

EXAMINER'S REPORT

Certificate of competence

Mechanical engineering manager of underground coal mines

September 2020 – June 2021

Written examination

Summary of results and general comments

Examination date: 24th September 2020

Number candidates: 7

Number who passed: 4

General comments

Candidates generally performed satisfactorily, with no candidates scoring less than 50%, and the majority passing. However, some candidates struggled with the practical application of concepts introduced in the exam questions, which indicates some candidates still lack suitable experience across all aspects of the role.

CME1 – Mechanical engineering practices applicable to underground coal mines

Summary of results and general comments

Exam Date: 24th September 2020

Number of Candidates: 3

Number who passed: 2

Highest mark: 70.17%

Average mark: 64.67%

Lowest mark: 57.17%

Question 1 (total of 50 marks)

Highest mark: 33

Average mark: 31

Lowest mark: 29

Examiner's comments

Scenario based question relating to a winch set up to free a jammed flight bar on a chain conveyor. Candidates generally answered okay but had a poor understanding of working load limit (WLL) and minimum breaking load (MBL).

Question 2 (total of 50 marks)

Highest mark: 44

Average mark: 35

Lowest mark: 30

Examiner's comments

Questions related to conveyor components and conveyor system design. Candidate answers were generally satisfactory.

Question 3 (total of 50 marks)

Highest mark: 41

Average mark: 36.17

Lowest mark: 30.5

Examiner's comments

Multiple choice and short answer questions covering a number of mechanical engineering related topics. Candidates generally answered satisfactorily, but lacked knowledge of truck maxi brake systems, winder keps, and drift rail turning radii.

Question 4 (total of 50 marks)

Highest mark: 42

Average mark: 38.33

Lowest mark: 32

Examiner's comments

Question related to aspects of conveyor belting changeout, including documentation, hazard and control identification, and FRAS certification. Candidates generally answered satisfactorily.

Question 5 (total of 50 marks)

Highest mark: 30

Average mark: 29

Lowest mark: 27.5

Examiner's comments

This question related to recommissioning a coal bin. Unfortunately, candidates' answers were more like the level of a tradesperson, rather than engineers, with too low a level of risk perception. Candidates did not manage the change, demonstrate a logical sequence for the project, reintroduce equipment to service (site introduction), or identify maintenance strategies to manage the recommissioned bin over its life cycle.

Question 6 (total of 50 marks)

Highest mark: 28.5

Average mark: 24.5

Lowest mark: 20

Examiner's comments

Question related to developing a fluid power management system. Candidates answered this question poorly. They appeared to have a lack of exposure to developing systems, and exhibited:

- poor comprehension of equipment design requirements
- lack of understanding on competency requirements
- lack of understanding on what is required in safe systems of work.

CME2 – Legislation and standards applicable to underground coal mines

Summary of results and general comments

Exam Date:	24 th September 2020
Number of Candidates:	7
Number who passed:	4
Highest mark:	67.33%
Average mark:	59.5%
Lowest mark:	51.17 %

Question 1 (total of 50 marks)

Highest mark:	38
Average mark:	29.71
Lowest mark:	23

Examiner's comments

This question on Work Health and Safety Regulations had two parts, the major part relating to falls, and the second part covering noise exposure. Candidate answers were generally satisfactory.

Question 2 (total of 50 marks)

Highest mark:	32
Average mark:	27.5
Lowest mark:	21

Examiner's comments

This incident management and notification question related to pressurised fluids. Candidates struggled with aspects of this question, including a lack of familiarisation with a non-disturbance notice and its requirements, and a lack of understanding of requirements to review site systems post incident.

Question 3 (total of 50 marks)

Highest mark:	40
Average mark:	29.43

Lowest mark: 24

Examiner's comments

Question related to the Mechanical Engineering Control Plan (MECP) and the role of the Mechanical Engineering Manager (MEM). Candidates demonstrated a disappointing lack of understanding of what an MECP is, what must be taken into account in preparing an MECP, and what the function of the MEM is.

Question 4 (total of 50 marks)

Highest mark: 39

Average mark: 31.29

Lowest mark: 24

Examiner's comments

The question related to the Work Health and Safety Act duties of care, managing risks, and the Mechanical Engineering Manager function. Although candidates' answers were generally okay, they did not understand the requirements of the PCBU in relation to installation, construction, or commissioning plant and structures, or how it would be enacted practically.

Question 5 (total of 50 marks)

Highest mark: 42

Average mark: 34.43

Lowest mark: 25

Examiner's comments

Fill in the blanks question relating to maintenance of control measures, notification of incidents, and what constitutes serious illness or injury. Candidate answers were generally okay.

Question 6 (total of 50 marks)

Highest mark: 32

Average mark: 26.14

Lowest mark: 22

Examiner's comments

The question related to diesel exhaust emissions in underground mines. Candidates demonstrated poor understanding or experience of developing diesel emission management systems, and no one knew the sulphur content requirements for underground diesel fuel.

Oral examination

Date: 28th to 30th October 2020

Number of candidates: 8

Number deemed competent: 2

General comments

Although only two candidates were deemed competent, a further three candidates were within a couple of marks of passing.

Question topics included:

- Incident investigation scenario
- Contract management
- Equipment management
- Safety breach management

Candidates need to:

- Develop a structured approach to provide logical and comprehensive answers that indicate they are managing issues. The answer should consider areas such as people, equipment, environment, processes, and organisational. The Nertney Wheel, Ishikawa, ICAM, and PEEPO are examples of systematic structured approaches.
- Manage the collection of all relevant information in the early stages of an investigation, not focus on high level failures, such as management systems, before collecting evidence from the scene.
- Listen to, and understand, the scenario in order to manage the issues and answer the question.
- Identify the hazards so they can control the energies.

Post Oral examination

Date: 2nd June 2021

Number of candidates: 2

Number deemed competent: 1

General comments

Question topics included:

- Incident investigation scenario
- Fluid injection management
- Legacy plant

Comments are not provided as they relate to one candidate only, who can request their individual feedback.

Overall comments for all exams

Unsuccessful candidates generally lacked the understanding or experience of the Mechanical Engineering Manager role.

More information

Regional NSW

Resources Regulator

T: 4063 6461

Email: mca@planning.nsw.gov.au

Acknowledgments

Mechanical engineering manager of underground coal mines examination panel

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