

EXAMINER'S REPORT

Mechanical engineering manager of underground coal mines certificate of competence

March – October 2019

Post oral examination

Examination date: 20 March 2019

Number of candidates: 0

Number deemed competent: 0

Written examinations

CME1 – Mechanical engineering practices applicable to underground coal mines

Summary of results and general comments

Exam Date: 8 August 2019

Number of Candidates: 8

Number who passed: 7

Highest mark: 82.8%

Average mark: 68%

Lowest mark: 58.8%

Question 1 (total of 10 marks)

Highest mark: 43

Average mark: 32.6

Lowest mark: 16

Examiner's comments

This question tested the candidate's knowledge of risks associated with stockpile handling equipment, and controls required to ensure the safety of the equipment operator. In general, this question was answered well by most candidates.

Question 2 (total of 10 marks)

Highest mark: 41.5

Average mark: 32.9

Lowest mark: 23

Examiner's comments

Mine piped services system design is often managed by the mechanical engineer. Candidates were examined on schematic symbols, dewatering system layouts, and component functionality.

Answers were generally poor and indicated a lack of understanding of underground mines piped services.

Question 3 (total of 10 marks)

Highest mark: 49

Average mark: 38.6

Lowest mark: 27

Examiner's comments

Multiple choice questions enable candidates to be broadly examined over a wide variety of topics, rather than in depth over a few topics. Topics covered include:

- MDG12 Guide for the construction of friction winders
- storage of gas cylinders
- welding management plan
- fluid power systems
- non-destructive testing
- AS1657 Fixed platforms, walkways, handrails and ladders

- Diesel engine systems

The question also covered Mining design guidelines.

In general, the questions were answered well, but did indicate a poor knowledge of friction winders.

Question 4 (total of 10 marks)

Highest mark: 46.5

Average mark: 39.4

Lowest mark: 35

Examiner's comments

The question covered the standard of engineering practice for fluid power management and was generally well answered by most candidates.

Question 5 (total of 10 marks)

Highest mark: 43

Average mark: 35.9

Lowest mark: 29

Examiner's comments

The question covered the identification of hazards and implementation of appropriate controls relating to belt conveyor fires underground. It was generally well answered by most candidates.

Question 6 (total of 10 marks)

Highest mark: 40

Average mark: 29.4

Lowest mark: 18

Examiner's comments

Most energy sources at underground mines are managed by the Mechanical Engineer, and require the development of critical controls, with a verification process to effectively manage them. It was generally answered satisfactorily by most candidates.

CME2 – Legislation and standards applicable to underground coal mines

Summary of results and general comments

Examination date:	8 th August 2019
Number of candidates:	14
Number who passed:	6
Highest mark:	81.3%
Average mark:	61%
Lowest mark:	42.8%

Question 1 (total of 10 marks)

Highest mark:	47
Average mark:	36.8
Lowest mark:	10

Examiner's comments

The briefing session for candidates advised that a sound working knowledge of legislation applicable to the mechanical engineering control plan (MECP) was required. It was disappointing that this question was generally handled poorly by the candidates.

Question 2 (total of 10 marks)

Highest mark:	48
Average mark:	39.1
Lowest mark:	33

Examiner's comments

The question explored the candidates experience with identifying hazards and developing controls that effectively mitigate risk with reference to the hierarchy of controls. It was generally well answered by most candidates.

Question 3 (total of 10 marks)

Highest mark:	45
Average mark:	28.89
Lowest mark:	13

Examiner's comments

The question explored the primary duty of care of the PCBU, dangerous incidents and duties of workers. More work is required by candidates on their understanding of what constitutes dangerous incidents.

Question 4 (total of 10 marks)

Highest mark:	37
Average mark:	28.68
Lowest mark:	17

Examiner's comments

Candidates were challenged on their knowledge of winding systems legislative requirements. Although candidates could identify hazards or risks associated with winders, they lacked sufficient depth of knowledge or experience to apply legislation to the practical management of winding ropes.

Question 5 (total of 10 marks)

Highest mark:	32
Average mark:	23.29
Lowest mark:	12

Examiner's comments

The question required the candidate to demonstrate detailed knowledge of the management of confined spaces. The candidates lacked depth of knowledge in both what constituted a confined space, and the specific controls required to manage them.

Question 6 (total of 10 marks)

Highest mark:	44
Average mark:	25.86
Lowest mark:	14

Examiner's comments

The question covered management of risks to health and safety, review of control measures, and contents of a safety management system. Although candidates understood the requirements for review of control measures, they had a poor working knowledge of the PCBU requirement to manage risks to health and safety at the mine, and reasonable knowledge of the content of a safety management system.

Oral examination

Examination date: 30th – 31st October 2019

Number of candidates: 7

Number deemed competent: 2

Examiner's comments

Six of the candidates were sitting their first oral exam. The candidates experience and knowledge were tested with mechanical engineering scenario questions relating to the following topics:

- Incident investigation
- Mobile plant equipment introduction to site
- Mobile plant safety critical function management
- Continuous miner chain change out

Most candidates performed okay, and generally had good depths of mechanical engineering knowledge. However, they could not adequately demonstrate an ability to apply the knowledge to satisfactorily manage the situations.

Two candidates performed satisfactorily by providing structured, logical answers with an emphasis on safely managing the situations.

General comments

Candidates need to consider the depth of their mining and engineering knowledge, and their ability to practically apply that to the safety focussed management of real-world situations, when planning to sit for statutory qualifications. In short, their relevant experience in mechanical engineering roles, especially in the day to day operation of the mine.

More information

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Acknowledgments

Mechanical engineering manager of underground coal mines examination panel

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