8			
11.9	Identify the typical types of fan and the characteristics of the fan used for underground fans other than an auxiliary fan.	PROM18/MPQVG04	K42/ K10	1										Portfolio 11.9			
Factors Influencing the Choice and Performance of Ventilation Systems																	
11.10	Define how the depth at which a mine is operating may influence the type of ventilation system used.	PROM18/MPQVG04	K43/ K10	1										Portfolio 11.10			
11.11	Outline how virgin rock temperature may influence the type and design of the operational ventilation systems.	PROM18/MPQVG04	K43/ K10	1										Portfolio 11.11			
11.12	Outline how the number of operational areas may influence the type and design of the ventilation system.	PROM18/MPQVG04	K43/ K10	1										Portfolio 11.12			
11.13	Outline how the distance from the mine entry to the working area may influence the design of the ventilation system.	PROM18/MPQVG04	K43/ K10	1										Portfolio 11.13			
11.14	Outline how the mine layout, and the number of roadways in series and in parallel may influence the design of the mine ventilation system.	PROM18/MPQVG04	K43/ K10	1										Portfolio 11.14			
Total Units				14	0	0	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Factors Influencing the Choice and Performance of Ventilation Systems (continued)																		
11.15	Outline how the quantity of toxic/ noxious/ poisonous or flammable gasses may impact the design of the mine ventilation system.	PROM18	K43	1										Portfolio 11.15				
11.16	For mines that have high operating temperatures, identify how the mine ventilation system may be configured to reduce the impact.	PROM18	K43	1										Portfolio 11.16				
11.17	Identify how the mine ventilation system may be designed and operated to limit the exposure of persons to dust produced by the production or mineral transport process.	PROM18	K43	1										Portfolio 11.17				
Auxiliary Ventilation Systems																		
11.18	Identify the main types of fan that may be used within an auxiliary ventilation system.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.18				
11.19	Identify the key components that make up a force ventilation system.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.19				
11.20	Identify the advantages/ disadvantages and limitations of a force ventilation system.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.20				
11.21	Identify how pressure and quantity may be varied with this type of system, and how this can be important.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.21				
11.22	Identify the key components that make up an exhaust ventilation system.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.22				
11.23	Identify the advantages/ disadvantages and limitations of an exhaust ventilation system.	MPQVG03/ MPQVG04/ MPQVG05	K12/ K10/ K1	1										Portfolio 11.23				
11.24	Outline how the components making up a force and exhaust system may be combined to produce a force/ exhaust overlap system.	MPQVG03/ MPQVG04/ MPQVG05/ MPQVG13	K12/ K10/ K2/ K58	1										Portfolio 11.24				
11.25	Identify the advantages/ disadvantages and limitations of a force/ exhaust overlap ventilation system.	MPQVG03/ MPQVG04/ MPQVG05/ MPQVG13	K12/ K10/ K2/ K58	1										Portfolio 11.25				
Total Units				11	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (3)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Health Monitoring on Ventilating Fans																		
11.26	Identify the type of equipment that may be installed on a ventilating fan to monitor the condition of the fan.	MPQVG03	K12	1										Portfolio 11.26				
11.27	Where health monitoring systems are used on fans in your organisation, identify the types of things that are monitored and why that is important.	MPQVG03	K12	1										Portfolio 11.27				
Dust Filtration Systems																		
11.28	Identify how a dust filtration system is installed in to an auxiliary ventilation system.	MPQVG03	K12	1										Portfolio 11.28				
11.29	What are the advantages and disadvantages of using a dust filtration system that may be used as part of the exhausting ventilation system.	MPQVG03	K12	1										Portfolio 11.29				
Machine Onboard Scrubbing Systems																		
11.30	Identify the advantages/ disadvantages of on-board scrubbing systems.	MPQVG03	K12	1										Portfolio 11.30				
Degassing Systems																		
11.31	Outline the main features of a degassing system installed in to a force ventilation system.	MPQVG03	K12	1										Portfolio 11.31				
11.32	Outline the main features of a degassing system installed in to an exhaust ventilation system.	MPQVG03	K12	1										Portfolio 11.32				
11.33	Broadly outline the process for carrying out degassing operations in an area ventilated using an auxiliary ventilation system.	MPQVG03/MPQVG13	K12/ K21	1										Portfolio 11.33				
11.34	Outline the types of control that would be put in place to ensure that persons or other parts of the mine are not impacted by the degassing procedure.	MPQVG13	K21	1										Portfolio 11.34				
Total Units				9	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 11		DESIGN OF VENTILATION SYSTEMS (4)												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Other Mine Ventilation Equipment																	
11.35	Define what an air door is used for and where this would be positioned in a mine ventilation system.	MPQVG04	K10	1										Portfolio 11.35			
11.36	Define what a regulator is used for and where this would be positioned in a mine ventilation system.	MPQVG04	K10	1										Portfolio 11.36			
11.37	Define what a ventilation stopping is, and where these would be used within a mine ventilation system.	MPQVG04	K10	1										Portfolio 11.37			
11.38	Outline the other types of stopping that may form part of a ventilation system, and when these might be used.	MPQVG04	K10	1										Portfolio 11.38			
11.39	Outline the other types of stopping that may form part of a ventilation system, and when these might be used.	MPQVG04	K10	1										Portfolio 11.39			
11.40	Define what a balance chamber is, and where this might be used within a mine ventilation system.	MPQVG04	K10	1										Portfolio 11.40			
11.41	Explain where a ventilation hurdle may be used as part of a ventilation system and what it is designed to achieve.	MPQVG04	K10	1										Portfolio 11.41			
11.42	Outline what an air crossing is, and how this may be used as part of a mine ventilation system.													Portfolio 11.42			
Mine Ventilation Plans																	
11.43	Identify how fresh airflow is shown on a mine ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.43			
11.44	Identify how return air flow is shown on a mine ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.44			
11.45	Identify how a booster fan (fan other than an auxiliary fan) is shown on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.45			
11.46	Identify how an auxiliary fan is shown on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.46			
11.47	Identify how the direction of airflow from the auxiliary fan is shown on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.47			
11.48	Identify how a fan regulator is shown on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.48			
11.49	Identify how a degassing unit is shown on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.49			
11.50	Identify how air doors are identified on a ventilation plan.	PROMM18/MPQVG13	K46/ K45	1										Portfolio 11.50			
Total Units				15	0	0	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (5)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Mine Ventilation Plans (continued)																		
11.51	Identify how regulators are shown on a mine ventilation plan.	PROMM18	K46	1										Portfolio 11.51				
11.52	Identify how differnt types of stoppings are shown on a mine ventilation plan.	PROMM18	K46	1										Portfolio 11.52				
11.53	Identify how an air crossing is shown on a mine ventilation plan.	PROMM18	K46	1										Portfolio 11.53				
11.54	Identify how airflows are marked on a ventilation plan.	PROMM18	K46	1										Portfolio 11.54				
11.55	Identify how monitoring/ sample points are marked on a ventilation plan.	PROMM18	K46	1										Portfolio 11.55				
11.56	Identify how monitoring instruments are identified on a ventilation plan.	PROMM18	K46	1										Portfolio 11.56				
11.57	Identify how quantities are shown on a ventilation plan.	PROMM18	K46	1										Portfolio 11.57				
Gas Drainage Systems and Techniques																		
11.58	Outline how gas that may be under pressure may be released prior to mining operations taking place.	MPQVG04	K13	1										Portfolio 11.58				
11.59	Describe why it may be desirable to drain gas from an area prior to mining operations taking place.	MPQVG04	K13	1										Portfolio 11.59				
11.60	Where gas is drained from an area prior to mining operations taking place, describe how the gas is removed from the area or dissipated in to the general airflow.	MPQVG04	K13	1										Portfolio 11.60				
11.61	Outline the controls that need to be in place if gas is going to be allowed to drain in to the main airflow.	MPQVG04	K13	1										Portfolio 11.61				
11.62	For coal mines operating longwall mining systems, describe how the process of drilling and capturing the methane can be achieved.	MPQVG04	K13	1										Portfolio 11.62				
Total Units				12	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

	L3 MINE VENTILATION ENGINEER																	
SECTION 11	DESIGN OF VENTILATION SYSTEMS (6)												NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Consideration of Abandoned Areas																		
11.63	Identify how your current mine layout is ventilated, and how the design meets the current organisational standards.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.63				
11.64	Identify how the mine may be developed and how ventilation is considered as part of the mine design process.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.64				
11.65	Outline how the mine design, historical and future planned workings influence the design of the mine ventilation systems.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.65				
11.66	Define the advantages and disadvantages of maintaining old areas as part of the mine ventilation system, and how these abandoned areas may affect mine ventilation.	MPQVG04/MPQVG13	K9/ K58/ K59	1										Portfolio 11.66				
11.67	Define how your organisation seals off old/ abandoned areas.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.67				
Siting and Positioning Auxiliary Ventilation Systems																		
11.68	Outline your organisational policy on the siting of auxiliary fans when it comes to the maximum amount of air that can be removed from the ventilation circuit.	MPQVG05	K2	1										Portfolio 11.68				
11.69	Outline your organisational policy when it comes to air joining a circuit after ventilating a working area, and any limitations on the levels of contamination.	MPQVG05	K2	1										Portfolio 11.69				
11.70	The type of monitoring systems that are in place to ensure that the air supplying the ventilation system is within the defined limits for toxic, noxious, poisonous or flammable gasses.	MPQVG05	K2	1										Portfolio 11.70				
11.71	Outline the considerations that should be given to the siting of fans where heat and humidity is a potential problem, and how the siting of the fans may assist in reducing the issue.	MPQVG05	K2	1										Portfolio 11.71				
Presentation and Gaining Approval of Ventilation Plans																		
11.72	Outline the type of information required on a mine ventilation plan.	MPQVG13	K62	1										Portfolio 11.72				
11.73	Outline your organisation's procedure to gain acceptance of a completed operational ventilation plan, and who is involved in reviewing and accepting the plan.	PROMM18/MPQVG13	K48/ K47	1										Portfolio 11.73				
Total Units				11	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (7)											NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Presentation and Gaining Approval of Ventilation Plans																		
11.74	Outline your organisation's procedure to ensure that operational teams understand the ventilation plans being presented.	MPQVG13	K62	1										Portfolio 11.74				
11.75	Identify how the mine may be developed and how ventilation is considered as part of the mine design process.	MPQVG13	K62	1										Portfolio 11.75				
11.76	Outline how mine ventilation plans are used to inform the wider mine planning process.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.76				
11.77	Define the advantages and disadvantages of maintaining old areas as part of the mine ventilation system, and how these abandoned areas may affect mine ventilation.	MPQVG04/MPQVG13	K9/ K58/ K59	1										Portfolio 11.77				
11.78	Outline how you would verify that the ventilation plan is able to meet the operational requirements.	MPQVG13	K48	1										Portfolio 11.78				
11.79	Define how your organisation seals off old/ abandoned areas.	MPQVG04/MPQVG13	K9/ K58	1										Portfolio 11.79				
Total Units				6	0	0	0											

Signed - Candidate

Signed - Assessor

Comments

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (8)										NAME						
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Practical Elements (Supervising Mine Sampling)																		
P11.1	Determine the ventilation related measurements and samples to be taken.	MPQVG04	P1			4												
P11.2	Specify the types of equipment to be used for various measurements and sampling that takes place at your mine.	MPQVG04	P2			2												
P11.3	Develop a suitable sampling plan that covers the whole of the mine operation.	MPQVG04	P3			1												
P11.4	Revise the sampling plan to take account of changes to the mine operation.	MPQVG04	P3			2												
P11.5	Organise for the planned sampling to be completed (must include examples of pressure/ quantity/ gasses/ dust/ temperature).	MPQVG04	P4			4												
P11.6	Observe to ensure that organisational procedures are followed when sampling is taking place.	MPQVG04	P5			2												
P11.7	Check the results from a pressure quantity survey.	MPQVG04	P6			2												
P11.8	Check the results from a dust sampling survey.	MPQVG04	P6			2												
P11.9	Check the results from the DEEE survey.	MPQVG04	P6			2												
P11.10	Check the results from a mine environmental (mine gas) survey.	MPQVG04	P6			2												
P11.11	Analyse and interpret the results from a pressure quantity survey.	MPQVG04	P7			2												
P11.12	Analyse and interpret the results from a dust sampling survey.	MPQVG04	P7			2												
P11.13	Analyse and interpret the results from a DEEE survey.	MPQVG04	P7			2												
P11.14	Analyse and interpret the results from a mine environmental (mine gas) survey.	MPQVG04	P7			2												
Total Units				0	0	31	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 11		DESIGN OF VENTILATION SYSTEMS (9)											NAME					
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Practical Elements (Design of Mine Ventilation Systems)																		
P11.15	Identify the levels of ventilation required to meet the operational requirements.	PROMM18/MPQVG13	P1/ P1			2												
P11.16	Identify the specification of the plant and equipment required to meet the operational requirements.	PROMM18	P4			4												
P11.17	Develop a suitable work plan to support the installation of the required ventilation systems.	PROMM18	P8			1												
P11.18	Identify areas that require auxiliary ventilation.	MPQVG05	P1			2												
P11.19	Determine the equipment that would provide the required levels of auxiliary ventilation.	MPQVG05	P2			4												
P11.20	Carry out measurements that support the design of the mine ventilation system.	MPQVG05	P4			2												
Total Units				0	0	15	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER																
SECTION 12		INSTALLATION AND COMMISSIONING OF VENTILATION SYSTEMS												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Measuring and Calculating the Auxiliary Ventilation Systems																		
12.1	Outline the type of information that may be required when siting an auxiliary fan (the answer should give consideration to the airflow in the main ventilation stream, the quantities to ventilate the working area, the quality and condition of the air returning to the main ventilation system).	MPQVG05	K3/ K4	1										Portfolio 12.1				
Auxiliary Ventilation Rules																		
12.2	Define the contents of the auxiliary ventilation rules that are used at your mine.	MPQVG05	K6	1										Portfolio 12.2				
12.3	Outline how the system is tested to ensure that it is meeting the parameters defined by the auxiliary ventilation rules.	MPQVG05	K6	1										Portfolio 12.3				
12.4	Define the procedure should the test reveal that the fan/ ventilation system is not operating in line with the auxiliary ventilation rules.	MPQVG05	K6	1										Portfolio 12.4				
12.5	Outline how the system is secured to prevent unauthorised alterations to the ventilation system once it has been commissioning.	PROMPR23	K7	1										Portfolio 12.5				
Deviations from the Required Standards																		
12.6	Outline the procedures that would be followed if the system or equipment is not working to the required standard.	MPQVG04/ MGQVG05	K14/ K5	1										Portfolio 12.6				
Commissioning New Fixed Environmental Monitoring Systems																		
12.7	Describe how fixed monitoring systems are tested and commissioned following installation.	New Section (Environmental Monitoring)	K3	1										Portfolio 12.7				
12.8	Outline the local and remote readings are verified to ensure that the indications are the same.	New Section (Environmental Monitoring)	K3	1										Portfolio 12.8				
12.9	Outline the issues if the instruments installed are reading either too high or too low.	New Section (Environmental Monitoring)	K3	1										Portfolio 12.9				
Total Units				9	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 12		INSTALLATION AND COMMISSIONING OF VENTIALTION SYSTEMS (2)												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Practical Elements																	
P12.1	Create a commissioning document that can be used to verify that the equipment has been installed to the required standards and that the equipment is operating within the required design criteria.	MPQVG05	P5			4											
P12.2	Carry out commissioning tests on a newly installed systems.	MPQVG05	P5			4											
P12.3	Carry out commissioning test on an overhauled/ upgraded system.					2											
Total Units				0	0	10	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER															
SECTION 13		PLANNING AND MAKING CHANGES TO MINE VENTILATION SYSTEMS												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
Changes to Mine Ventilations Systems																	
13.1	Identify the organisational procedures required if there are any changes to be made to the ventilation system underground at your mine.	MPQVG05/MPQVG13	K8/ K65	1										Portfolio 13.1			
13.2	Outline how changes of ventilation to one area of the mine may impact other areas of the mine.	MPQVG05/MPQVG13	K8/ K65	1										Portfolio 13.2			
13.3	Outline the checks required by your organistions following any changes to the underground ventilation system.	MPQVG05/MPQVG13	K8/ K65	1										Portfolio 13.3			
Practical Elements																	
P13.1	Plan changes to a mine ventilation system, identifying and confirming the objectives of the change.	PROMM18	P1			4											
P13.2	Verify that the plant that is installed is capable of delivering the required changes.	PROMM18	P4			4											
P13.3	Check to ensure that the methods employed will not endanger the health, safety and welfare of persons.	PROMM18	P10			4											
P13.4	Ensure that there are sufficient appropriate safety systems and equipment are made available.	PROMM18	P11			2											
P13.5	Ensure that details of the work to be carried out are communicated appropriately to all relevant persons.	PROMM18	P12			2											
P13.6	Ensure that there is adequate supervision available to monitor and support the ventilation changes.	PROMM18	P14			2											
P13.7	That the changes to the ventilation work have been through the appropriate levels of signoff prior to commencement.	PROMM18	P15			1											
Total Units				3	0	19	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 14		USING VENTILATION MODELLING AND SIMULATION												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Ventilation Modelling Techniques																		
14.1	Identify the various modelling techniques that can be used to plan the mine ventilation system.	MPQVG13	K66	1										Portfolio 15.1				
14.2	Outline the type of information that would need to be collected and verified in order to establish or build a ventilation model.	MPQVG13	K66	1										Portfolio 15.2				
14.3	Outline the type of information that would be required to allow the model to be extended to include proposed future work areas within the mine.	MPQVG13	K66	1										Portfolio 15.3				
14.4	Identify the means by which the results from a model may be tested to verify their accuracy within current workings.	MPQVG13	K66	1										Portfolio 15.4				
14.5	Define how validation within current workings can be used to validate the assumptions for future workings.	MPQVG13	K66	1										Portfolio 15.5				
Use of Ventilation Modelling as Part of the Design Process																		
14.6	Outline your organisation's requirements to consider and use modelling information as part of the ventilation and wider mine planning process.	MPQVG13	K66	1										Portfolio 15.6				
14.7	Outline how ventilation models are used in your organisation to check the suitability of the mine ventilation system against the required/ desired operational layout.	MPQVG13	K62	1										Portfolio 15.7				
14.8	Describe how your organisation utilises modelling techniques to understand the ventilation requirements for the future.	MPQVG13	K62	1										Portfolio 15.8				
14.9	Define how ventilation models may be used to assist in predicting the effectiveness of the mine layout and ventilation systems in controlling environmental hazards that have been identified.	MPQVG13	K62	1										Portfolio 15.9				
Practical Elements																		
P14.1	Use measurements and information to create a model.	MPQVG03/MPQVG13	P3/ P7															
P14.2	Obtain various relevant current and applicable information to support the development of a ventilation model/ simulation.	PROMM18/MPQVG13	P2/ P2															
P14.3	Enlist the support of other management/ specialists as appropriate.	PROMM18/MPQVG13	P3/ P3															
P14.4	Use the vent model/ vent simulation to assist in carrying out complex calculation and analysis, and ensure that proposed systems meet the operational requirements.	MPQVG03/MPQVG13	P5/ P5															
Total Units				9	0	0	0											
Signed - Candidate				Signed - Assessor				Comments										

		L3 MINE VENTILATION ENGINEER															
SECTION 15		MINE PLANNING PROCESS												NAME			
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References			
							1	2	3	4	5			1	2	3	4
The Principle Activates in Mining Operations and Mineral Winning																	
15.1	Within your organisation identify how new areas of the mine are identified as having the right characteristics for the extraction of minerals.	PROMM18	K53	1										Portfolio 16.1			
15.2	Outline the process that your organisation goes through to plan access to and how those minerals will be developed for extraction.	PROMM18	K53	1										Portfolio 16.2			
15.3	Describe the production process that is most widely used in your operation.	PROMM18	K53	1										Portfolio 16.3			
15.4	Outline how the required extraction rates and quality requirements are used as part of the planning process	PROMM18	K53	1										Portfolio 16.4			
Operating Cycle																	
15.5	Provide an overview of the operation (production) cycle at your mine. Your description should include, the equipment that needs to be established in advance of the cycle, the cutting (blasting/ extraction) part of the cycle/ the mineral clearance process/ the installation of ground control measures/ the reestablishing (or maintenance of ventilation)/ extension of services (water/ compressed air/ power)/ extension of the mineral and mine transport systems.	PROMM18	K54	1										Portfolio 16.5			
Budgeting Cycle																	
15.6	Define the operational planning process conducted within your organisation, and how that information is used as part of the business planning and budgeting cycles.	PROMM18	K47	1										Portfolio 16.6			
15.7	How the ventilation department budgets to ensure that there is adequate resources and equipment to meet the operational plan.	PROMM18	K50	1										Portfolio 16.7			
15.8	Outline how the ventilation plan is aligned with the wider operational plan.	PROMM18	K47	1										Portfolio 16.8			
Total Units				8	0	0	0										
Signed - Candidate				Signed - Assessor				Comments									

		L3 MINE VENTILATION ENGINEER																
SECTION 15		MINE PLANNING PROCESS (2)												NAME				
Development Area		Standard	Ref	Know. Elements	Comp	Practical Elements	Practical Elements Completed					Candidates Signature	Reviewers Signature	Practical and Knowledge Evidence References				
							1	2	3	4	5			1	2	3	4	
Cost Benefit Analysis																		
15.9	Outline the process that is used by your organisation to evaluate different solutions to enquire that they get the one with the highest level of operational benefits at a reasonable cost.	PROMM18	K44	1										Portfolio 16.9				
Practical Elements																		
P15.1	Produce a full ventilation report that supports the development of the wider operational plan and budgeting process.	NA	NA			1												
Total Units				1	0	1	0											
Signed - Candidate				Signed - Assessor				Comments										