

EXAMINER'S REPORT

Undermanager of underground coal mines certificate of competence

July 2021

Written examination

Summary of results and general comments

Examination date:	3–4 February 2021
Number candidates:	30
Number who passed:	19
Highest overall mark:	82%
Median overall mark:	65%
Lowest overall mark:	47%

Paper UB1 – Mining Legislation

Summary of results and general comments

Exam date:	3 February 2021
Number of candidates:	25
Number who passed:	20
Highest mark:	88%
Lowest mark:	46%

Question 1 (total of 20 marks)

Highest mark:	17
Lowest mark:	4

Examiners' comments

This question was answered generally well by most candidates. It is a legal requirement to review control measures following certain circumstances. Some candidates answered referencing incorrect clauses under the legislation.

Most candidates marked well relating to Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 (WHS (MPS) Reg 2014) Cl. 39 exposure standards, and the results indicate there is a knowledge gap for candidates and the relevant notices an Undermanager will come across in their role that can be issued under legislation.

Question 2 (total of 20 marks)

Highest mark: 20

Lowest mark: 11.5

Examiners' comments

This question was answered to a high standard by most candidates demonstrating a good understanding of the legislated requirements for Inspection Plans under WHS (MPS) Reg 2014 Cl. 85. The candidates receiving lower marks did not state the correct inspection frequencies and/or provided limited examples of things requiring inspection under an inspection plan.

Question 3 (total of 20 marks)

Highest mark: 18

Lowest mark: 7

Examiners' comments

This question was answered well by most candidates. Most candidates demonstrated a good understanding of the incombustible material in roadway dust requirements.

Candidates in general did not demonstrate understanding of the frequency required for sampling in the various areas of the mine.

Question 4 (total of 20 marks)

Highest mark: 20

Lowest mark: 8

Examiners' comments

This question was generally answered well by most candidates. Most candidates demonstrated the knowledge that the legislation requires communications and information transfer between shifts and between shift Undermanagers.

A number of candidates failed to recognise the legislative requirement to acknowledge both the accuracy of the previous shift report and that the contents was communicated to the workforce.

Question 5 (total of 20 marks)

Highest mark: 19

Lowest mark: 5

Examiners' comments

The spread of marks awarded for this question, was quite broad. Many candidates demonstrated a working knowledge of the contents of a mines Emergency Management Plan. This part of the question was generally answered well by most candidates.

The requirements for testing the Emergency Plan was not as well understood.

Paper UB2 – Mine Ventilation

Summary of results and general comments

Exam date: 3 February 2021

Number of candidates: 25

Number who passed: 17

Highest mark: 81.5%

Lowest mark: 36%

Question 1 (total 100 marks)

Highest mark: 82

Lowest mark: 27.5

Examiners' comments

Overall, there was a higher pass mark for this paper than in previous years. It was noted that most candidates who passed scored quite well in some areas, and poorly in others.

- Candidates must demonstrate practical ventilation knowledge relevant to the question. Where spontaneous combustion is an identified hazard for the mine, having 30m³/s around a perimeter roadway is an example of candidates recording what is at their mine, and not necessarily specific to the question.
- Overall, the ventilation plan was done well, with most candidates scoring >60% for this question. Legends were used on most papers.
- Several candidates continued to rely heavily on 'rules of thumb' or use assumptions that are not explained or justified. It is important that each candidate should briefly explain why their assumptions are appropriate for the ventilation question. Providing an explanation for each

assumption allows the candidate to demonstrate their knowledge of ventilation principles and concepts.

- Several candidates continued to rely heavily on 'generic' hazards related to this question year after year. One example is where a candidate recorded the safety management system as control for the hazards associated with the mine plan. Candidates need to demonstrate what hazards are specific to this plan, and how they will control them.

Question 2 (total 100 marks)

Highest mark: 96

Lowest mark: 42

Examiners' comments

- Most candidates demonstrated the required knowledge on how methane can be ignited underground and how this can be controlled.
- Managing methane was handled well by most candidates.
- Graham's ratio is useful tool when determining the intensity of oxidation of coal in underground mines. This question was answered well by some candidates, and very poorly by others. Those candidates who scored well (>15) demonstrated preparation in these calculations, whilst those candidates who scored poorly (<5) showed little to no preparation in this field of ventilation.
- Candidates forfeited a significant amount of marks when answering the pre-shift question where you, as the Undermanager was on surface. Questions like this are written for the candidate to manage a situation from a remote location, and not necessarily 'on the spot'. A large number of candidates answered this question from the perspective of a deputy and failed to identify the tools and resources available to them on surface (control room, gas monitoring, fan monitoring etc) to assist in your decision making. For a question worth 50 marks, some candidates scored between 10-20 marks for this question due to poor time management, answering like a deputy and not understanding the 'stages' of decision making and data collection/analysis.

Paper UB3 – Coal Mining Practice

Summary of results and general comments

Exam date:	4 February 2021
Number of candidates:	22
Number who passed:	21
Highest mark:	85%
Lowest mark:	54%

Question 1 (total of 20 marks)

Highest mark:	16
Lowest mark:	9.5

Examiners' comments – 15 candidates attempted this question.

This question was answered generally well, with only 4/15 candidates scoring <12. Several candidates did not reference a safe system of work when providing work instructions to the panel deputy to manage the methane accumulation. As an Undermanager, your role requires you to 'implement' the safety management system. This means, in practice, when you are providing work instructions, you should reference elements of the safety management system, i.e. review the associated procedure, and include any actions taken in the incident report for further review'.

Question 2 (total of 20 marks)

Highest mark:	19
Lowest mark:	13.5

Examiners' comments – 19 candidates attempted this question.

The question was generally answered to a high standard with an average mark of 16.4 out of 20 marks. Most candidates demonstrated a satisfactory understanding of the responsibilities of an undermanager in respect of supervision, instruction, incident communication during shift handover and the implementation of work plans.

Question 3 (total of 20 marks)

Highest mark:	16
Lowest mark:	9

Examiners' comments – 21 candidates attempted this question.

Many candidates attempted this question and the question was answered reasonably well with an average mark of 12.25.

Most candidates demonstrated the required knowledge to manage the fluid injection injury however several candidates did not address the potential for strata deterioration on the longwall (LW) recovery face.

Several candidates failed to identify that this was a reportable event.

Question 4 (total of 20 marks)

Highest mark: 17.5

Lowest mark: 10.5

Examiners' comments – 12 candidates attempted this question.

Candidates receiving lower marks either did not identify the critical information needed to be sought by an undermanager on notification of a roof fall (i.e. Potential for further deterioration, information from strata monitoring devices, secondary impacts of the fall such as ventilation impacts) or did not demonstrate a satisfactory understanding of the steps required to be taken to reduce the risk of further roof falls or the steps required for the development of a fall recovery plan. This includes consideration of available information sources, consultation with expertise and workers, personal inspection and risk assessment.

Question 5 (total of 20 marks)

Highest mark: 16

Lowest mark: 11.5

Examiners' comments – 9 candidates attempted this question.

This question was attempted by the minority of candidates, however those who did scored quite well with an average of 14.75. Most candidates demonstrated the required knowledge when consulting with stakeholders for risk assessments and the process in developing a new management plan.

Candidates managed the situation where strata was deteriorating well, they inspected the area and provided a written report to the mining engineering manager, in line with the relevant pillar extraction management plan. Most candidates demonstrated an understanding of sequence variations.

Question 6 (total of 20 marks)

Highest mark: 20

Lowest mark: 12

Examiners' comments – 10 candidates attempted this question.

Though fewer candidates attempted this question most who did, answered it quite well with an average mark of 16.

This question was designed to test candidate's skills and knowledge of managing a project and specifically managing the risks associated with a routine task such as excavation of overcasts

The second part of the question required the candidate to understand that options need to be considered, and that these options need to be assessed based on the merit of the excavation method.

Question 7 (total of 20 marks)

Highest mark: 20

Lowest mark: 11

Examiners' comments – 18 candidates attempted this question.

The majority of candidates attempted this question and generally the questions was answered well with an average mark of 15.7.

The majority of candidates did demonstrate a sound practical knowledge relating to Spontaneous Combustion controls, those who received lower scores for this question generally did not communicate a more detailed understanding of technical aspects of the chemical reaction underway and links to how monitoring assists in the management of this hazard.

A number of candidates did not link gas analysis and gas ratios to indicators of the development of Spontaneous Combustion.

Question 8 (total of 20 marks)

Highest mark: 13

Lowest mark: 3

Examiners' comments – 8 candidates attempted this question.

This question was not attempted by most candidates and those that did attempt the question did not answer the question well with an average mark of 10.

The majority of candidates did not identify that integrity of the roof strata when holing a pre-driven recovery road is critical and any issue associated with the holing requires escalation.

A number of candidates failed to confirm ventilation quantity and velocity along the longwall face.

Oral examination

Date: 9–10 December 2021

Number of candidates: 11

Number deemed competent: 5

Examiners' comments

Candidates generally need to apply the same approach as recommended after the April exams. Prior preparation around areas they needed to improve on from a previous oral and then thinking like an Undermanager in the exam were the two main themes.

Oral examination

Date: 28–29 April 2021

Number of candidates: 20

Number deemed competent: 11

Examiners' comments

- Candidates demonstrated appropriate benchmarking considering the COVID-19 challenges.
- Candidates need to understand the Undermanager's role involves managing a team of supervisors.
- All candidates need to answer the questions as if they are the Undermanager in charge of the shift, a number of candidates approached scenarios for the perspective of a Deputy or a technical engineer with limited Associated Non-Technical Skills (ANTS) being demonstrated.
- Candidates generally understood the legislative obligations with respect to notification of incidents and the requirements and time frames commensurate with that.
- Candidates generally demonstrated risk management, communication, delegation, leadership, risk control and reviewing and revising when scenarios were posed. However, despite the importance being reiterated, some candidates still do not take a WHOLE mine approach as an Undermanager and answer questions at deputy level. An Undermanager role is critical and having a WHOLE of mine approach to safety and management of the mine at all time is paramount.
- An Undermanager role requires ANTS and these are examined and explored at the exam. It is paramount that candidates demonstrate that they can delegate, multitask and provide clear communication. Decision making with a structured approach is vital.
- Candidates generally demonstrated competency in most technical subjects but candidates need to be aware that being able to manage an emergency situation with a structured approach is pivotal.
- Being able to identify the hazards as an emergency is evolving continues to be a core skill that is necessary to demonstrate along with taking control and providing good leadership in a challenging situation.

- Overall successful candidates approached questions with a whole of mine approach to risks, safety and a structured approach to the questions posed.

More information

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Acknowledgments

Undermanager of underground coal mines examination panel

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